

POWER **P**LAZA



POWER SUPPLIES PRODUCT GUIDE

About PowerPlaza

SMPS 산업을 선두하는 기업, 파워프라자입니다. Leading SMPS industry, we are PowerPlaza.

파워프라자는 1993년 설립된 이래 DC-DC Converter, AC-DC Converter 등 표준화된 700여종의 다양한 제품을 개발, 생산, 판매하는 명실상부한 국내 최고의 SMPS 업체로 성장하였습니다. 또한 국내 SMPS 산업을 선도하는 전자부품 회사로서 국내 선두의 기술력과 끊임없는 연구, 생산능력을 바탕으로 정직한 마음으로 고객 여러분에게 더욱 가까이 다가가겠습니다. 아울러 파워프라자의 제품으로 소비자 여러분의 경쟁력을 높일 수 있도록 모든 임직원은 노력을 멈추지 않습니다.

Established in 1993, we have been producing, developing and selling over 700 kind of standard SMPS product like DC-DC converter and AC-DC converter and now we are boast of our honor being recognized as the best SMPS supplier. We will approach you closer and closer with high technology and continuous research and investment on the production equipment based on honest mind. We are striving to help you to be more competitive through our products and be the best worldwide leading 21st power industry.

경영이념 Corporate philosophy

파워프라자는 정도경영을 실천합니다.

하늘을 공경하고, 사람을 사랑하는 경천애인(敬天愛人) 사상을 바탕으로 신뢰 받고, 투명하고 부조리가 없는 기업이미지를 정착시키며 항상 성실하고 바른 경영으로 기업의 사회적 책임을 다하고 있습니다.

Practical Business Ethics

Respect Nature's will and love human

Clean Company Management and keep social responsibility



파워프라자는 환경친화적인 기업입니다.

파워프라자는 미래 자연환경을 생각하며, 적극적인 R&D를 통하여 저탄소 녹색 성장에 앞장섭니다.

Environment Friendly Company

PowerPlaza concern about environment and nature for our next generation and strive to lead low carbon green growth.

파워프라자는 고객의 입장에서 먼저 생각하는 가치 경영을 실천하며 파워프라자의 모든 제품이 전세계 No.1 브랜드가 될 때까지 파워프라자의 노력은 멈추지 않습니다.

PowerPlaza is practicing the value administration of thinking everything in the customer's shoes and our efforts will never stop until all our products can be the whole world No.1 brand.

사업영역 Our Businesses Range

Power supply 사업영역

Network Equipment Power Supply, Rail Power Supply, Industrial Power Supply, DC-DC/AC-DC Converter



EV사업영역 Electric Vehicle Businesses



2007년 “친환경 경영방침” 을 선언하고 축적된 전력전자 기술력을 바탕으로 전기차 및 개조 전기차 사업에 진출하였습니다. 2009년 EV연구소를 설립하고 디지털 파워기술을 기반으로 파워트레인 솔루션 연구, 개조 전기차 사업 등을 통하여 전기차에 대한 기술력을 확보하였습니다. 2010년 8월 고속 전기차 “예쁘자나” 로 Zero Race 유럽코스를 완주하였으며, 2010년 11월 “세계 기네스 기록도전을 위한 Korea Challenge” 에서 503km 한국 기네스 기록을 수립하였습니다. 또한 2011년 9월 Zero emission으로 국토대장정을 하는 Zero emission korea tour를 개최 하였습니다. 파워프라자는 신뢰성이 요구되는 전기차 개발을 위해 Catia, 3D Scanner, NI Labview, 열화상 카메라, Dynamometer 등 고급 Software 및 Hardware를 도입하여, 높은 신뢰도를 바탕으로 한 안정적인 제품과 끊임없는 신기술 개발을 위해 노력하고 있습니다.

Since we announced “Green Policy” in 2007, we stretched our business to Electric Vehicle base in electric & electronic technologies. Power Plaza EV Center established in 2009 and has built their technologies for Power Train solution with digital power tech and Electric conversion of gas/oil vehicle, design for pure electric vehicle. PowerPlaza’s pure EV, Yebbujana has done Europe tour of Zero Race 2010 and set Korea Guinness Record as 503km in division of EV’s longest drive range. PowerPlaza has done over 1,000km cross country tour with electric vehicles on Sept. 2011. We constantly strive to improve our manufacturing process, develop many new models and improve our level of environmental awareness.

Electric Vehicle Powertrain Components

Battery Pack, BMS(Battery Management System), EV용 Auxiliary Power Supply, PDU, Charger



Conversion Technology for Internal Combustion Engine Vehicle to Electric Vehicle - 개조 전기자동차

파워프라자는 내연기관(가솔린, 경유, 가스) 자동차에서 엔진을 빼고 그 자리에 전기모터와 배터리를 대체하는 개조 전기차사업을 2008년부터 꾸준히 연구, 개발하고 있습니다.

PowerPlaza has research and developed gas/oil to electric conversion solution by using powertrain(battery, BMS, PDU, DC-DC Converter) and Drive train(Motor with controller) instead of internal combustion gas/oil engine since 2008.



Electric Vehicle Research

Electric Vehicle R&D, Electric Vehicle solution, Personal Mobility, Mechanical design for electric vehicle, Smart Grid

DC-DC Converter

MODULE TYPE

Model	Page	Image	Output	Series	Input Voltage	Output Power	Safety	Features
SP-series	6~15		Single	SPS	5V, 12V, 24V, 48V	1.5~20W	CE, RoHS, UL (20W Pending)	Small Size and High Efficiency
			Dual	SPD	5V, 12V, 24V, 48V	1.5~20W	RoHS	Small Size and High Efficiency
P-series	16~27		Single	PS	5V, 12V, 24V, 48V	1.5~25W	CE, RoHS	5-Sided Shield Metal Case
			Dual	PD	5V, 12V, 24V, 48V	1.5~25W	RoHS	5-Sided Shield Metal Case
SPT-series	28~29		Single	SPTS	24V, 48V	15W	RoHS	6-Sided Shield Metal Case
PT-series	30~35		Single	PTS	24V, 48V	10~25W	CE, RoHS, UL	6-Sided Shield Metal Case
			Dual	PTD	24V, 48V	10~25W	CE, RoHS	6-Sided Shield Metal Case
			Triple	PT	24V, 48V	15W, 25W	CE, RoHS	6-Sided Shield Metal Case
PBR50-series	36~37		Single	PBR	24V, 48V	50W	CE, RoHS, UL	6-Sided Shield Metal Case
UPM18A-series	38~39		Single	UPM	48V	18A	RoHS	Intermediate Bus Converter
YPM600-series	40~41		Single	YPM	48V, 72V, 96V	600W	RoHS	Easy Attachment and Screw Type Pin
LPM600-series	42~43		Single	LPM	48V, 72V, 96V	600W	RoHS	CC / CV (Constant Current / Constant Voltage)

POL

Model	Page	Image	Output	Series	Input Voltage	Output Power	Safety	Features
SNS-series	44~53		Single	SNS 5A	5V, 12V	5~25W	RoHS	SIP, SMT Package POL Converter
			Single	SNS 6A	5V	6~19.8W	RoHS	SMT Package POL Converter
			Single	SNS 10A	5V, 12V	10~50W	RoHS	SIP, SMT Package POL Converter
			Single	SNS 15A	5V, 12V	15~75W	RoHS	SIP, SMT Package POL Converter
			Single	SNS 16A	5V	16~52W	RoHS	SIP Package POL Converter
78NS-series	54~57		Single	78NS 1R5A	4.5V, 5.5V	1.5~4.95W	RoHS	Three Terminal DC-DC Converter
			Single	78NS 3A	12V	9.9W, 15W	RoHS	Three Terminal DC-DC Converter
QPC20A-series	58~59		Single	QPC	48V	20A	RoHS	High Input Buck Converter

BRICK TYPE

Model	Page	Image	Output	Series	Input Voltage	Output Power	Safety	Features
NB600-series FULL BRICK	60~61		Single	NB	48V, 72V, 96V	600W	RoHS	Full Brick
NHS/HS-series HALF BRICK	62~63		Single	HS	24V, 48V	150W	RoHS	Ultra-Wide 2:1 Input 6-Side Shield, Half Brick
NHF/HF-series HALF BRICK	64~65		Single	HF	24V, 48V	100W	RoHS	Ultra-Wide 4:1 Input 6-Side Shield, Half Brick

DC-DC Converter

BRICK TYPE

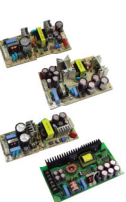
Model	Page	Image	Output	Series	Input Voltage	Output Power	Safety	Features
HRS50-series HALF BRICK	66~67		Single	HRS	48V, 72V, 96V	50W	RoHS	Small Size and High Efficiency
NES50-series EIGHTH BRICK	68~69		Single	NES	48V	50W	RoHS	Small Size and High Efficiency
UQC18A-series BUS CONVERTER	70~71		Single	UQC	48V	18A	RoHS	Intermediate Bus Converter

AC-DC Converter

MODULE TYPE

Model	Page	Image	Output	Series	Input Voltage	Output Power	Safety	Features
SF-series	72~73		Single	SFS	Universal Input	5W,10W	RoHS EMC CE cTUVus VDE	Small Size & Low No-Load Power Consumption
			Dual	SFD		5W,10W	RoHS	Small Size & Low No-Load Power Consumption
CFS5-series	74~75		Single	CFS	Universal Input	5W	RoHS EMC CE cTUVus VDE (Pending)	Low Cost Chassis Type (Non Potting)
FS-series	76~83		Single	FS	Universal Input	10~60W	RoHS EMC CE cTUVus VDE (30, 60W Pending)	Resin Case
			Dual	FSD		10~60W	RoHS	Resin Case
			Triple	FST		10~30W	RoHS	Resin Case
SF/FS-Chassis	84		Single	SF/FS	Universal Input	10~60W	RoHS EMC CE cTUVus VDE	
Accessory	85			Din-Rail				

OPEN TYPE

Model	Page	Image	Output	Series	Input Voltage	Output Power	Safety	Features
NF-series	86~87		Single	NFS	Universal Input & Selected Input (50W,100W)	10~100W		Multi Purpose & Low Price
			Dual	NFD		15~50W		Multi Purpose & Low Price
			Triple	NFT		15~30W		Multi Purpose & Low Price

UNIT TYPE

Model	Page	Image	Output	Series	Input Voltage	Output Power	Safety	Features
C-series	88~101		Single	CS	Universal Input	15~50W	RoHS CE cTUVus VDE	Multi Purpose & Industrial Model
			Single	CS	Selected Input	75~200W	CE RoHS	
			Dual	CD	Universal Input	30W		Multi Purpose & Industrial Model

SP1R5 Series

1.5W ISOLATED DC-DC CONVERTER



FEATURES 5V, 12V, 24V, 48V Inputs / Single, Dual Outputs

- High Efficiency
- Wide 2:1 Input Range
- Small Footprint / Low Profile
- Built-in Over Current Protection Circuit
- Input-Output Isolation
- Output Voltage Adjustment (TRM) (Single Outputs)
- Open Case Type
- Long Life Design (Employ Only Ceramic Capacitors)
- Wide Operating Temperature Range (-40°C ~ 85°C)
- 5 Year Warranty

ELECTRICAL SPECIFICATIONS

Input

- Input Range DC 5V(4.5 - 9), 12V(9 - 18), 24V(18 - 36), 48V(36 - 76)
- Efficiency 73 - 81% Typ.

Output

- Output Voltages 3.3V, 5V, 12V, 15V, $\pm 12V$, $\pm 15V$
- Output Voltage Tolerance $\pm 2.0\%$ (Single), $\pm 3.0\%$ (Dual)
- Line Regulation $\pm 0.5\%$ Max.
- Load Regulation $\pm 1.0\%$ Max. (Single), $\pm 2.5\%$ Max. (Dual : Minimum Load 10%)
- Ripple and Noise 1% of Vout (Bandwidth : 20MHz)
- Output Voltage Trim Range $\pm 10.0\%$ Typ.

Protection Circuit

- Over Current Protection Work Over 105% of Rating (Current Limited Output) (**NOTE 1**)

Electrically Isolated

- Isolation Input-Output, Input-Case, Output-Case / DC500V, 100M Ω
- High Pot Input-Output, Input-Case, Output-Case / AC500V, 1Min.

ENVIRONMENTAL

- Operating Temperature Range -40°C - 85°C
- Operating Humidity (Non-Condensing) 5% - 95%RH
- Storage Temperature Range -40°C - 105°C
- Storage Humidity (Non-Condensing) 5% - 95%RH
- Cooling Method Convection, Forced Air
- MTBF (MIL-HDBK-217F) 9.0×10^5 hrs
- Safety (Single Output) UL (UL 60950-1) / CE_LVD (EN 60950-1) through UL

NOTE 1. Long term continuous operation into a short circuit will compromise the reliability of the unit.

ORDERING INFORMATION

Input	Output1	Output2	Maximum Power	Ripple & Noise Max.	Efficiency Typ.	Model Number
4.5 - 9V	3.3V@0.40A		1.32W	50mVp-p	73%	SPS1R5-5-3R3(H)
4.5 - 9V	5V@0.30A		1.50W	50mVp-p	78%	SPS1R5-5-5(H)
4.5 - 9V	12V@0.13A		1.56W	120mVp-p	81%	SPS1R5-5-12(H)
4.5 - 9V	15V@0.10A		1.50W	150mVp-p	81%	SPS1R5-5-15(H)
4.5 - 9V	+12V@0.065A	-12V@0.065A	1.56W	120/120mVp-p	80%	SPD1R5-5-1212(H)
4.5 - 9V	+15V@0.050A	-15V@0.050A	1.50W	150/150mVp-p	80%	SPD1R5-5-1515(H)
9 - 18V	3.3V@0.40A		1.32W	50mVp-p	73%	SPS1R5-12-3R3(H)
9 - 18V	5V@0.30A		1.50W	50mVp-p	78%	SPS1R5-12-5(H)
9 - 18V	12V@0.13A		1.56W	120mVp-p	81%	SPS1R5-12-12(H)
9 - 18V	15V@0.10A		1.50W	150mVp-p	81%	SPS1R5-12-15(H)
9 - 18V	+12V@0.065A	-12V@0.065A	1.56W	120/120mVp-p	80%	SPD1R5-12-1212(H)
9 - 18V	+15V@0.050A	-15V@0.050A	1.50W	150/150mVp-p	80%	SPD1R5-12-1515(H)
18 - 36V	3.3V@0.40A		1.32W	50mVp-p	73%	SPS1R5-24-3R3(H)
18 - 36V	5V@0.30A		1.50W	50mVp-p	78%	SPS1R5-24-5(H)
18 - 36V	12V@0.13A		1.56W	120mVp-p	81%	SPS1R5-24-12(H)
18 - 36V	15V@0.10A		1.50W	150mVp-p	81%	SPS1R5-24-15(H)
18 - 36V	+12V@0.065A	-12V@0.065A	1.56W	120/120mVp-p	80%	SPD1R5-24-1212(H)
18 - 36V	+15V@0.050A	-15V@0.050A	1.50W	150/150mVp-p	80%	SPD1R5-24-1515(H)
36 - 76V	3.3V@0.40A		1.32W	70mVp-p	73%	SPS1R5-48-3R3(H)
36 - 76V	5V@0.30A		1.50W	70mVp-p	78%	SPS1R5-48-5(H)
36 - 76V	12V@0.13A		1.56W	120mVp-p	80%	SPS1R5-48-12(H)
36 - 76V	15V@0.10A		1.50W	150mVp-p	80%	SPS1R5-48-15(H)
36 - 76V	+12V@0.065A	-12V@0.065A	1.56W	120/120mVp-p	80%	SPD1R5-48-1212(H)
36 - 76V	+15V@0.050A	-15V@0.050A	1.50W	150/150mVp-p	80%	SPD1R5-48-1515(H)

H : SMT package (No Case)

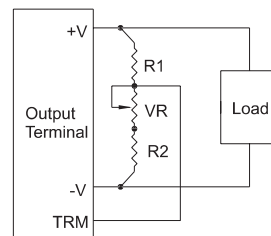
PIN ASSIGNMENTS

Single Output	Dual Output
1. +Vin	1. +Vin
2. - Vin	2. - Vin
3. TRM	3. - Vout
4. - Vout	4. COM
5. +Vout	5. +Vout

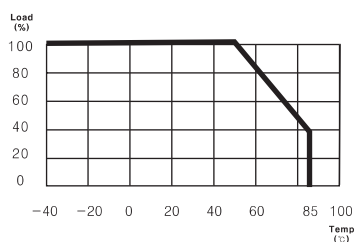
EXTERNAL PARTS

Model	Output Voltage	VR	R1	R2
SP1R5	3.3V	500Ω	1.0kΩ	560Ω
	5V	1.0kΩ	1.0kΩ	680Ω
	12V	1.0kΩ	3.9kΩ	680Ω
	15V	1.0kΩ	5.6kΩ	750Ω

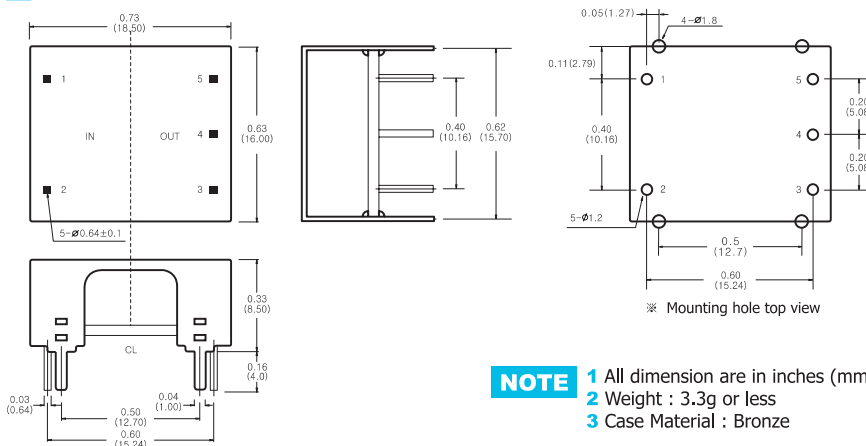
TRIM METHOD



DERATING CURVE



DIMENSIONS



NOTE 1 All dimension are in inches (mm)
 2 Weight : 3.3g or less
 3 Case Material : Bronze

SP3 Series

3W ISOLATED DC-DC CONVERTER



FEATURES 5V, 12V, 24V, 48V Inputs / Single, Dual Outputs

- High Efficiency
- Wide 2:1 Input Range
- Small Footprint / Low Profile
- Built-in Over Current Protection Circuit
- Input-Output Isolation
- Output Voltage Adjustment (TRM) (Single Outputs)
- Open Case Type
- Long Life Design (Employ Only Ceramic Capacitors)
- Wide Operating Temperature Range (-40°C ~ 85°C)
- 5 Year Warranty

ELECTRICAL SPECIFICATIONS

Input

- Input Range DC 5V(4.5 - 9), 12V(9 - 18), 24V(18 - 36), 48V(36 - 76)
- Efficiency 73 - 83% Typ.
- Remote On/Off Control
 - On : Short to -Vin
 - Off : Open

Output

- Output Voltages 3.3V, 5V, 12V, 15V, $\pm 12V$, $\pm 15V$
- Output Voltage Tolerance $\pm 2.0\%$ (Single), $\pm 3.0\%$ (Dual)
- Line Regulation $\pm 0.5\%$ Max.
- Load Regulation $\pm 1.0\%$ Max. (Single), $\pm 2.5\%$ Max. (Dual : Minimum Load 10%)
- Ripple and Noise 1% of Vout (Bandwidth : 20MHz)
- Output Voltage Trim Range $\pm 10.0\%$ Typ.

Protection Circuit

- Over Current Protection Work Over 105% of Rating (Current Limited Output) (**NOTE 1**)

Electrically Isolated

- Isolation Input-Output, Input-Case, Output-Case / DC500V, 100M Ω
- High Pot Input-Output, Input-Case, Output-Case / AC500V, 1Min.

ENVIRONMENTAL

- Operating Temperature Range -40°C ~ 85°C
- Operating Humidity (Non-Condensing) 5% ~ 95%RH
- Storage Temperature Range -40°C ~ 105°C
- Storage Humidity (Non-Condensing) 5% ~ 95%RH
- Cooling Method Convection, Forced Air
- MTBF (MIL-HDBK-217F) 7.0×10^5 hrs
- Safety (Single Output) UL (UL 60950-1) / CE_LVD (EN 60950-1) through UL

NOTE 1. Long term continuous operation into a short circuit will compromise the reliability of the unit.

ORDERING INFORMATION

Input	Output1	Output2	Maximum Power	Ripple&Noise Max.	Efficiency Typ.	Model Number
4.5 - 9V	3.3V@0.60A		1.98W	50mVp-p	73%	SPS3-5-3R3
4.5 - 9V	5V@0.60A		3.00W	50mVp-p	78%	SPS3-5-5
4.5 - 9V	12V@0.25A		3.00W	120mVp-p	80%	SPS3-5-12
4.5 - 9V	15V@0.20A		3.00W	150mVp-p	80%	SPS3-5-15
4.5 - 9V	+12V@0.13A	-12V@0.13A	3.12W	120/120mVp-p	81%	SPD3-5-1212
4.5 - 9V	+15V@0.10A	-15V@0.10A	3.00W	150/150mVp-p	81%	SPD3-5-1515
9 - 18V	3.3V@0.60A		1.98W	50mVp-p	74%	SPS3-12-3R3
9 - 18V	5V@0.60A		3.00W	50mVp-p	81%	SPS3-12-5
9 - 18V	12V@0.25A		3.00W	120mVp-p	83%	SPS3-12-12
9 - 18V	15V@0.20A		3.00W	150mVp-p	83%	SPS3-12-15
9 - 18V	+12V@0.13A	-12V@0.13A	3.12W	120/120mVp-p	83%	SPD3-12-1212
9 - 18V	+15V@0.10A	-15V@0.10A	3.00W	150/150mVp-p	83%	SPD3-12-1515
18 - 36V	3.3V@0.60A		1.98W	50mVp-p	73%	SPS3-24-3R3
18 - 36V	5V@0.60A		3.00W	50mVp-p	79%	SPS3-24-5
18 - 36V	12V@0.25A		3.00W	120mVp-p	82%	SPS3-24-12
18 - 36V	15V@0.20A		3.00W	150mVp-p	82%	SPS3-24-15
18 - 36V	+12V@0.13A	-12V@0.13A	3.12W	120/120mVp-p	83%	SPD3-24-1212
18 - 36V	+15V@0.10A	-15V@0.10A	3.00W	150/150mVp-p	83%	SPD3-24-1515
36 - 76V	3.3V@0.60A		1.98W	50mVp-p	73%	SPS3-48-3R3
36 - 76V	5V@0.60A		3.00W	50mVp-p	81%	SPS3-48-5
36 - 76V	12V@0.25A		3.00W	120mVp-p	83%	SPS3-48-12
36 - 76V	15V@0.20A		3.00W	150mVp-p	83%	SPS3-48-15
36 - 76V	+12V@0.13A	-12V@0.13A	3.12W	120/120mVp-p	83%	SPD3-48-1212
36 - 76V	+15V@0.10A	-15V@0.10A	3.00W	150/150mVp-p	83%	SPD3-48-1515

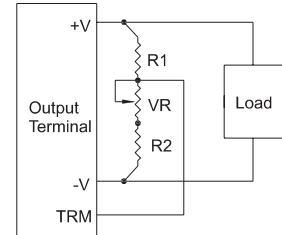
PIN ASSIGNMENTS

Single Output	Dual Output
1. +Vin	1. +Vin
2. - Vin	2. - Vin
3. CNT	3. CNT
3. TRM	3. - Vout
4. - Vout	4. COM
5. +Vout	5. +Vout

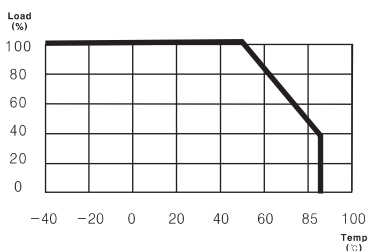
EXTERNAL PARTS

Model	Output Voltage	VR	R1	R2
SPS3	3.3V	500Ω	1.0kΩ	560Ω
	5V	1.0kΩ	1.0kΩ	680Ω
	12V	1.0kΩ	3.9kΩ	680Ω
	15V	1.0kΩ	5.6kΩ	750Ω

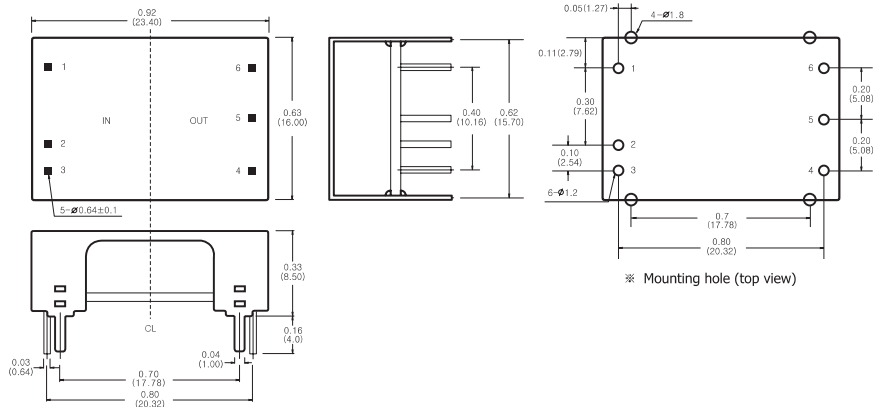
TRIM METHOD



DERATING CURVE



DIMENSIONS



- NOTE**
- 1 All dimension are in inches (mm)
 - 2 Weight : 4.0g or less
 - 3 Case Material : Bronze

SP6 Series

6W ISOLATED DC-DC CONVERTER



FEATURES 5V, 12V, 24V, 48V Inputs / Single, Dual Outputs

- High Efficiency
- Wide 2:1 Input Range
- Small Footprint / Low Profile
- Built-in Over Current Protection Circuit
- Input-Output Isolation
- Remote On/Off Control (CNT)
- Output Voltage Adjustment (TRM) (Single Outputs)
- Open Case Type
- Long Life Design (Employ Only Ceramic Capacitors)
- Wide Operating Temperature Range (-40°C ~ 85°C)
- 5 Year Warranty

ELECTRICAL SPECIFICATIONS

Input

- Input Range DC 5V(4.5 - 9), 12V(9 - 18), 24V(18 - 36), 48V(36 - 76)
- Efficiency 72 - 86% Typ.
- Remote On/Off Control
 - On : Short to -Vin
 - Off : Open

Output

- Output Voltages 3.3V, 5V, 12V, 15V, $\pm 12V$, $\pm 15V$
- Output Voltage Tolerance $\pm 2.0\%$ (Single), $\pm 3.0\%$ (Dual)
- Line Regulation $\pm 0.5\%$ Max.
- Load Regulation $\pm 1.0\%$ Max. (Single), $\pm 2.5\%$ Max. (Dual : Minimum Load 10%)
- Ripple and Noise 1% of Vout (Bandwidth : 20MHz)
- Output Voltage Trim Range $\pm 10.0\%$ Typ.

Protection Circuit

- Over Current Protection Work Over 105% of Rating (Current Limited Output) (**NOTE 1**)

Electrically Isolated

- Isolation Input-Output, Input-Case, Output-Case / DC500V, 100M Ω
- High Pot Input-Output, Input-Case, Output-Case / AC500V, 1Min.

ENVIRONMENTAL

- Operating Temperature Range -40°C ~ 85°C
- Operating Humidity (Non-Condensing) 5% ~ 95%RH
- Storage Temperature Range -40°C ~ 105°C
- Storage Humidity (Non-Condensing) 5% ~ 95%RH
- Cooling Method Convection, Forced Air
- MTBF (MIL-HDBK-217F) 5.6×10^5 hrs
- Safety (Single Output) UL (UL 60950-1) / CE_LVD (EN 60950-1) through UL

NOTE 1. Long term continuous operation into a short circuit will compromise the reliability of the unit.

ORDERING INFORMATION

Input	Output1	Output2	Maximum Power	Ripple & Noise Max.	Efficiency Typ.	Model Number
4.5 - 9V	3.3V@1.20A		3.96W	50mVp-p	72%	SPS6-5-3R3
4.5 - 9V	5V@1.00A		5.00W	50mVp-p	77%	SPS6-5-5
4.5 - 9V	12V@0.50A		6.00W	120mVp-p	80%	SPS6-5-12
4.5 - 9V	15V@0.40A		6.00W	150mVp-p	80%	SPS6-5-15
4.5 - 9V	+12V@0.25A	-12V@0.25A	6.00W	120/120mVp-p	82%	SPD6-5-1212
4.5 - 9V	+15V@0.20A	-15V@0.20A	6.00W	150/150mVp-p	82%	SPD6-5-1515
9 - 18V	3.3V@1.50A		4.95W	50mVp-p	77%	SPS6-12-3R3
9 - 18V	5V@1.20A		6.00W	50mVp-p	80%	SPS6-12-5
9 - 18V	12V@0.50A		6.00W	120mVp-p	84%	SPS6-12-12
9 - 18V	15V@0.40A		6.00W	150mVp-p	85%	SPS6-12-15
9 - 18V	+12V@0.25A	-12V@0.25A	6.00W	120/120mVp-p	85%	SPD6-12-1212
9 - 18V	+15V@0.20A	-15V@0.20A	6.00W	150/150mVp-p	85%	SPD6-12-1515
18 - 36V	3.3V@1.50A		4.95W	50mVp-p	74%	SPS6-24-3R3
18 - 36V	5V@1.20A		6.00W	50mVp-p	80%	SPS6-24-5
18 - 36V	12V@0.50A		6.00W	120mVp-p	82%	SPS6-24-12
18 - 36V	15V@0.40A		6.00W	150mVp-p	83%	SPS6-24-15
18 - 36V	+12V@0.25A	-12V@0.25A	6.00W	120/120mVp-p	84%	SPD6-24-1212
18 - 36V	+15V@0.20A	-15V@0.20A	6.00W	150/150mVp-p	84%	SPD6-24-1515
36 - 76V	3.3V@1.50A		4.95W	50mVp-p	75%	SPS6-48-3R3
36 - 76V	5V@1.20A		6.00W	50mVp-p	81%	SPS6-48-5
36 - 76V	12V@0.50A		6.00W	120mVp-p	85%	SPS6-48-12
36 - 76V	15V@0.40A		6.00W	150mVp-p	85%	SPS6-48-15
36 - 76V	+12V@0.25A	-12V@0.25A	6.00W	120/120mVp-p	85%	SPD6-48-1212
36 - 76V	+15V@0.20A	-15V@0.20A	6.00W	150/150mVp-p	86%	SPD6-48-1515

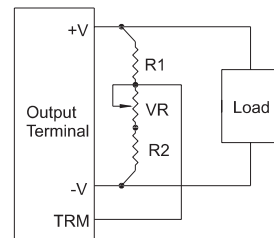
PIN ASSIGNMENTS

Single Output	Dual Output
1. +Vin	1. +Vin
2. - Vin	2. - Vin
3. CNT	3. CNT
4. TRM	4. - Vout
5. - Vout	5. No Pin
6. No Pin	6. COM
7. +Vout	7. +Vout

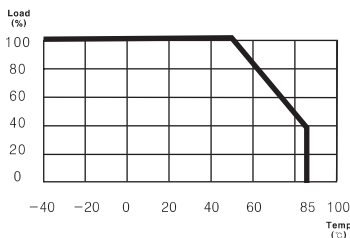
EXTERNAL PARTS

Model	Output Voltage	VR	R1	R2
SPS6	3.3V	500Ω	1.0kΩ	560Ω
	5V	1.0kΩ	1.0kΩ	680Ω
	12V	1.0kΩ	3.9kΩ	680Ω
	15V	1.0kΩ	5.6kΩ	750Ω

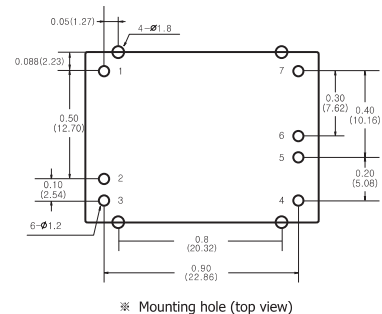
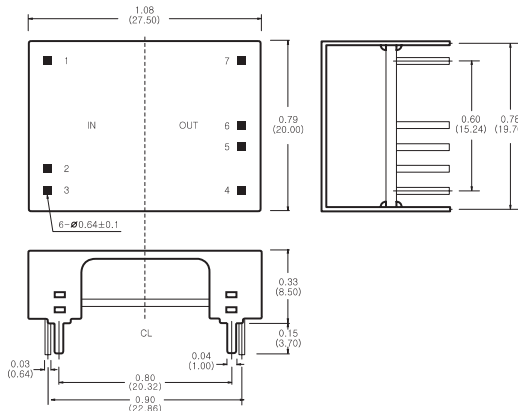
TRIM METHOD



DERATING CURVE



DIMENSIONS



* Mounting hole (top view)

NOTE 1 All dimension are in inches (mm)
2 Weight : 5.8g or less
3 Case Material : Bronze

SP10 Series

10W ISOLATED DC-DC CONVERTER



FEATURES 5V, 12V, 24V, 48V Inputs / Single, Dual Outputs

- High Efficiency
- Wide 2:1 Input Range
- Small Footprint / Low Profile
- Built-in Over Current Protection Circuit
- Input-Output Isolation
- Remote On/Off Control (CNT)
- Output Voltage Adjustment (TRM) (Single Outputs)
- Open Case Type
- Long Life Design (Employ Only Ceramic Capacitors)
- Wide Operating Temperature Range (-40°C ~ 85°C)
- 5 Year Warranty

ELECTRICAL SPECIFICATIONS

Input

- Input Range DC 5V(4.5 - 9), 12V(9 - 18), 24V(18 - 36), 48V(36 - 76)
- Efficiency 74 - 86% Typ.
- Remote On/Off Control
 - On : Short to -Vin
 - Off : Open

Output

- Output Voltages 3.3V, 5V, 12V, 15V, $\pm 12V$, $\pm 15V$
- Output Voltage Tolerance $\pm 2.0\%$ (Single), $\pm 3.0\%$ (Dual)
- Line Regulation $\pm 0.5\%$ Max.
- Load Regulation $\pm 1.0\%$ Max. (Single), $\pm 2.5\%$ Max. (Dual : Minimum Load 10%)
- Ripple and Noise 1% of Vout (Bandwidth : 20MHz)
- Output Voltage Trim Range $\pm 10.0\%$ Typ.

Protection Circuit

- Over Current Protection Work Over 105% of Rating (Current Limited Output) (**NOTE 1**)

Electrically Isolated

- Isolation Input-Output, Input-Case, Output-Case / DC500V, 100M Ω
- High Pot Input-Output, Input-Case, Output-Case / AC500V, 1Min.

ENVIRONMENTAL

- Operating Temperature Range -40°C ~ 85°C
- Operating Humidity (Non-Condensing) 5% ~ 95%RH
- Storage Temperature Range -40°C ~ 105°C
- Storage Humidity (Non-Condensing) 5% ~ 95%RH
- Cooling Method Convection, Forced Air
- MTBF (MIL-HDBK-217F) 4.8×10^5 hrs
- Safety (Single Output) UL (UL 60950-1) / CE_LVD (EN 60950-1) through UL

NOTE 1. Long term continuous operation into a short circuit will compromise the reliability of the unit.

ORDERING INFORMATION

Input	Output1	Output2	Maximum Power	Ripple&Noise Max.	Efficiency Typ.	Model Number
4.5 - 9V	3.3V@1.60A		5.28W	50mVp-p	75%	SPS10-5-3R3
4.5 - 9V	5V@1.60A		8.00W	50mVp-p	78%	SPS10-5-5
4.5 - 9V	12V@0.70A		8.40W	120mVp-p	81%	SPS10-5-12
4.5 - 9V	15V@0.60A		9.00W	150mVp-p	83%	SPS10-5-15
4.5 - 9V	+12V@0.35A	-12V@0.35A	8.40W	120/120mVp-p	84%	SPD10-5-1212
4.5 - 9V	+15V@0.30A	-15V@0.30A	9.00W	150/150mVp-p	84%	SPD10-5-1515
9 - 18V	3.3V@2.00A		6.60W	50mVp-p	77%	SPS10-12-3R3
9 - 18V	5V@2.00A		10.00W	50mVp-p	81%	SPS10-12-5
9 - 18V	12V@0.90A		10.80W	120mVp-p	84%	SPS10-12-12
9 - 18V	15V@0.70A		10.50W	150mVp-p	86%	SPS10-12-15
9 - 18V	+12V@0.45A	-12V@0.45A	10.80W	120/120mVp-p	86%	SPD10-12-1212
9 - 18V	+15V@0.35A	-15V@0.35A	10.50W	150/150mVp-p	86%	SPD10-12-1515
18 - 36V	3.3V@2.00A		6.60W	50mVp-p	75%	SPS10-24-3R3
18 - 36V	5V@2.00A		10.00W	50mVp-p	80%	SPS10-24-5
18 - 36V	12V@0.90A		10.80W	120mVp-p	85%	SPS10-24-12
18 - 36V	15V@0.70A		10.50W	150mVp-p	85%	SPS10-24-15
18 - 36V	+12V@0.45A	-12V@0.45A	10.80W	120/120mVp-p	85%	SPD10-24-1212
18 - 36V	+15V@0.35A	-15V@0.35A	10.50W	150/150mVp-p	85%	SPD10-24-1515
36 - 76V	3.3V@2.00A		6.60W	50mVp-p	74%	SPS10-48-3R3
36 - 76V	5V@2.00A		10.00W	50mVp-p	80%	SPS10-48-5
36 - 76V	12V@0.90A		10.80W	120mVp-p	85%	SPS10-48-12
36 - 76V	15V@0.70A		10.50W	150mVp-p	85%	SPS10-48-15
36 - 76V	+12V@0.45A	-12V@0.45A	10.80W	120/120mVp-p	84%	SPD10-48-1212
36 - 76V	+15V@0.35A	-15V@0.35A	10.50W	150/150mVp-p	84%	SPD10-48-1515

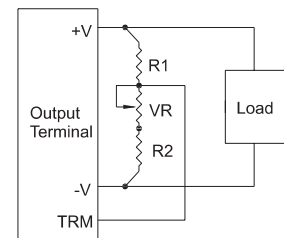
PIN ASSIGNMENTS

Single Output	Dual Output
1. +Vin	1. +Vin
2. - Vin	2. - Vin
3. CNT	3. CNT
4. TRM	4. - Vout
5. - Vout	5. No Pin
6. No Pin	6. COM
7. +Vout	7. +Vout

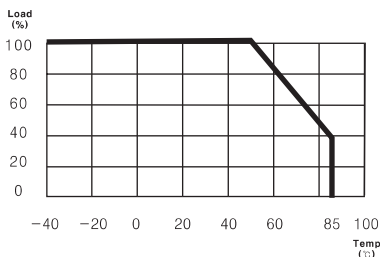
EXTERNAL PARTS

Model	Output Voltage	VR	R1	R2
SPS10	3.3V	500Ω	1.0kΩ	560Ω
	5V	1.0kΩ	1.0kΩ	680Ω
	12V	1.0kΩ	3.9kΩ	680Ω
	15V	1.0kΩ	5.6kΩ	750Ω

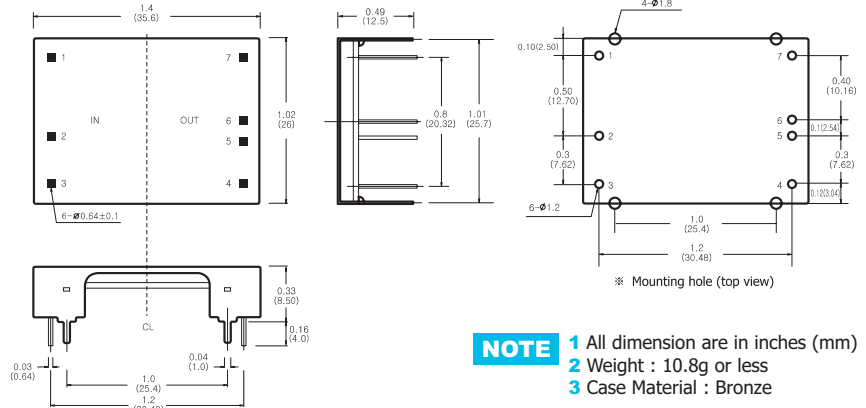
TRIM METHOD



DERATING CURVE



DIMENSIONS



- NOTE**
- 1 All dimension are in inches (mm)
 - 2 Weight : 10.8g or less
 - 3 Case Material : Bronze

SP20 Series

20W ISOLATED DC-DC CONVERTER



FEATURES 24V, 48V Inputs / Single, Dual Outputs

- High Efficiency
- Wide 2:1 Input Range
- Small Footprint / Low Profile
- Built-in Over Current Protection Circuit
- Input-Output Isolation
- Remote On/Off Control (CNT)
- Output Voltage Adjustment (TRM) (Single Outputs)
- Open Case Type
- Long Life Design (Employ Only Ceramic Capacitors)
- Wide Operating Temperature Range (-40°C ~ 85°C)
- 5 Year Warranty

ELECTRICAL SPECIFICATIONS

Input

- Input Range DC 24V(18 - 36), 48V(36 - 76)
- Efficiency 86 - 90% Typ.
- Remote On/Off Control
 - On : Short to -Vin
 - Off : Open

Output

- Output Voltages 3.3V, 5V, 12V, 15V, ± 12 , ± 15
- Output Voltage Tolerance $\pm 2.0\%$
- Line Regulation $\pm 0.5\%$ Max.
- Load Regulation $\pm 1.0\%$ Max.
- Ripple and Noise 2% of Vout (Bandwidth : 20MHz)
- Output Voltage Trim Range $\pm 10.0\%$ Typ.

Protection Circuit

- Over Current / Short Circuit Protection ... Work Over 105% of Rating (Hiccup mode) (**NOTE 1**)

Electrically Isolated

- Isolation Input-Output, Input-Case, Output-Case / DC500V, 100M Ω
- High Pot Input-Output, Input-Case, Output-Case / AC500V, 1Min.

ENVIRONMENTAL

- Operating Temperature Range -20°C ~ 85°C
- Option, See **NOTE 2** -40°C ~ 85°C
- Operating Humidity (Non-Condensing) 5% ~ 95%RH
- Storage Temperature Range -40°C ~ 105°C
- Storage Humidity (Non-Condensing) 5% ~ 95%RH
- Cooling Method Convection, Forced Air
- MTBF (MIL-HDBK-217F) 5.5×10^5 hrs

NOTE 1. Long term continuous operation into a short circuit will compromise the reliability of the unit.

2. As a factory added option, the all model can be operated from -40°C to 85°C, the suffix 'M' should be added to the model number when ordering. ex) SPS20-24-5M

ORDERING INFORMATION

Input	Output1	Output2	Maximum Power	Ripple&Noise Max.	Efficiency Typ.	Model Number
18 - 36V	3.3V@4.00A		13.20W	70mVp-p	86%	SPS20-24-3R3
18 - 36V	5V@4.00A		20.00W	70mVp-p	88%	SPS20-24-5
18 - 36V	12V@1.70A		20.40W	150mVp-p	90%	SPS20-24-12
18 - 36V	15V@1.40A		21.00W	150mVp-p	89%	SPS20-24-15
18 - 36V	+12V@0.85A	-12V@0.85A	20.40W	150/150mVp-p	89%	SPD20-24-1212
18 - 36V	+15V@0.70A	-15V@0.70A	21.00W	150/150mVp-p	89%	SPD20-24-1515
36 - 76V	3.3V@4.00A		13.20W	70mVp-p	86%	SPS20-48-3R3
36 - 76V	5V@4.00A		20.00W	70mVp-p	87%	SPS20-48-5
36 - 76V	12V@1.70A		20.40W	150mVp-p	89%	SPS20-48-12
36 - 76V	15V@1.40A		21.00W	150mVp-p	89%	SPS20-48-15
36 - 76V	+12V@0.85A	-12V@0.85A	20.40W	150/150mVp-p	88%	SPD20-48-1212
36 - 76V	+15V@0.70A	-15V@0.70A	21.00W	150/150mVp-p	89%	SPD20-48-1515

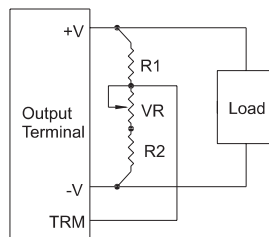
PIN ASSIGNMENTS

Single Output	Dual Output
1. +Vin	1. +Vin
2. - Vin	2. - Vin
3. CNT	3. CNT
4. TRM	4. - Vout
5. - Vout	5. No Pin
6. - Vout	6. COM
7. +Vout	7. No pin
8. +Vout	8. +Vout

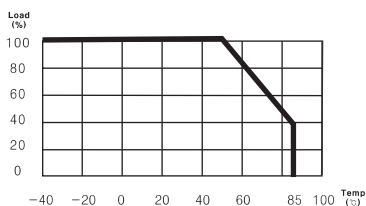
EXTERNAL PARTS

Model	Output Voltage	VR	R1	R2
SP20	3.3V	500Ω	1.0kΩ	560Ω
	5V	1.0kΩ	1.0kΩ	680Ω
	12V	1.0kΩ	3.9kΩ	680Ω
	15V	1.0kΩ	5.6kΩ	750Ω

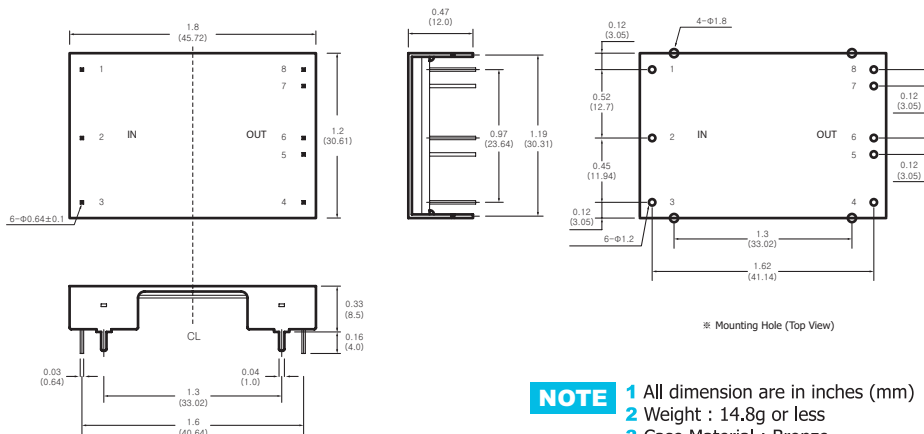
TRIM METHOD



DERATING CURVE



DIMENSIONS



NOTE 1 All dimension are in inches (mm)
2 Weight : 14.8g or less
3 Case Material : Bronze

P1R5 Series

1.5W DC-DC CONVERTER



FEATURES 5V, 12V, 24V, 48V Inputs / Single, Dual Outputs

- High Efficiency
- Encapsulated Small / Compact Size
- Wide 2:1 Input Range
- 300kHz Fixed Frequency
- Input / Output Isolation
- Surface Mounting Technology
- Current Mode Control
- Output Low Ripple / Noise
- Low Start up Current
- 3 Year Warranty

ELECTRICAL SPECIFICATIONS

Input	Input Range	DC 5V(4.5 - 7.2), 12V(8 - 16.5), 24V(18 - 32), 48V(32 - 63)
	Efficiency	66 - 81% Typ.

Output	Output Voltages	3.3V, 5V, 12V, 15V, $\pm 12V$, $\pm 15V$
	Output Voltage Tolerance	$\pm 2.0\%$ (Single and Uncomplementary Dual) $\pm 3.0\%$ (Complementary Dual)
	Line Regulation	$\pm 0.5\%$ Max.
	Load Regulation	$\pm 1.0\%$ Max. (Single), $\pm 2.5\%$ Max. (Dual : Minimum Load 10%)
	Ripple and Noise	1% of Vout (Bandwidth : 20MHz)

Protection Circuit	Over Current Protection	Work Over 105% of Rating (Current Limited Output) (NOTE 1)
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Electrically Isolated	Isolation	Input-Output, Input-Case, Output-Case / DC500V, 100M Ω
	High Pot	Input-Output, Input-Case, Output-Case / AC500V, 1Min.

ENVIRONMENTAL

Operating Temperature Range	-20°C ~ 71°C
Option, See NOTE 2	-40°C ~ 85°C
Operating Humidity (Non-Condensing)	20% ~ 90%RH
Storage Temperature Range	-40°C ~ 105°C
Storage Humidity (Non-Condensing)	10% ~ 95%RH
Cooling Method	Convection
MTBF (MIL-HDBK-217F)	7.9×10^5 hrs
Safety (Single Output)	CE_LVD (EN 60950) through TÜV

NOTE 1. Long term continuous operation into a short circuit will compromise the reliability of the unit.

2. As a factory added option, the all model can be operated from -40°C to 85°C, the suffix 'M' should be added to the model number when ordering. ex) PS1R5-24-5M

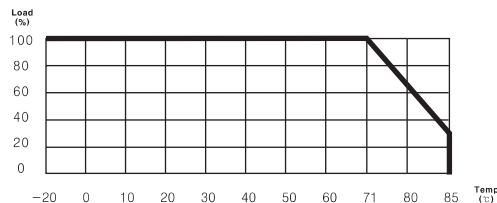
ORDERING INFORMATION

Input	Output1	Output2	Maximum Power	Ripple&Noise Max.	Efficiency Typ.	Model Number
4.5 - 7.2V	3.3V@0.30A		0.99W	50mVp-p	66%	PS1R5-5-3R3
4.5 - 7.2V	5V@0.30A		1.50W	50mVp-p	70%	PS1R5-5-5
4.5 - 7.2V	12V@0.125A		1.50W	120mVp-p	70%	PS1R5-5-12
4.5 - 7.2V	15V@0.10A		1.50W	150mVp-p	75%	PS1R5-5-15
4.5 - 7.2V	+12V@0.06A	-12V@0.06A	1.44W	120/120mVp-p	72%	PD1R5-5-1212
4.5 - 7.2V	+15V@0.05A	-15V@0.05A	1.50W	150/150mVp-p	75%	PD1R5-5-1515
8 - 16.5V	3.3V@0.30A		0.99W	50mVp-p	75%	PS1R5-12-3R3
8 - 16.5V	5V@0.30A		1.50W	50mVp-p	78%	PS1R5-12-5
8 - 16.5V	12V@0.125A		1.50W	120mVp-p	81%	PS1R5-12-12
8 - 16.5V	15V@0.10A		1.50W	150mVp-p	81%	PS1R5-12-15
8 - 16.5V	+12V@0.06A	-12V@0.06A	1.44W	120/120mVp-p	81%	PD1R5-12-1212
8 - 16.5V	+15V@0.05A	-15V@0.05A	1.50W	150/150mVp-p	78%	PD1R5-12-1515
18 - 32V	3.3V@0.30A		0.99W	50mVp-p	70%	PS1R5-24-3R3
18 - 32V	5V@0.30A		1.50W	50mVp-p	73%	PS1R5-24-5
18 - 32V	12V@0.125A		1.50W	120mVp-p	78%	PS1R5-24-12
18 - 32V	15V@0.10A		1.50W	150mVp-p	78%	PS1R5-24-15
18 - 32V	+12V@0.06A	-12V@0.06A	1.44W	120/120mVp-p	74%	PD1R5-24-1212
18 - 32V	+15V@0.05A	-15V@0.05A	1.50W	150/150mVp-p	75%	PD1R5-24-1515
32 - 63V	3.3V@0.30A		0.99W	50mVp-p	68%	PS1R5-48-3R3
32 - 63V	5V@0.30A		1.50W	50mVp-p	70%	PS1R5-48-5
32 - 63V	12V@0.125A		1.50W	120mVp-p	75%	PS1R5-48-12
32 - 63V	15V@0.10A		1.50W	150mVp-p	73%	PS1R5-48-15
32 - 63V	+12V@0.06A	-12V@0.06A	1.44W	120/120mVp-p	74%	PD1R5-48-1212
32 - 63V	+15V@0.05A	-15V@0.05A	1.50W	150/150mVp-p	73%	PD1R5-48-1515

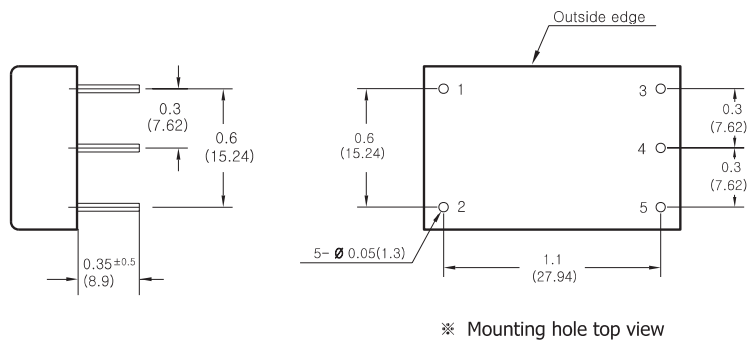
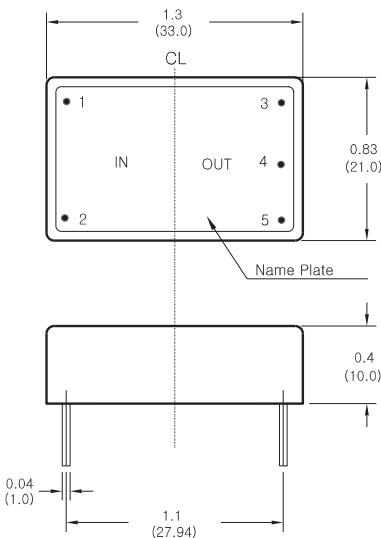
PIN ASSIGNMENTS

Single Output	Dual Output
1. +Vin	1. +Vin
2. - Vin	2. - Vin
3. +Vout	3. Output1
4. No Pin	4. COM
5. - Vout	5. Output2

DERATING CURVE



DIMENSIONS



NOTE 1 All dimension are in inches (mm)
2 Weight : 18g or less
3 Case Material : ZnDC

P3 Series

3W DC-DC CONVERTER



FEATURES 5V, 12V, 24V, 48V Inputs / Single, Dual Outputs

- High Efficiency
- Encapsulated Small / Compact Size
- Wide 2:1 Input Range
- 300kHz Fixed Frequency
- Input / Output Isolation
- Surface Mounting Technology
- Current Mode Control
- Output Low Ripple / Noise
- Low Start up Current
- 3 Year Warranty

ELECTRICAL SPECIFICATIONS

Input

- Input Range DC 5V(4.5 - 7.2), 12V(8 - 16.5), 24V(18 - 32), 48V(32 - 63)
- Efficiency 66 - 85% Typ.

Output

- Output Voltages 3.3V, 5V, 12V, 15V, $\pm 12V$, $\pm 15V$
- Output Voltage Tolerance $\pm 2.0\%$ (Single and Uncomplementary Dual)
 $\pm 3.0\%$ (Complementary Dual)
- Line Regulation $\pm 0.5\%$ Max.
- Load Regulation $\pm 1.0\%$ Max. (Single), $\pm 2.5\%$ Max. (Dual : Minimum Load 10%)
- Ripple and Noise 1% of Vout (Bandwidth : 20MHz)

Protection Circuit

- Over Current Protection Work Over 105% of Rating (Current Limited Output) (**NOTE 1**)

Electrically Isolated

- Isolation Input-Output, Input-Case, Output-Case / DC500V, 100M Ω
- High Pot Input-Output, Input-Case, Output-Case / AC500V, 1Min.

ENVIRONMENTAL

- Operating Temperature Range $-20^{\circ}\text{C} \sim 71^{\circ}\text{C}$
- Option, See **NOTE 2** $-40^{\circ}\text{C} \sim 85^{\circ}\text{C}$
- Operating Humidity (Non-Condensing) 20% $\sim$ 90%RH
- Storage Temperature Range $-40^{\circ}\text{C} \sim 105^{\circ}\text{C}$
- Storage Humidity (Non-Condensing) 10% $\sim$ 95%RH
- Cooling Method Convection
- MTBF (MIL-HDBK-217F) 7.3×10^5 hrs
- Safety (Single Output) CE_LVD (EN 60950) through TÜV

NOTE 1. Long term continuous operation into a short circuit will compromise the reliability of the unit.

2. As a factory added option, the all model can be operated from -40°C to 85°C , the suffix 'M' should be added to the model number when ordering. ex) PS3-24-5M

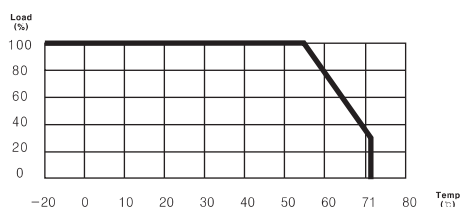
ORDERING INFORMATION

Input	Output1	Output2	Maximum Power	Ripple & Noise Max.	Efficiency Typ.	Model Number
4.5 - 7.2V	3.3V@0.60A		1.98W	50mVp-p	66%	PS3-5-3R3
4.5 - 7.2V	5V@0.60A		3.00W	50mVp-p	68%	PS3-5-5
4.5 - 7.2V	12V@0.25A		3.00W	120mVp-p	74%	PS3-5-12
4.5 - 7.2V	15V@0.20A		3.00W	150mVp-p	70%	PS3-5-15
4.5 - 7.2V	+12V@0.12A	-12V@0.12A	2.88W	120/120mVp-p	75%	PD3-5-1212
4.5 - 7.2V	+15V@0.10A	-15V@0.10A	3.00W	150/150mVp-p	72%	PD3-5-1515
8 - 16.5V	3.3V@0.60A		1.98W	50mVp-p	77%	PS3-12-3R3
8 - 16.5V	5V@0.60A		3.00W	50mVp-p	80%	PS3-12-5
8 - 16.5V	12V@0.25A		3.00W	120mVp-p	80%	PS3-12-12
8 - 16.5V	15V@0.20A		3.00W	150mVp-p	81%	PS3-12-15
8 - 16.5V	+12V@0.12A	-12V@0.12A	2.88W	120/120mVp-p	85%	PD3-12-1212
8 - 16.5V	+15V@0.10A	-15V@0.10A	3.00W	150/150mVp-p	83%	PD3-12-1515
18 - 32V	3.3V@0.60A		1.98W	50mVp-p	75%	PS3-24-3R3
18 - 32V	5V@0.60A		3.00W	50mVp-p	79%	PS3-24-5
18 - 32V	12V@0.25A		3.00W	120mVp-p	80%	PS3-24-12
18 - 32V	15V@0.20A		3.00W	150mVp-p	82%	PS3-24-15
18 - 32V	+12V@0.12A	-12V@0.12A	2.88W	120/120mVp-p	81%	PD3-24-1212
18 - 32V	+15V@0.10A	-15V@0.10A	3.00W	150/150mVp-p	82%	PD3-24-1515
32 - 63V	3.3V@0.60A		1.98W	50mVp-p	75%	PS3-48-3R3
32 - 63V	5V@0.60A		3.00W	50mVp-p	78%	PS3-48-5
32 - 63V	12V@0.25A		3.00W	120mVp-p	78%	PS3-48-12
32 - 63V	15V@0.20A		3.00W	150mVp-p	78%	PS3-48-15
32 - 63V	+12V@0.12A	-12V@0.12A	2.88W	120/120mVp-p	78%	PD3-48-1212
32 - 63V	+15V@0.10A	-15V@0.10A	3.00W	150/150mVp-p	78%	PD3-48-1515

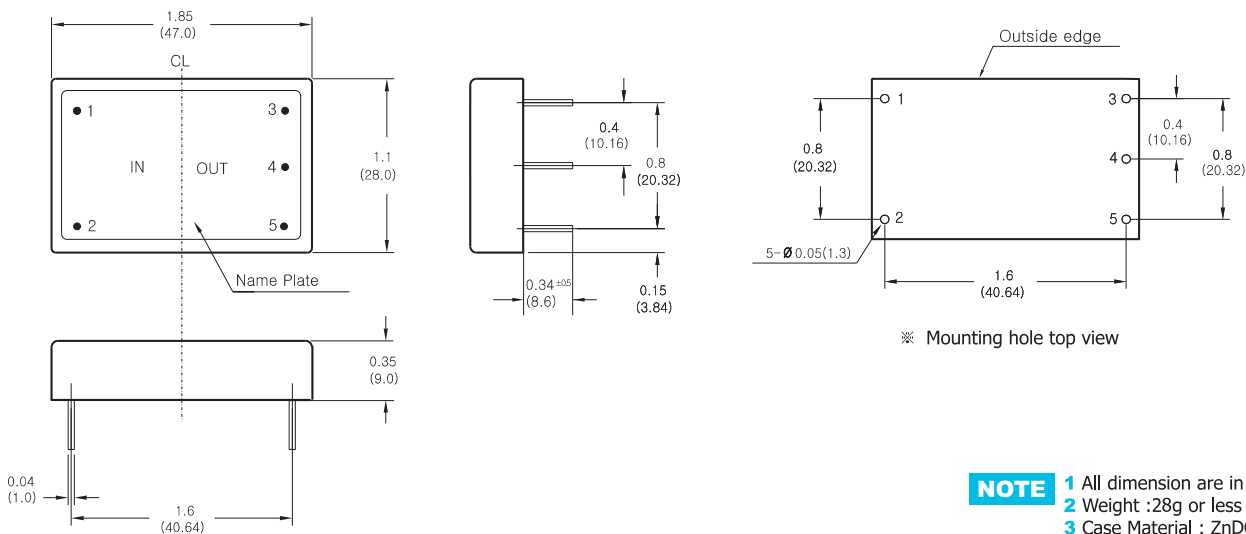
PIN ASSIGNMENTS

Single Output	Dual Output
1. +Vin	1. +Vin
2. - Vin	2. - Vin
3. +Vout	3. Output1
4. No Pin	4. COM
5. - Vout	5. Output2

DERATING CURVE



DIMENSIONS



P6 Series

6W DC-DC CONVERTER



FEATURES 5V, 12V, 24V, 48V Inputs / Single, Dual Outputs

- High Efficiency
- Encapsulated Small / Compact Size
- Wide 2:1 Input Range
- 300kHz Fixed Frequency
- Input / Output Isolation
- Surface Mounting Technology
- Current Mode Control
- Output Low Ripple / Noise
- Low Start up Current
- 3 Year Warranty

ELECTRICAL SPECIFICATIONS

Input

- Input Range DC 5V(4.5 - 7.2), 12V(8 - 16.5), 24V(18 - 32), 48V(32 - 63)
- Efficiency 68 - 83% Typ.

Output

- Output Voltages 3.3V, 5V, 12V, 15V, $\pm 12V$, $\pm 15V$, $+5V/+12V$, $+5V/+15V$
- Output Voltage Tolerance $\pm 2.0\%$ (Single and Uncomplementary Dual), $\pm 3.0\%$ (Complementary Dual)
- Line Regulation $\pm 0.5\%$ Max.
- Load Regulation $\pm 1.0\%$ Max. (Single), $\pm 2.5\%$ Max. (Complementary Dual : Minimum Load 10%)
 $\pm 1.0\%$ Max. (Dual : Output1), $\pm 4.0\%$ Max. (Dual : Output2)
- Ripple and Noise 1% of Vout (Bandwidth : 20MHz)

Protection Circuit

- Over Current Protection Work Over 105% of Rating (Current Limited Output) (**NOTE 1**)

Electrically Isolated

- Isolation Input-Output, Input-Case, Output-Case / DC500V, 100M Ω
- High Pot Input-Output, Input-Case, Output-Case / AC500V, 1Min.

ENVIRONMENTAL

- Operating Temperature Range $-20^{\circ}\text{C} \sim 71^{\circ}\text{C}$
- Option, See **NOTE 2** $-40^{\circ}\text{C} \sim 85^{\circ}\text{C}$
- Operating Humidity (Non-Condensing) 20% $\sim$ 90%RH
- Storage Temperature Range $-40^{\circ}\text{C} \sim 105^{\circ}\text{C}$
- Storage Humidity (Non-Condensing) 10% $\sim$ 95%RH
- Cooling Method Convection
- MTBF (MIL-HDBK-217F) 7.4×10^5 hrs
- Safety
 - Single Output CE_LVD (EN 60950) through TÜV
 - Complementary Dual Output CE_LVD (EN 60950-1) through UL

NOTE 1. Long term continuous operation into a short circuit will compromise the reliability of the unit.

2. As a factory added option, the all model can be operated from -40°C to 85°C , the suffix 'M' should be added to the model number when ordering. ex) PS6-24-5M

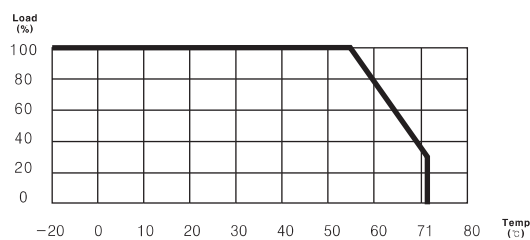
ORDERING INFORMATION

Input	Output1	Output2	Maximum Power	Ripple&Noise Max.	Efficiency Typ.	Model Number
4.5 - 7.2V	3.3V@1.00A		3.30W	50mVp-p	69%	PS6-5-3R3
4.5 - 7.2V	5V@1.00A		5.00W	50mVp-p	70%	PS6-5-5
4.5 - 7.2V	12V@0.45A		5.40W	120mVp-p	70%	PS6-5-12
4.5 - 7.2V	15V@0.35A		5.25W	150mVp-p	68%	PS6-5-15
4.5 - 7.2V	+12V@0.23A	-12V@0.23A	5.25W	120/120mVp-p	69%	PD6-5-1212
4.5 - 7.2V	+15V@0.18A	-15V@0.18A	5.40W	150/150mVp-p	69%	PD6-5-1515
4.5 - 7.2V	+5V@0.80A	+12V@0.13A	5.56W	75/120mVp-p	68%	PD6-5-0512
4.5 - 7.2V	+5V@0.80A	+15V@0.10A	5.50W	75/150mVp-p	68%	PD6-5-0515
8 - 16.5V	3.3V@1.20A		3.96W	50mVp-p	78%	PS6-12-3R3
8 - 16.5V	5V@1.20A		6.00W	50mVp-p	82%	PS6-12-5
8 - 16.5V	12V@0.50A		6.00W	120mVp-p	82%	PS6-12-12
8 - 16.5V	15V@0.40A		6.00W	150mVp-p	82%	PS6-12-15
8 - 16.5V	+12V@0.25A	-12V@0.25A	6.00W	120/120mVp-p	82%	PD6-12-1212
8 - 16.5V	+15V@0.20A	-15V@0.20A	6.00W	150/150mVp-p	82%	PD6-12-1515
8 - 16.5V	+5V@0.80A	+12V@0.13A	5.56W	75/120mVp-p	70%	PD6-12-0512
8 - 16.5V	+5V@0.80A	+15V@0.10A	5.50W	75/150mVp-p	70%	PD6-12-0515
18 - 32V	3.3V@1.20A		3.96W	50mVp-p	79%	PS6-24-3R3
18 - 32V	5V@1.20A		6.00W	50mVp-p	81%	PS6-24-5
18 - 32V	12V@0.50A		6.00W	120mVp-p	83%	PS6-24-12
18 - 32V	15V@0.40A		6.00W	150mVp-p	83%	PS6-24-15
18 - 32V	+12V@0.25A	-12V@0.25A	6.00W	120/120mVp-p	82%	PD6-24-1212
18 - 32V	+15V@0.20A	-15V@0.20A	6.00W	150/150mVp-p	83%	PD6-24-1515
18 - 32V	+5V@0.80A	+12V@0.13A	5.56W	75/120mVp-p	72%	PD6-24-0512
18 - 32V	+5V@0.80A	+15V@0.10A	5.50W	75/150mVp-p	73%	PD6-24-0515
32 - 63V	3.3V@1.20A		3.96W	50mVp-p	78%	PS6-48-3R3
32 - 63V	5V@1.20A		6.00W	50mVp-p	80%	PS6-48-5
32 - 63V	12V@0.50A		6.00W	120mVp-p	83%	PS6-48-12
32 - 63V	15V@0.40A		6.00W	150mVp-p	83%	PS6-48-15
32 - 63V	+12V@0.25A	-12V@0.25A	6.00W	120/120mVp-p	81%	PD6-48-1212
32 - 63V	+15V@0.20A	-15V@0.20A	6.00W	150/150mVp-p	81%	PD6-48-1515
32 - 63V	+5V@0.80A	+12V@0.13A	5.56W	75/120mVp-p	74%	PD6-48-0512
32 - 63V	+5V@0.80A	+15V@0.10A	5.50W	75/150mVp-p	74%	PD6-48-0515

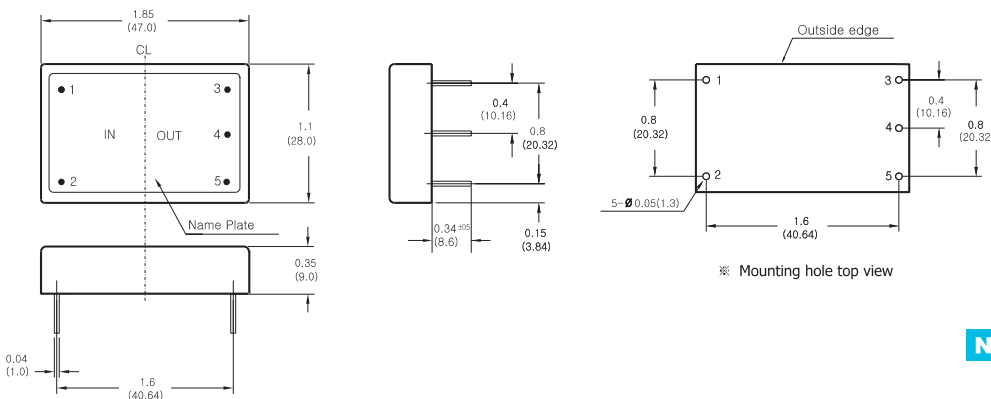
PIN ASSIGNMENTS

Single Output	Dual Output
1. +Vin	1. +Vin
2. - Vin	2. - Vin
3. +Vout	3. Output1
4. No Pin	4. COM
5. - Vout	5. Output2

DERATING CURVE



DIMENSIONS



NOTE 1 All dimension are in inches (mm)
2 Weight :28g or less
3 Case Material : ZnDC

P10 Series

10W DC-DC CONVERTER



FEATURES 5V, 12V, 24V, 48V Inputs / Single, Dual Outputs

- High Efficiency
- Encapsulated Small / Compact Size
- Wide 2:1 Input Range
- 300kHz Fixed Frequency
- Input / Output Isolation
- Surface Mounting Technology
- Current Mode Control
- Output Low Ripple / Noise
- Low Start up Current
- 3 Year Warranty

ELECTRICAL SPECIFICATIONS

Input

- Input Range DC 5V(4.5 - 7.2), 12V(8 - 16.5), 24V(18 - 32), 48V(32 - 63)
- Efficiency 72 - 85% Typ.

Output

- Output Voltages 3.3V, 5V, 12V, 15V, $\pm 12V$, $\pm 15V$, $+5V/+12V$, $+5V/+15V$
- Output Voltage Tolerance $\pm 2.0\%$ (Single and Uncomplementary Dual), $\pm 3.0\%$ (Complementary Dual)
- Line Regulation $\pm 0.5\%$ Max.
- Load Regulation $\pm 1.0\%$ Max. (Single), $\pm 2.5\%$ Max. (Complementary Dual : Minimum Load 10%)
 $\pm 1.0\%$ Max. (Dual : Output1), $\pm 4.0\%$ Max. (Dual : Output2)
- Ripple and Noise 1% of Vout (Bandwidth : 20MHz)

Protection Circuit

- Over Current Protection Work Over 105% of Rating (Current Limited Output) (**NOTE 1**)

Electrically Isolated

- Isolation Input-Output, Input-Case, Output-Case / DC500V, 100M Ω
- High Pot Input-Output, Input-Case, Output-Case / AC500V, 1Min.

ENVIRONMENTAL

- Operating Temperature Range $-20^{\circ}\text{C} \sim 71^{\circ}\text{C}$
- Option, See **NOTE 2** $-40^{\circ}\text{C} \sim 85^{\circ}\text{C}$
- Operating Humidity (Non-Condensing) 20% $\sim$ 90%RH
- Storage Temperature Range $-40^{\circ}\text{C} \sim 105^{\circ}\text{C}$
- Storage Humidity (Non-Condensing) 10% $\sim$ 95%RH
- Cooling Method Convection
- MTBF (MIL-HDBK-217F) 4.8×10^5 hrs
- Safety (Single Output) CE_LVD (EN 60950) through TÜV

NOTE 1. Long term continuous operation into a short circuit will compromise the reliability of the unit.

2. As a factory added option, the all model can be operated from -40°C to 85°C , the suffix 'M' should be added to the model number when ordering. ex) PS10-24-5M

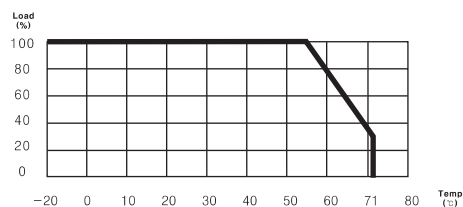
ORDERING INFORMATION

Input	Output1	Output2	Maximum Power	Ripple&Noise Max.	Efficiency Typ.	Model Number
4.5 - 7.2V	3.3V@1.60A		5.28W	50mVp-p	76%	PS10-5-3R3
4.5 - 7.2V	5V@1.60A		8.00W	50mVp-p	77%	PS10-5-5
4.5 - 7.2V	12V@0.70A		8.40W	120mVp-p	81%	PS10-5-12
4.5 - 7.2V	15V@0.60A		9.00W	150mVp-p	81%	PS10-5-15
4.5 - 7.2V	+12V@0.35A	-12V@0.35A	8.40W	120/120mVp-p	80%	PD10-5-1212
4.5 - 7.2V	+15V@0.30A	-15V@0.30A	9.00W	150/150mVp-p	78%	PD10-5-1515
4.5 - 7.2V	+5V@0.90A	+12V@0.40A	9.30W	75/120mVp-p	78%	PD10-5-0512
4.5 - 7.2V	+5V@0.90A	+15V@0.32A	9.30W	75/150mVp-p	78%	PD10-5-0515
8 - 16.5V	3.3V@2.00A		6.60W	50mVp-p	80%	PS10-12-3R3
8 - 16.5V	5V@2.00A		10.00W	50mVp-p	81%	PS10-12-5
8 - 16.5V	12V@0.90A		10.80W	120mVp-p	82%	PS10-12-12
8 - 16.5V	15V@0.70A		10.50W	150mVp-p	82%	PS10-12-15
8 - 16.5V	+12V@0.45A	-12V@0.45A	10.80W	120/120mVp-p	83%	PD10-12-1212
8 - 16.5V	+15V@0.35A	-15V@0.35A	10.50W	150/150mVp-p	85%	PD10-12-1515
8 - 16.5V	+5V@0.90A	+12V@0.40A	9.30W	75/120mVp-p	72%	PD10-12-0512
8 - 16.5V	+5V@0.90A	+15V@0.32A	9.30W	75/150mVp-p	72%	PD10-12-0515
18 - 32V	3.3V@2.00A		6.60W	50mVp-p	80%	PS10-24-3R3
18 - 32V	5V@2.00A		10.00W	50mVp-p	82%	PS10-24-5
18 - 32V	12V@0.90A		10.80W	120mVp-p	84%	PS10-24-12
18 - 32V	15V@0.70A		10.50W	150mVp-p	85%	PS10-24-15
18 - 32V	+12V@0.45A	-12V@0.45A	10.80W	120/120mVp-p	83%	PD10-24-1212
18 - 32V	+15V@0.35A	-15V@0.35A	10.50W	150/150mVp-p	83%	PD10-24-1515
18 - 32V	+5V@0.90A	+12V@0.40A	9.30W	75/120mVp-p	74%	PD10-24-0512
18 - 32V	+5V@0.90A	+15V@0.32A	9.30W	75/150mVp-p	73%	PD10-24-0515
32 - 63V	3.3V@2.00A		6.60W	50mVp-p	80%	PS10-48-3R3
32 - 63V	5V@2.00A		10.00W	50mVp-p	83%	PS10-48-5
32 - 63V	12V@0.90A		10.80W	120mVp-p	83%	PS10-48-12
32 - 63V	15V@0.70A		10.50W	150mVp-p	82%	PS10-48-15
32 - 63V	+12V@0.45A	-12V@0.45A	10.80W	120/120mVp-p	82%	PD10-48-1212
32 - 63V	+15V@0.35A	-15V@0.35A	10.50W	150/150mVp-p	83%	PD10-48-1515
32 - 63V	+5V@0.90A	+12V@0.40A	9.30W	75/120mVp-p	75%	PD10-48-0512
32 - 63V	+5V@0.90A	+15V@0.32A	9.30W	75/150mVp-p	75%	PD10-48-0515

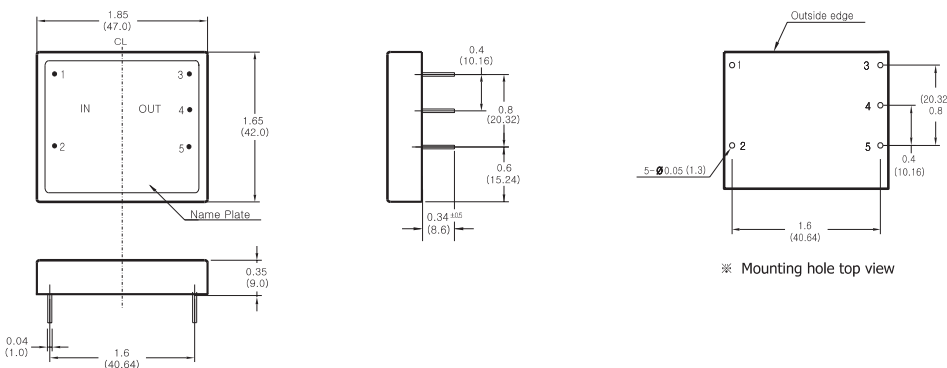
PIN ASSIGNMENTS

Single Output	Dual Output
1. +Vin	1. +Vin
2. - Vin	2. - Vin
3. +Vout	3. Output1
4. No Pin	4. COM
5. - Vout	5. Output2

DERATING CURVE



DIMENSIONS



NOTE 1 All dimension are in inches (mm)
2 Weight : 45g or less
3 Case Material : ZnDC

P15 Series

15W DC-DC CONVERTER



FEATURES 5V, 12V, 24V, 48V Inputs / Single, Dual Outputs

- High Efficiency
- Encapsulated Small / Compact Size
- Wide 2:1 Input Range
- 300kHz Fixed Frequency
- Input / Output Isolation
- Surface Mounting Technology
- Current Mode Control
- Output Low Ripple / Noise
- Low Start up Current
- Remote On/Off Control (CNT)
- Output Voltage Adjustment (TRM)
- Over Voltage Protection (OVP)
- 3 Year Warranty

ELECTRICAL SPECIFICATIONS

Input

- Input Range DC 5V(4.5 - 7.2), 12V(8 - 16.5), 24V(18 - 32), 48V(32 - 63)
- Efficiency 76 - 88% Typ.
- Remote On/Off Control TTL Compatible
 - On : 0 to 1.2 Vdc or Short to -Vin
 - Off : 2.4 to 5.5 Vdc or Open

Output

- Output Voltages 3.3V, 5V, 12V, 15V, $\pm 5V$, $\pm 12V$, $\pm 15V$
- Output Voltage Tolerance $\pm 2.0\%$ (Single and Uncomplementary Dual), $\pm 3.0\%$ (Complementary Dual)
- Line Regulation $\pm 0.5\%$ Max.
- Load Regulation $\pm 1.0\%$ Max. (Single), $\pm 2.5\%$ Max. (Dual : Minimum Load 10%)
- Ripple and Noise 1% of Vout (Bandwidth : 20MHz)

Protection Circuit

- Over Current Protection Work Over 105% of Rating (Current Limited Output) (**NOTE 1**)
- Over Voltage Protection Work at 115 - 140% of Rating

Electrically Isolated

- Isolation Input-Output, Input-Case, Output-Case / DC500V, 100M Ω
- High Pot Input-Output, Input-Case, Output-Case / AC500V, 1Min.

ENVIRONMENTAL

- Operating Temperature Range $-20^{\circ}\text{C} \sim 71^{\circ}\text{C}$
- Option, See **NOTE 2** $-40^{\circ}\text{C} \sim 85^{\circ}\text{C}$
- Operating Humidity (Non-Condensing) 20% $\sim$ 90%RH
- Storage Temperature Range $-40^{\circ}\text{C} \sim 105^{\circ}\text{C}$
- Storage Humidity (Non-Condensing) 10% $\sim$ 95%RH
- Cooling Method Convection
- MTBF (MIL-HDBK-217F) 5.2×10^5 hrs
- Safety (Single Output) CE_LVD (EN 60950) through TÜV

NOTE 1. Long term continuous operation into a short circuit will compromise the reliability of the unit.
 2. As a factory added option, the all model can be operated from -40°C to 85°C , the suffix 'M' should be added to the model number when ordering. ex) PS15-24-5M

ORDERING INFORMATION

Input	Output1	Output2	Maximum Power	Ripple & Noise Max.	Efficiency Typ.	Model Number
4.5 - 7.2V	3.3V@2.00A		6.60W	75mVp-p	76%	PS15-5-3R3
4.5 - 7.2V	5V@2.00A		10.00W	75mVp-p	78%	PS15-5-5
4.5 - 7.2V	12V@1.00A		12.00W	120mVp-p	80%	PS15-5-12
4.5 - 7.2V	15V@0.80A		12.00W	150mVp-p	80%	PS15-5-15
4.5 - 7.2V	+5V@1.00A	-5V@1.00A	10.00W	120/120mVp-p	80%	PD15-5-55
4.5 - 7.2V	+12V@0.50A	-12V@0.50A	12.00W	150/150mVp-p	80%	PD15-5-1212
4.5 - 7.2V	+15V@0.40A	-15V@0.40A	12.00W	150/150mVp-p	80%	PD15-5-1515
8 - 16.5V	3.3V@2.40A		7.92W	75mVp-p	83%	PS15-12-3R3
8 - 16.5V	5V@2.40A		12.00W	75mVp-p	85%	PS15-12-5
8 - 16.5V	12V@1.20A		14.40W	120mVp-p	88%	PS15-12-12
8 - 16.5V	15V@1.00A		15.00W	150mVp-p	88%	PS15-12-15
8 - 16.5V	+5V@1.50A	-5V@1.50A	15.00W	120/120mVp-p	85%	PD15-12-55
8 - 16.5V	+12V@0.60A	-12V@0.60A	14.40W	150/150mVp-p	85%	PD15-12-1212
8 - 16.5V	+15V@0.50A	-15V@0.50A	15.00W	150/150mVp-p	85%	PD15-12-1515
18 - 32V	3.3V@2.40A		7.92W	75mVp-p	84%	PS15-24-3R3
18 - 32V	5V@2.40A		12.00W	75mVp-p	85%	PS15-24-5
18 - 32V	12V@1.20A		14.40W	120mVp-p	88%	PS15-24-12
18 - 32V	15V@1.00A		15.00W	150mVp-p	87%	PS15-24-15
18 - 32V	+5V@1.50A	-5V@1.50A	15.00W	120/120mVp-p	86%	PD15-24-55
18 - 32V	+12V@0.60A	-12V@0.60A	14.40W	150/150mVp-p	86%	PD15-24-1212
18 - 32V	+15V@0.50A	-15V@0.50A	15.00W	150/150mVp-p	86%	PD15-24-1515
32 - 63V	3.3V@2.40A		7.92W	75mVp-p	78%	PS15-48-3R3
32 - 63V	5V@2.40A		12.00W	75mVp-p	80%	PS15-48-5
32 - 63V	12V@1.20A		14.40W	120mVp-p	83%	PS15-48-12
32 - 63V	15V@1.00A		15.00W	150mVp-p	83%	PS15-48-15
32 - 63V	+5V@1.50A	-5V@1.50A	15.00W	120/120mVp-p	83%	PD15-48-55
32 - 63V	+12V@0.60A	-12V@0.60A	14.40W	150/150mVp-p	83%	PD15-48-1212
32 - 63V	+15V@0.50A	-15V@0.50A	15.00W	150/150mVp-p	83%	PD15-48-1515

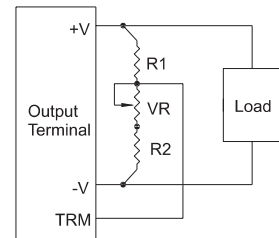
PIN ASSIGNMENTS

Single Output	Dual Output
1. +Vin	1. +Vin
2. - Vin	2. - Vin
3. CNT	3. CNT
4. +Vout	4. Output1
5. No Pin	5. COM
6. - Vout	6. Output2
7. TRM	7. TRM

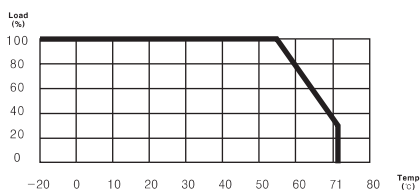
EXTERNAL PARTS

Model	Output Voltage	VR	R1	R2
PS 15	5V	1k Ω	1k Ω	680 Ω
	12V	1k Ω	3.9k Ω	680 Ω
	15V	1k Ω	5.6k Ω	750 Ω
PD 15	$\pm 5V$ (10V)	1k Ω	3.3k Ω	680 Ω
	$\pm 12V$ (24V)	5k Ω	9.0k Ω	820 Ω
	$\pm 15V$ (30V)	5k Ω	20.0k Ω	910 Ω

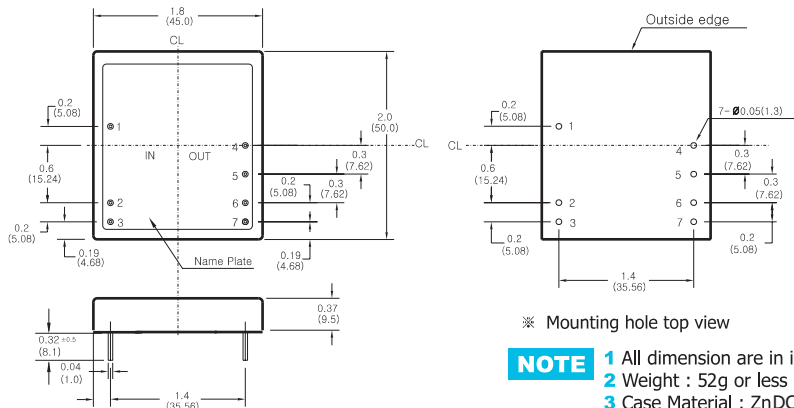
TRIM METHOD



DERATING CURVE



DIMENSIONS



P25 Series

25W DC-DC CONVERTER



FEATURES 5V, 12V, 24V, 48V, 96V Inputs / Single, Dual Outputs

- High Efficiency
- Encapsulated Small / Compact Size
- Wide 2:1 Input Range
- 300kHz Fixed Frequency
- Input / Output Isolation
- Surface Mounting Technology
- Current Mode Control
- Output Low Ripple / Noise
- Low Start up Current
- Remote On/Off Control (CNT)
- Output Voltage Adjustment (TRM)
- Over Voltage Protection (OVP)
- 3 Year Warranty

ELECTRICAL SPECIFICATIONS

Input

- Input Range DC 5V(4.5 - 7.2), 12V(8 - 16.5), 24V(18 - 32), 48V(32 - 63), 96V(70 - 140)
- Efficiency 73 - 90% Typ.
- Remote On/Off Control TTL Compatible
 - On : 0 to 1.2 Vdc or Short to -Vin
 - Off : 2.4 to 5.5 Vdc or Open

Output

- Output Voltages 3.3V, 5V, 12V, 15V, $\pm 5V$, $\pm 12V$, $\pm 15V$
- Output Voltage Tolerance $\pm 2.0\%$ (Single and Uncomplementary Dual), $\pm 3.0\%$ (Complementary Dual)
- Line Regulation $\pm 0.5\%$ Max.
- Load Regulation $\pm 1.0\%$ Max. (Single), $\pm 2.5\%$ Max. (Dual : Minimum Load 10%)
- Ripple and Noise 1% of Vout (Bandwidth : 20MHz)

Protection Circuit

- Over Current Protection Work Over 105% of Rating (Current Limited Output) (**NOTE 1**)
- Over Voltage Protection Work at 115 - 140% of Rating

Electrically Isolated

- Isolation Input-Output, Input-Case, Output-Case / DC500V, 100M Ω
- High Pot Input-Output, Input-Case, Output-Case / AC500V, 1Min.

ENVIRONMENTAL

- Operating Temperature Range $-20^{\circ}\text{C} \sim 71^{\circ}\text{C}$
- Option, See **NOTE 2** $-40^{\circ}\text{C} \sim 85^{\circ}\text{C}$
- Operating Humidity (Non-Condensing) 20% $\sim$ 90%RH
- Storage Temperature Range $-40^{\circ}\text{C} \sim 105^{\circ}\text{C}$
- Storage Humidity (Non-Condensing) 10% $\sim$ 95%RH
- Cooling Method Convection
- MTBF (MIL-HDBK-217F) 4.7×10^5 hrs
- Safety (Single Output) CE_LVD (EN 60950) through TÜV (Except 96V Input)

NOTE 1. Long term continuous operation into a short circuit will compromise the reliability of the unit.
 2. As a factory added option, the all model can be operated from -40°C to 85°C , the suffix 'M' should be added to the model number when ordering. ex) PS25-24-5M

ORDERING INFORMATION

Input	Output1	Output2	Maximum Power	Ripple&Noise Max.	Efficiency Typ.	Model Number
4.5 - 9V	3.3V@3.20A		10.56W	75mVp-p	73%	PS25-5-3R3
4.5 - 9V	5V@3.20A		16.00W	75mVp-p	75%	PS25-5-5
4.5 - 9V	12V@1.70A		20.40W	120mVp-p	77%	PS25-5-12
4.5 - 9V	15V@1.40A		21.00W	150mVp-p	77%	PS25-5-15
4.5 - 9V	+5V@1.60A	-5V@1.60A	16.00W	100/100mVp-p	75%	PD25-5-55
4.5 - 9V	+12V@0.85A	-12V@0.85A	20.40W	120/120mVp-p	74%	PD25-5-1212
4.5 - 9V	+15V@0.70A	-15V@0.70A	21.00W	150/150mVp-p	74%	PD25-5-1515
9 - 18V	3.3V@4.00A		13.20W	75mVp-p	83%	PS25-12-3R3
9 - 18V	5V@4.00A		20.00W	75mVp-p	85%	PS25-12-5
9 - 18V	12V@2.10A		25.20W	120mVp-p	89%	PS25-12-12
9 - 18V	15V@1.70A		25.50W	150mVp-p	89%	PS25-12-15
9 - 18V	+5V@2.00A	-5V@2.00A	20.00W	100/100mVp-p	80%	PD25-12-55
9 - 18V	+12V@1.05A	-12V@1.05A	25.20W	120/120mVp-p	83%	PD25-12-1212
9 - 18V	+15V@0.85A	-15V@0.85A	25.50W	150/150mVp-p	84%	PD25-12-1515
18 - 36V	3.3V@4.00A		13.20W	75mVp-p	83%	PS25-24-3R3
18 - 36V	5V@4.00A		20.00W	75mVp-p	85%	PS25-24-5
18 - 36V	12V@2.10A		25.20W	120mVp-p	89%	PS25-24-12
18 - 36V	15V@1.70A		25.50W	150mVp-p	90%	PS25-24-15
18 - 36V	+5V@2.00A	-5V@2.00A	20.00W	100/100mVp-p	82%	PD25-24-55
18 - 36V	+12V@1.05A	-12V@1.05A	25.20W	120/120mVp-p	86%	PD25-24-1212
18 - 36V	+15V@0.85A	-15V@0.85A	25.50W	150/150mVp-p	86%	PD25-24-1515
36 - 72V	3.3V@4.00A		13.20W	75mVp-p	83%	PS25-48-3R3
36 - 72V	5V@4.00A		20.00W	75mVp-p	85%	PS25-48-5
36 - 72V	12V@2.10A		25.20W	120mVp-p	90%	PS25-48-12
36 - 72V	15V@1.70A		25.50W	150mVp-p	90%	PS25-48-15
36 - 72V	+5V@2.00A	-5V@2.00A	20.00W	100/100mVp-p	82%	PD25-48-55
36 - 72V	+12V@1.05A	-12V@1.05A	25.20W	120/120mVp-p	86%	PD25-48-1212
36 - 72V	+15V@0.85A	-15V@0.85A	25.50W	150/150mVp-p	86%	PD25-48-1515
70 - 140V	3.3V@4.00A		13.20W	75mVp-p	82%	PS25-96-3R3
70 - 140V	5V@4.00A		20.00W	75mVp-p	84%	PS25-96-5
70 - 140V	12V@2.10A		25.20W	120mVp-p	88%	PS25-96-12
70 - 140V	15V@1.70A		25.50W	150mVp-p	89%	PS25-96-15
70 - 140V	+5V@2.00A	-5V@2.00A	20.00W	100/100mVp-p	81%	PD25-96-55
70 - 140V	+12V@1.05A	-12V@1.05A	25.20W	120/120mVp-p	85%	PD25-96-1212
70 - 140V	+15V@0.85A	-15V@0.85A	25.50W	150/150mVp-p	85%	PD25-96-1515

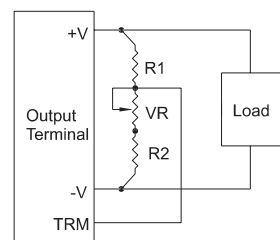
PIN ASSIGNMENTS

Single Output	Dual Output
1. +Vin	1. +Vin
2. - Vin	2. - Vin
3. CNT	3. CNT
4. +Vout	4. +Vout
5. No Pin	5. COM
6. - Vout	6. - Vout
7. TRM	7. TRM

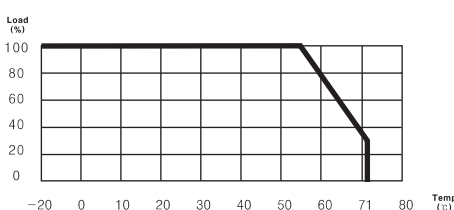
EXTERNAL PARTS

Model	Output Voltage	VR	R1	R2
PS 25	5V	1k Ω	1k Ω	680 Ω
	12V	1k Ω	3.9k Ω	680 Ω
	15V	1k Ω	5.6k Ω	750 Ω
PD 25	$\pm 5V$ (10V)	1k Ω	3.3k Ω	680 Ω
	$\pm 12V$ (24V)	5k Ω	9.0k Ω	820 Ω
	$\pm 15V$ (30V)	5k Ω	20.0k Ω	910 Ω

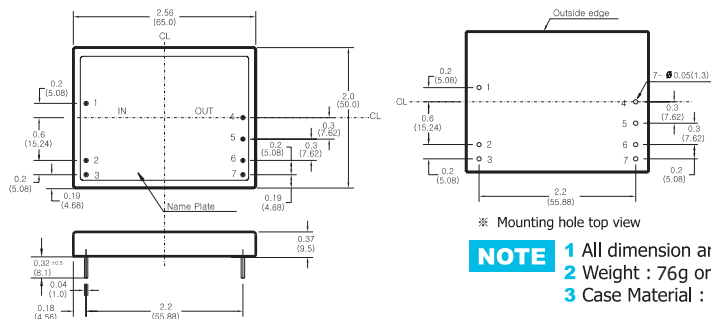
TRIM METHOD



DERATING CURVE



DIMENSIONS





FEATURES 24V, 48V Inputs / Single Output

- High Efficiency
- Industrial Standard Pin Layout
- Encapsulated Small / Compact Size
- Wide 4:1 Input Range
- 400kHz Fixed Frequency
- Input / Output Isolation
- Surface Mounting Technology
- Six-Sided EMI Shield
- Current Mode Control
- Output Low Ripple / Noise
- Remote On/Off Control (CNT)
- Output Voltage Adjustment (TRM)
- 3 Year Warranty

ELECTRICAL SPECIFICATIONS

Input

- Input Range DC 24V(10 - 36), 48V(20 - 72)
- Efficiency 83 - 87% Typ.
- Remote On/Off Control TTL Compatible
 - On : 2.5 to 5.5 Vdc or Open
 - Off : 0 to 0.8 Vdc

Output

- Output Voltages 3.3V, 5V, 12V, 15V
- Output Voltage Tolerance $\pm 2.0\%$
- Line Regulation $\pm 0.5\%$ Max.
- Load Regulation $\pm 1\%$ Max.
- Ripple and Noise 1% of Vout (Bandwidth : 20MHz)

Protection Circuit

- Over Current Protection Work Over 105% of Rating (Hiccup Mode) (**NOTE 1**)

Electrically Isolated

- Isolation Input-Output, Input-Case, Output-Case / DC500V, 100M Ω
- High Pot Input-Output, Input-Case, Output-Case / AC500V, 1Min.

ENVIRONMENTAL

- Operating Temperature Range $-20^{\circ}\text{C} \sim 71^{\circ}\text{C}$
- Operating Humidity (Non-Condensing) 20% $\sim$ 90%RH
- Storage Temperature Range $-40^{\circ}\text{C} \sim 105^{\circ}\text{C}$
- Storage Humidity (Non-Condensing) 10% $\sim$ 95%RH
- Cooling Method Convection
- EMI / RFI Six-Sided Continuous Shield
- MTBF (MIL-HDBK-217F) 5.0×10^5 hrs

NOTE 1. Long term continuous operation into a short circuit will compromise the reliability of the unit.

ORDERING INFORMATION

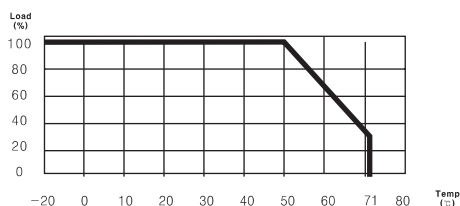
Input	Output	Maximum Power	Ripple & Noise Max.	Efficiency Typ.	Model Number
10 - 36V	3.3V@4.00A	13.20W	75mVp-p	83%	SPTS15-24-3R3
10 - 36V	5V@3.00A	15.00W	75mVp-p	85%	SPTS15-24-5
10 - 36V	12V@1.25A	15.00W	120mVp-p	87%	SPTS15-24-12
10 - 36V	15V@1.00A	15.00W	150mVp-p	87%	SPTS15-24-15
20 - 72V	3.3V@4.00A	13.20W	75mVp-p	86%	SPTS15-48-3R3
20 - 72V	5V@3.00A	15.00W	75mVp-p	86%	SPTS15-48-5
20 - 72V	12V@1.25A	15.00W	120mVp-p	87%	SPTS15-48-12
20 - 72V	15V@1.00A	15.00W	150mVp-p	87%	SPTS15-48-15

PIN ASSIGNMENTS

Single Output

1. +Vin
2. - Vin
3. CNT
4. +Vout
5. TRM
6. - Vout

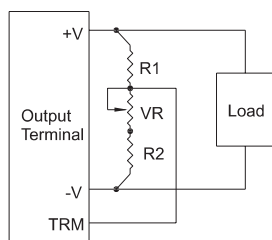
DERATING CURVE



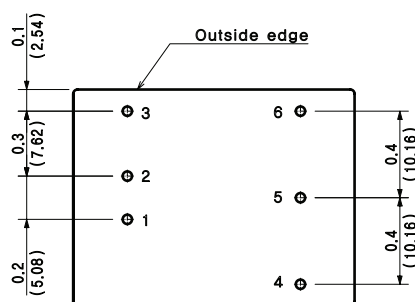
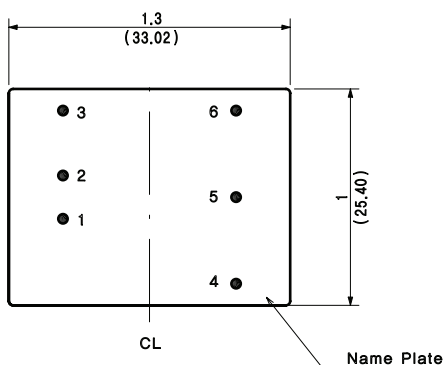
EXTERNAL PARTS

Model	Output Voltage	VR	R1	R2
SPTS 15	3.3V	500Ω	1.0kΩ	560Ω
	5V	1kΩ	1.0kΩ	680Ω
	12V	1kΩ	3.9kΩ	680Ω
	15V	1kΩ	5.6kΩ	750Ω

TRIM METHOD



DIMENSIONS



※ Mounting hole top view

NOTE 1 All dimension are in inches (mm)
2 Weight : 25g or less
3 Case Material : ZnDC

PT10 Series

10W DC-DC CONVERTER



FEATURES 24V, 48V Inputs / Single, Dual Outputs

- High Efficiency
- Industrial Standard Pin Layout
- Encapsulated Small / Compact Size
- Wide 4:1 Input Range
- 300kHz Fixed Frequency
- Input / Output Isolation
- Surface Mounting Technology
- Six-Sided EMI Shield
- Current Mode Control
- Output Low Ripple / Noise
- Low Start up Current
- 3 Year Warranty

ELECTRICAL SPECIFICATIONS

Input

- Input Range DC 24V(10 - 36), 48V(20 - 72)
- Efficiency 77 - 85% Typ.

Output

- Output Voltages 3.3V, 5V, 12V, 15V, $\pm 5V$, $\pm 12V$, $\pm 15V$
- Output Voltage Tolerance $\pm 2.0\%$ (Single and Uncomplementary Dual), $\pm 3.0\%$ (Complementary Dual)
- Line Regulation $\pm 0.5\%$ Max. (Single), $\pm 1.0\%$ Max. (Dual)
- Load Regulation $\pm 1.0\%$ Max. (Single), $\pm 2.5\%$ Max. (Dual : Minimum Load 10%)
- Ripple and Noise 1% of Vout (Bandwidth : 20MHz)

Protection Circuit

- Over Current Protection Work Over 105% of Rating (Current Limited Output) (**NOTE 1**)

Electrically Isolated

- Isolation Input-Output, Input-Case, Output-Case / DC500V, 100M Ω
- High Pot Input-Output, Input-Case, Output-Case / AC500V, 1Min.

ENVIRONMENTAL

- Operating Temperature Range $-20^{\circ}\text{C} \sim 71^{\circ}\text{C}$
- Option, See **NOTE 2** $-40^{\circ}\text{C} \sim 85^{\circ}\text{C}$
- Operating Humidity (Non-Condensing) 20% $\sim$ 90%RH
- Storage Temperature Range $-40^{\circ}\text{C} \sim 105^{\circ}\text{C}$
- Storage Humidity (Non-Condensing) 10% $\sim$ 95%RH
- Cooling Method Convection
- EMI / RFI Six-Sided Continuous Shield
- MTBF (MIL-HDBK-217F) 5.8×10^5 hrs
- Safety
 - Single Output UL (UL 60950)
 - Single, Dual, Triple Output CE_LVD (EN 60950-1) through TÜV

NOTE 1. Long term continuous operation into a short circuit will compromise the reliability of the unit.

2. As a factory added option, the all model can be operated from -40°C to 85°C , the suffix 'M' should be added to the model number when ordering. ex) PTS10-48-5M

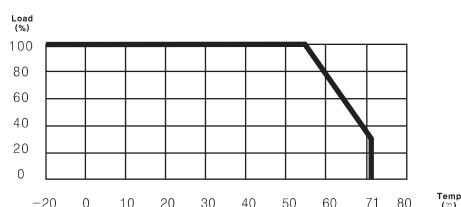
ORDERING INFORMATION

Input	Output1	Output2	Maximum Power	Ripple&Noise Max.	Efficiency Typ.	Model Number
10 - 36V	3.3V@2.40A		7.92W	75mVp-p	77%	PTS10-24-3R3
10 - 36V	5V@2.00A		10.00W	75mVp-p	82%	PTS10-24-5
10 - 36V	12V@0.90A		10.80W	120mVp-p	83%	PTS10-24-12
10 - 36V	15V@0.70A		10.50W	150mVp-p	84%	PTS10-24-15
10 - 36V	+5V@1.00A	-5V@1.00A	10.00W	100/100mVp-p	80%	PTD10-24-55
10 - 36V	+5V@1.50A	-5V@0.50A	10.00W	100/100mVp-p	78%	PTD10-24-55A
10 - 36V	+12V@0.45A	-12V@0.45A	10.80W	120/120mVp-p	83%	PTD10-24-1212
10 - 36V	+15V@0.35A	-15V@0.35A	10.50W	150/150mVp-p	83%	PTD10-24-1515
20 - 72V	3.3V@2.40A		7.92W	75mVp-p	78%	PTS10-48-3R3
20 - 72V	5V@2.00A		10.00W	75mVp-p	81%	PTS10-48-5
20 - 72V	12V@0.90A		10.80W	120mVp-p	84%	PTS10-48-12
20 - 72V	15V@0.70A		10.50W	150mVp-p	85%	PTS10-48-15
20 - 72V	+5V@1.00A	-5V@1.00A	10.00W	100/100mVp-p	81%	PTD10-48-55
20 - 72V	+5V@1.50A	-5V@0.50A	10.00W	100/100mVp-p	81%	PTD10-48-55A
20 - 72V	+12V@0.45A	-12V@0.45A	10.80W	120/120mVp-p	83%	PTD10-48-1212
20 - 72V	+15V@0.35A	-15V@0.35A	10.50W	150/150mVp-p	83%	PTD10-48-1515

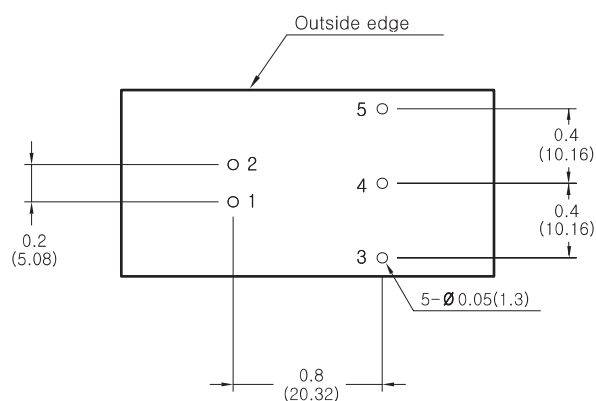
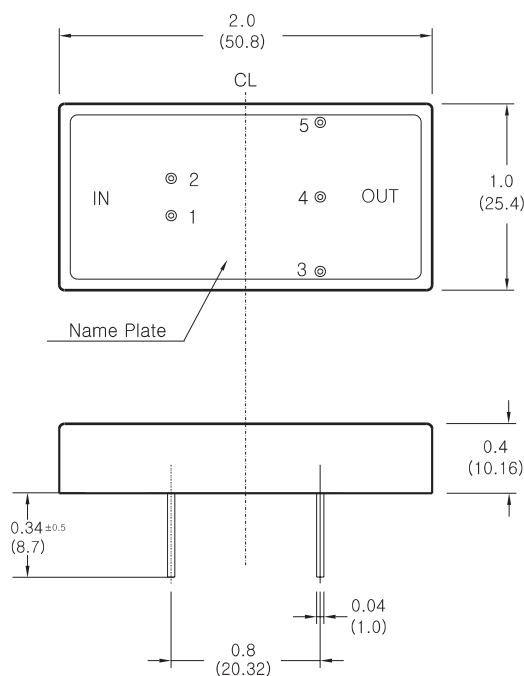
PIN ASSIGNMENTS

Single Output	Dual Output
1. +Vin	1. +Vin
2. - Vin	2. - Vin
3. +Vout	3. Output1
4. No Pin	4. COM
5. - Vout	5. Output2

DERATING CURVE



DIMENSIONS



※ Mounting hole top view

NOTE 1 All dimension are in inches (mm)
2 Weight : 40g or less
3 Case Material : ZnDC

PT15 Series

15W DC-DC CONVERTER



FEATURES 24V, 48V Inputs / Single, Dual, Triple Outputs

- High Efficiency
- Industrial Standard Pin Layout
- Encapsulated Small / Compact Size
- Wide 4:1 Input Range
- 250kHz Fixed Frequency
- Input / Output Isolation
- Surface Mount Technology
- Six-Sided EMI Shield
- Output Low Ripple / Noise
- Current Mode Control
- Remote On/Off Control (CNT)
- Output Voltage Adjustment (TRM)
- Over Voltage Protection (OVP)
- 3 Year Warranty

ELECTRICAL SPECIFICATIONS

Input

- Input Range DC 24V(10 - 36), 48V(20 - 72)
- Efficiency 80 - 87% Typ.
- Remote On/Off Control TTL Compatible
 - On : 2.5 to 5.5 Vdc or Open
 - Off : 0 to 0.8 Vdc

Output

- Output Voltages 3.3V, 5V, 12V, 15V, $\pm 5V$, $\pm 12V$, $\pm 15V$, $3.3V/\pm 12V$, $3.3V/\pm 15V$, $5V/\pm 12V$, $5V/\pm 15V$
- Operating Voltage Tolerance $\pm 2.0\%$ (Single and Uncomplementary Dual), $\pm 3.0\%$ (Complementary Dual)
- Line Regulation $\pm 0.25\%$ Max. (Output 1), $\pm 5.0\%$ Max. (Output 2, 3)
- Load Regulation $\pm 0.25\%$ Max. (Single), $\pm 2.5\%$ Max. (Dual)
 - $\pm 0.25\%$ Max. (Output 1)
 - $\pm 8.0\%$ Max. (Output 2, 3)] @Triples : 50% L-FL max (aux) bal. Loads
- Ripple and Noise 1% of Vout (Bandwidth : 20MHz)

Protection Circuit

- Over Current Protection Work Over 105% of Rating (Current Limited Output) (**NOTE 1**)
- Over Voltage Protection Work at 115 - 140% of Rating

Electrically Isolated

- Isolation Input-Output, Input-Case, Output-Case / DC500V, 100M Ω
- High Pot Input-Output, Input-Case, Output-Case / AC500V, 1Min.

ENVIRONMENTAL

- Operating Temperature Range $-20^{\circ}\text{C} \sim 71^{\circ}\text{C}$
- Option, See **NOTE 2** $-40^{\circ}\text{C} \sim 85^{\circ}\text{C}$
- Operating Humidity (Non-Condensing) 20% $\sim$ 90%RH
- Storage Temperature Range $-40^{\circ}\text{C} \sim 105^{\circ}\text{C}$
- Storage Humidity (Non-Condensing) 10% $\sim$ 95%RH
- Cooling Method Convection
- EMI / RFI Six-Sided Continuous Shield
- MTBF (MIL-HDBK-217F) 5.0×10^5 hrs
- Safety
 - Single Output UL (UL 60950)
 - Single, Dual, Triple Output CE_LVD (EN 60950-1) through TÜV

NOTE 1. Long term continuous operation into a short circuit will compromise the reliability of the unit.

2. As a factory added option, the all model can be operated from -40°C to 85°C , the suffix 'M' should be added to the model number when ordering. ex) PTS15-48-522M

ORDERING INFORMATION

Input	Output1	Output2	Output3	Maximum Power	Ripple&Noise Max.	Efficiency Typ.	Model Number
10 - 36V	3.3V@4.00A			13.20W	75mVp-p	80%	PTS15-24-3R3
10 - 36V	5V@3.00A			15.00W	75mVp-p	85%	PTS15-24-5
10 - 36V	12V@1.25A			15.00W	120mVp-p	86%	PTS15-24-12
10 - 36V	15V@1.00A			15.00W	150mVp-p	84%	PTS15-24-15
10 - 36V	+5V@1.50A	-5V@1.50A		15.00W	50/50mVp-p	85%	PTD15-24-55
10 - 36V	+12V@0.625A	-12V@0.625A		15.00W	120/120mVp-p	87%	PTD15-24-1212
10 - 36V	+15V@0.50A	-15V@0.50A		15.00W	150/150mVp-p	87%	PTD15-24-1515
10 - 36V	+3.3V@2.00A	+12V@0.31A	-12V@0.31A	12.39W	50/120/120mVp-p	83%	PT15-24-322
10 - 36V	+5V@1.50A	+12V@0.31A	-12V@0.31A	15.00W	50/120/120mVp-p	84%	PT15-24-522
10 - 36V	+3.3V@2.00A	+15V@0.25A	-15V@0.25A	12.45W	50/150/150mVp-p	83%	PT15-24-3FF
10 - 36V	+5V@1.50A	+15V@0.25A	-15V@0.25A	15.00W	50/150/150mVp-p	84%	PT15-24-5FF
20 - 72V	3.3V@4.00A			13.20W	75mVp-p	80%	PTS15-48-3R3
20 - 72V	5V@3.00A			15.00W	75mVp-p	85%	PTS15-48-5
20 - 72V	12V@1.25A			15.00W	120mVp-p	87%	PTS15-48-12
20 - 72V	15V@1.00A			15.00W	150mVp-p	85%	PTS15-48-15
20 - 72V	+5V@1.50A	-5V@1.50A		15.00W	50/50mVp-p	85%	PTD15-48-55
20 - 72V	+12V@0.625A	-12V@0.625A		15.00W	120/120mVp-p	86%	PTD15-48-1212
20 - 72V	+15V@0.50A	-15V@0.50A		15.00W	150/150mVp-p	87%	PTD15-48-1515
20 - 72V	+3.3V@2.00A	+12V@0.31A	-12V@0.31A	12.39W	50/120/120mVp-p	83%	PT15-48-322
20 - 72V	+5V@1.50A	+12V@0.31A	-12V@0.31A	15.00W	50/120/120mVp-p	84%	PT15-48-522
20 - 72V	+3.3V@2.00A	+15V@0.25A	-15V@0.25A	12.45W	50/150/150mVp-p	83%	PT15-48-3FF
20 - 72V	+5V@1.50A	+15V@0.25A	-15V@0.25A	15.00W	50/150/150mVp-p	84%	PT15-48-5FF

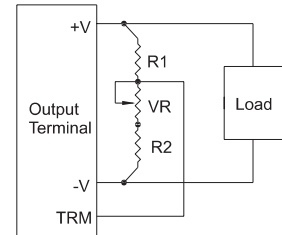
PIN ASSIGNMENTS

Single Output	Dual Output	Triple Output
1. +Vin	1. +Vin	1. +Vin
2. - Vin	2. - Vin	2. - Vin
3. No Pin	3. No Pin	3. No Pin
4. CNT (Enable)	4. CNT (Enable)	4. CNT (Enable)
5. No Connect	5. Output1	5. Output2
6. +Vout	6. COM	6. Output1
7. - Vout	7. Output2	7. GND
8. TRM	8. TRM	8. Output3

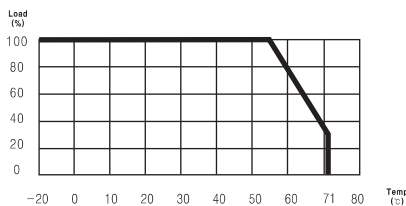
EXTERNAL PARTS

Model	Output Voltage	VR	R1	R2
PTS 15	5V	1k Ω	1.0k Ω	680 Ω
	12V	1k Ω	3.9k Ω	680 Ω
	15V	1k Ω	5.6k Ω	680 Ω
PTD 15	$\pm 5V$ (10V)	1k Ω	3.3k Ω	680 Ω
	$\pm 12V$ (24V)	5k Ω	9.0k Ω	820 Ω
	$\pm 15V$ (30V)	5k Ω	20.0k Ω	910 Ω

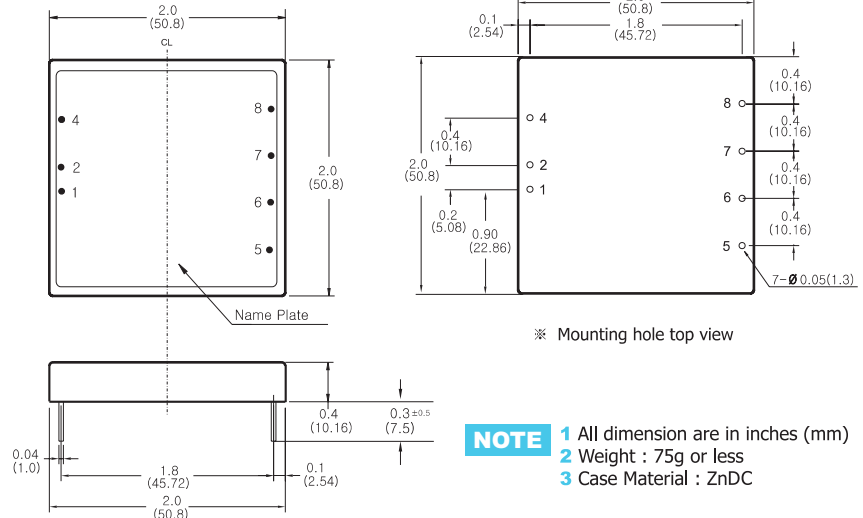
TRIM METHOD



DERATING CURVE



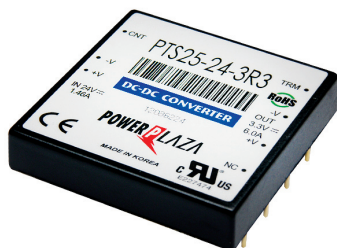
DIMENSIONS



NOTE 1 All dimension are in inches (mm)
 2 Weight : 75g or less
 3 Case Material : ZnDC

PT25 Series

25W DC-DC CONVERTER



FEATURES 24V, 48V Inputs / Single, Dual, Triple Outputs

- High Efficiency
- Industrial Standard Pin Layout
- Encapsulated Small / Compact Size
- Wide 2:1 Input Range
- 300kHz Fixed Frequency
- Input / Output Isolation
- Surface Mount Technology
- Six-Sided EMI Shield
- Output Low Ripple / Noise
- Current Mode Control
- Remote On/Off Control (CNT)
- Output Voltage Adjustment (TRM)
- Over Voltage Protection (OVP)
- 3 Year Warranty

ELECTRICAL SPECIFICATIONS

Input

- Input Range DC 24V(18 - 36), 48V(36 - 72)
- Efficiency 80 - 89% Typ.
- Remote On/Off Control TTL Compatible
 - On : 2.5 to 5.5 Vdc or Open
 - Off : 0 to 0.8 Vdc

Output

- Output Voltages 3.3V, 5V, 12V, 15V, $\pm 5V$, $\pm 12V$, $\pm 15V$, $3.3V/\pm 12V$, $3.3V/\pm 15V$, $5V/\pm 12V$, $5V/\pm 15V$
- Operating Voltage Tolerance $\pm 2.0\%$ (Single and Uncomplementary Dual), $\pm 3.0\%$ (Complementary Dual)
- Line Regulation $\pm 0.25\%$ Max. (Output 1), $\pm 5.0\%$ Max. (Output 2, 3)
- Load Regulation $\pm 0.25\%$ Max. (Single), $\pm 2.5\%$ Max. (Dual)
 - $\pm 0.25\%$ Max. (Output 1)
 - $\pm 8.0\%$ Max. (Output 2, 3)] @Triples : 50% L-FL max (aux) bal. Loads
- Ripple and Noise 1% of Vout (Bandwidth : 20MHz)

Protection Circuit

- Over Current Protection Work Over 105% of Rating (Current Limited Output) (**NOTE 1**)
- Over Voltage Protection Work at 115 - 140% of Rating

Electrically Isolated

- Isolation Input-Output, Input-Case, Output-Case / DC500V, 100M Ω
- High Pot Input-Output, Input-Case, Output-Case / AC500V, 1Min.

ENVIRONMENTAL

- Operating Temperature Range $-20^{\circ}\text{C} \sim 71^{\circ}\text{C}$
- Option, See **NOTE 2** $-40^{\circ}\text{C} \sim 85^{\circ}\text{C}$
- Operating Humidity (Non-Condensing) 20% $\sim$ 90%RH
- Storage Temperature Range $-40^{\circ}\text{C} \sim 105^{\circ}\text{C}$
- Storage Humidity (Non-Condensing) 10% $\sim$ 95%RH
- Cooling Method Convection
- EMI / RFI Six-Sided Continuous Shield
- MTBF (MIL-HDBK-217F) 4.5×10^5 hrs
- Safety
 - Single Output UL (UL 60950) : E227474
 - Single, Dual, Triple Output CE_LVD (EN 60950-1) through TÜV

NOTE 1. Long term continuous operation into a short circuit will compromise the reliability of the unit.

2. As a factory added option, the all model can be operated from -40°C to 85°C , the suffix 'M' should be added to the model number when ordering. ex) PT25-48-522M

ORDERING INFORMATION

Input	Output1	Output2	Output3	Maximum Power	Ripple&Noise Max.	Efficiency Typ.	Model Number
18 - 36V	3.3V@6.00A			19.80W	100mVp-p	80%	PTS25-24-3R3
18 - 36V	5V@5.00A			25.00W	100mVp-p	85%	PTS25-24-5
18 - 36V	12V@2.00A			24.00W	120mVp-p	89%	PTS25-24-12
18 - 36V	15V@1.60A			24.00W	150mVp-p	89%	PTS25-24-15
18 - 36V	+5V@2.50A	-5V@2.50A		25.00W	75/75mVp-p	84%	PTD25-24-55
18 - 36V	+12V@1.00A	-12V@1.00A		24.00W	120/120mVp-p	88%	PTD25-24-1212
18 - 36V	+15V@0.80A	-15V@0.80A		24.00W	150/150mVp-p	87%	PTD25-24-1515
18 - 36V	+3.3V@3.50A	+12V@0.35A	-12V@0.35A	19.95W	75/120/120mVp-p	83%	PT25-24-322
18 - 36V	+5V@3.50A	+12V@0.35A	-12V@0.35A	25.90W	75/120/120mVp-p	84%	PT25-24-522
18 - 36V	+3.3V@3.50A	+15V@0.28A	-15V@0.28A	19.95W	75/150/150mVp-p	83%	PT25-24-3FF
18 - 36V	+5V@3.50A	+15V@0.25A	-15V@0.25A	25.00W	75/150/150mVp-p	84%	PT25-24-5FF
36 - 72V	3.3V@6.00A			19.80W	100mVp-p	81%	PTS25-48-3R3
36 - 72V	5V@5.00A			25.00W	100mVp-p	85%	PTS25-48-5
36 - 72V	12V@2.00A			24.00W	120mVp-p	89%	PTS25-48-12
36 - 72V	15V@1.60A			24.00W	150mVp-p	85%	PTS25-48-15
36 - 72V	+5V@2.50A	-5V@2.50A		25.00W	75/75mVp-p	84%	PTD25-48-55
36 - 72V	+12V@1.00A	-12V@1.00A		24.00W	120/120mVp-p	88%	PTD25-48-1212
36 - 72V	+15V@0.80A	-15V@0.80A		24.00W	150/150mVp-p	87%	PTD25-48-1515
36 - 72V	+3.3V@3.50A	+12V@0.35A	-12V@0.35A	19.95W	75/120/120mVp-p	83%	PT25-48-322
36 - 72V	+5V@3.50A	+12V@0.35A	-12V@0.35A	25.90W	75/120/120mVp-p	84%	PT25-48-522
36 - 72V	+3.3V@3.50A	+15V@0.28A	-15V@0.28A	19.95W	75/150/150mVp-p	83%	PT25-48-3FF
36 - 72V	+5V@3.50A	+15V@0.25A	-15V@0.25A	25.00W	75/150/150mVp-p	84%	PT25-48-5FF

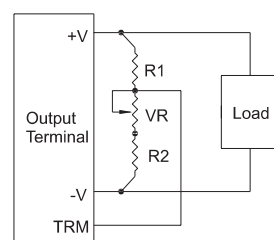
PIN ASSIGNMENTS

Single Output	Dual Output	Triple Output
1. +Vin	1. +Vin	1. +Vin
2. - Vin	2. - Vin	2. - Vin
3. No Pin	3. No Pin	3. No Pin
4. CNT (Enable)	4. CNT (Enable)	4. CNT (Enable)
5. No Connect	5. Output1	5. Output2
6. +Vout	6. COM	6. Output1
7. - Vout	7. Output2	7. GND
8. TRM	8. TRM	8. Output3

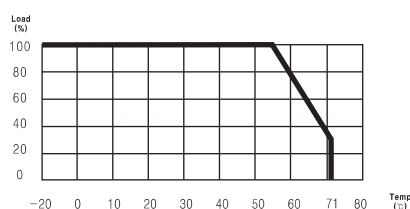
EXTERNAL PARTS

Model	Output Voltage	VR	R1	R2
PTS 25	5V	1k Ω	1k Ω	680 Ω
	12V	1k Ω	3.9k Ω	680 Ω
	15V	1k Ω	5.6k Ω	680 Ω
PTD 25	$\pm 5V$ (10V)	1k Ω	3.3k Ω	680 Ω
	$\pm 12V$ (24V)	5k Ω	9.0k Ω	820 Ω
	$\pm 15V$ (30V)	5k Ω	20.0k Ω	910 Ω

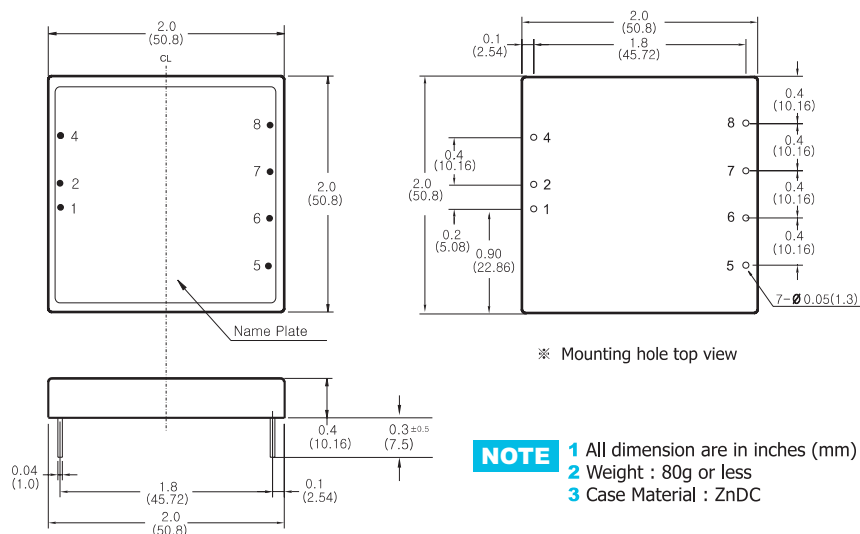
TRIM METHOD



DERATING CURVE



DIMENSIONS



PBR50 Series

50W DC-DC CONVERTER



FEATURES 24V, 48V Inputs / Single Output

- High Efficiency (Synchronous Rectification)
- Encapsulated Small / Compact Size
- Wide 2:1 Input Range
- 300kHz Fixed Frequency
- Input / Output Isolation
- Surface Mounting Technology
- Output Low Ripple / Noise
- Current Mode Control
- Long Life Design (Employ Only Ceramic Capacitor)
- Under Voltage Lock Out, Thermal Shut Down, Short Circuit Protection
- Remote On/Off Control (CNT)
- Output Voltage Adjustment (TRM)
- Over Voltage Protection (OVP)
- 3 Year Warranty

ELECTRICAL SPECIFICATIONS

Input

- Input Range DC 24V(18 - 36), 48V(36 - 75)
- Efficiency 86 - 93% Typ.
- Remote On / Off TTL Compatible
 - On : Open
 - Off : Short to -Vin

Output

- Output Voltages 2.5V, 3.3V, 5V, 12V, 15V
- Output Voltage Tolerance $\pm 2.0\%$
- Line Regulation $\pm 0.5\%$ Max.
- Load Regulation $\pm 1.0\%$ Max.
- Ripple and Noise 1% of Vout (Bandwidth : 20MHz)

Protection Circuit

- Over Current Protection Work Over 105% of Rating (Hiccup mode) (**NOTE 1**)
- Over Voltage Protection Work at 115 - 140% of Rating

Electrically Isolated

- Isolation Input-Output, Input-Case, Output-Case / DC500V, 100M Ω
- High Pot Input-Output, Input-Case, Output-Case / AC500V, 1Min.

ENVIRONMENTAL

- Operating Temperature Range $-40^{\circ}\text{C} \sim 85^{\circ}\text{C}$
- Operating Humidity (Non-Condensing) 20% $\sim$ 90%RH
- Storage Temperature Range $-40^{\circ}\text{C} \sim 105^{\circ}\text{C}$
- Storage Humidity (Non-Condensing) 10% $\sim$ 95%RH
- Cooling Method Forced Air
- MTBF (MIL-HDBK-217F) 5.4×10^5 hrs
- Safety
 - UL (UL 60950-1)
 - CE_LVD (EN 60950-1) through TÜV

NOTE 1. Long term continuous operation into a short circuit will compromise the reliability of the unit.

ORDERING INFORMATION

Input	Output	Maximum Power	Ripple & Noise Max.	Efficiency Typ.	Model Number
18 - 36V	2.5V@15.00A	37.50W	70mVp-p	86%	PBR50-24-2R5
18 - 36V	3.3V@15.00A	49.50W	70mVp-p	88%	PBR50-24-3R3
18 - 36V	5V@10.00A	50.00W	70mVp-p	91%	PBR50-24-5
18 - 36V	12V@4.10A	49.20W	120mVp-p	93%	PBR50-24-12
18 - 36V	15V@3.30A	49.50W	150mVp-p	92%	PBR50-24-15
36 - 75V	2.5V@15.00A	37.50W	70mVp-p	87%	PBR50-48-2R5
36 - 75V	3.3V@15.00A	49.50W	70mVp-p	88%	PBR50-48-3R3
36 - 75V	5V@10.00A	50.00W	70mVp-p	90%	PBR50-48-5
36 - 75V	12V@4.10A	49.20W	120mVp-p	92%	PBR50-48-12
36 - 75V	15V@3.30A	49.50W	150mVp-p	91%	PBR50-48-15

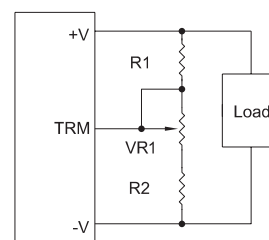
PIN ASSIGNMENTS

Single Output
1. CNT
2. - Vin
3. +Vin
4. No Conect
5. +Vout
6. - Vout
7. TRM

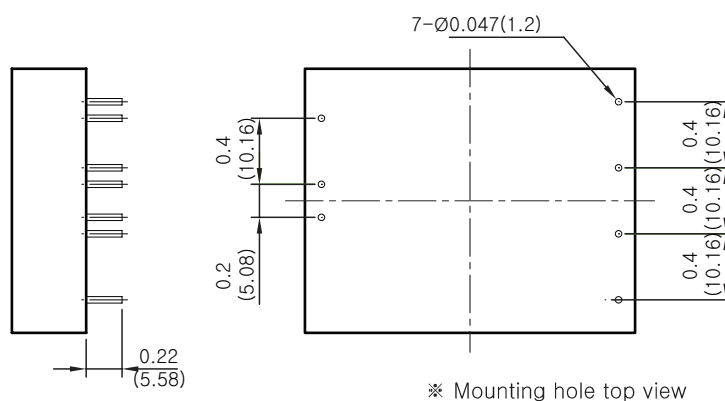
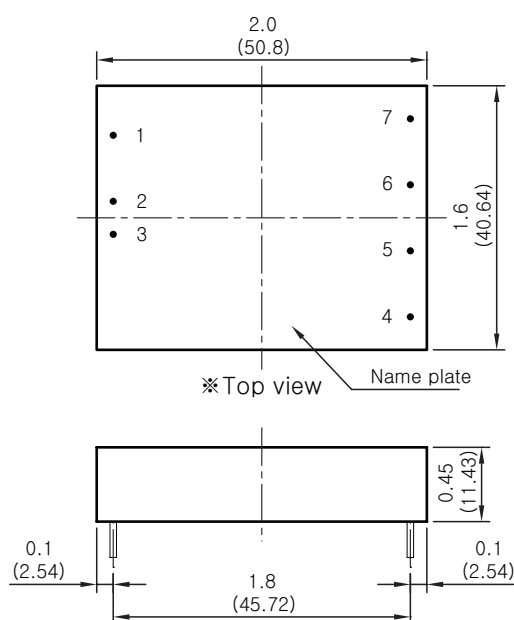
EXTERNAL PARTS

Model	Output Voltage	VR	R1	R2
PBR 50	2.5V	500Ω	750Ω	560Ω
	3.3V	500Ω	1kΩ	560Ω
	5V	1kΩ	1kΩ	680Ω
	12V	1kΩ	3.9kΩ	680Ω
	15V	1kΩ	5.6kΩ	750Ω

TRIM METHOD



DIMENSIONS



NOTE 1 All dimension are in inches (mm)
2 Weight : 60g or less
3 Case Material : ZnDC

UPM18A Series

INTERMEDIATE BUS DC-DC CONVERTER



FEATURES 48V Inputs / Single Output

- High Efficiency
- Industry Standard Quarter-Brick
- Single Unregulated Output
- Constant Switching Frequency
- Synchronous Rectifier Topology
- Input Under Voltage Lock Out
- Output Short Circuit Protection
- Over Current Protection (OCP)
- Over Temperature Protection (OTP)
- 1500Vdc Input to Output Isolation
- Remote On/Off Control (CNT)
- 3 Year Warranty

ELECTRICAL SPECIFICATIONS

Input

- Input Range DC 48V(36 - 60)
- Efficiency 95% Typ.
- Remote On / Off

On : Open
Off : Short to - Vin

Output

- Output Voltages 12V
- Output Voltage Tolerance $\pm 2.0\%$
- Line Regulation $V_{in} / 4$ (**NOTE 1**)
- Load Regulation $\pm 8.0\%$ Max.
- Temp Regulation $\pm 2.0\%$ Max.
- Switching Frequency 200kHz
- Ripple and Noise 150mVp-p (@12V) (**NOTE 2**)

Electrically Isolated

- Isolation Input-Output / DC1500V

ENVIRONMENTAL

- Operating Temperature Range $-40^{\circ}\text{C} \sim 85^{\circ}\text{C}$
- Operating Humidity (Non-Condensing) 30% ~ 95%RH
- Storage Temperature Range $-40^{\circ}\text{C} \sim 125^{\circ}\text{C}$
- Storage Humidity (Non-Condensing) 10% ~ 90%RH
- Cooling Method Convection Cooled / Forced Air
- MTBF (MIL-HDBK-217F) 5.1×10^5 hrs

NOTE 1. Unregulated output will track input voltage with 4:1 ratio.
 2. Ripple & Noise is tested / specified over a 20MHz bandwidth and are tested specified with $1\mu\text{F}$ / $15\mu\text{F}$ ceramic / tantalum output.

ORDERING INFORMATION

Input	Output	Maximum Power	Ripple & Noise Max.	Efficiency Typ.	Model Number
36 - 60V	12V@18.00A	200.00W	150mVp-p	95%	UPM18A-48-12

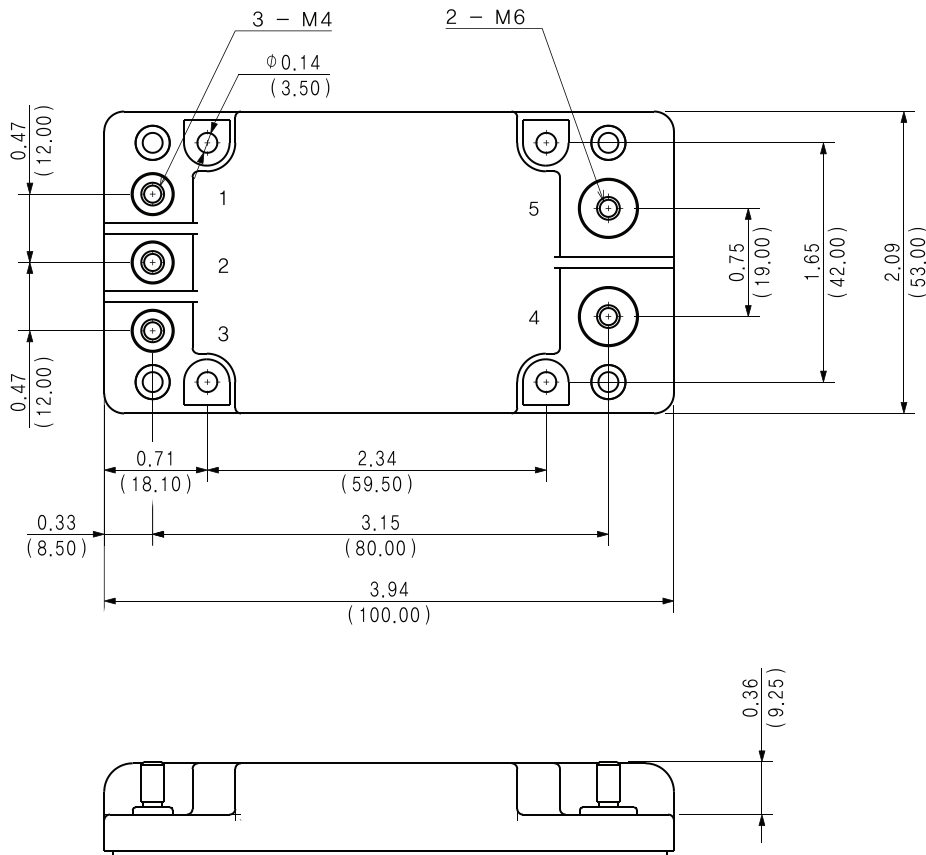
1. Typical at $T_a = +25^{\circ}\text{C}$ under nominal line voltage and full load conditions.
2. Ripple & Noise is tested / specified over a 20MHz bandwidth and are tested specified with $1\mu\text{F}$ / $15\mu\text{F}$ ceramic / tantalum output.

PIN ASSIGNMENTS

Single Output

1. - Vin
2. CNT
3. +Vin
4. +Vout
5. - Vout

DIMENSIONS



- NOTE**
- 1 All dimension are in inches (mm)
 - 2 Weight : 140g or less
 - 3 Material
 - Case : PBT
 - Cooling Plate : Aluminium Base Plate
 - Screw Pin (1-5) : Phosphor Bronze / Gold Flash
 - 4 For Screw Pin Attachment, Apply Mounting Torque of Max. 4Nm

YPM600 Series

600W ISOLATED DC-DC CONVERTER



FEATURES 48V, 72V, 96V Inputs / Single Output

- High Efficiency
- Screw Type Pin
- 1500Vdc Input to Output Isolation
- Output Over Voltage Protection (OVP)
- Input Over Voltage Protection (OVLO)
- Input Under Voltage Protection (UVLO)
- Over Temperature Protection (OTP)
- Over Current Protection (OCP)
- Short Circuit Protection (Hiccup, Auto-Restart)
- Remote On/Off Control (CNT)

ELECTRICAL SPECIFICATIONS

Input

- Input Range DC 48V(36 - 75), 72V(50 - 100), 96V(60 - 115)
- Efficiency 91.2 - 92.1% Typ.
- Remote On/Off Control
 - On : Short to -Vin
 - Off : Open

Output

- Output Voltages 12V
- Output Voltage Tolerance $\pm 2.0\%$
- Line Regulation $\pm 0.5\%$ Max.
- Load Regulation $\pm 0.5\%$ Max.
- Ripple and Noise 1% of Vout (Bandwidth : 20MHz)

Protection Circuit

- Short Circuit Over Current Protection Hiccup, Auto-Restart at 115 - 140% of Rating
- Under Voltage Protection Auto-Restart
- Output Over Voltage Protection Auto-Restart About 120% Vout Nom.
- Thermal Shut Down 100°C (Base Plate), Auto-Restart

Electrically Isolated

- Isolation Input-Output, Input-Case, Output-Case / DC1500V, DC1000V, DC1000V
- Isolation Resistance 100M Ω

ENVIRONMENTAL

- Operating Temperature Range -40°C ~ 90°C (Base Plate)
- Operating Humidity (Non-Condensing) 20% ~ 90%RH
- Storage Temperature Range -40°C ~ 125°C
- Cooling Method Forced Air, Heat Sink

ORDERING INFORMATION

Input	Output	Maximum Power	Ripple & Noise Max.	Efficiency Typ.	Model Number
36 - 75V	12V@50.00A	600.00W	120mVp-p	91.2%	YPM600-48-12
50 - 100V	12V@50.00A	600.00W	120mVp-p	92.1%	YPM600-72-12
60 - 115V	12V@50.00A	600.00W	120mVp-p	91.9%	YPM600-96-12

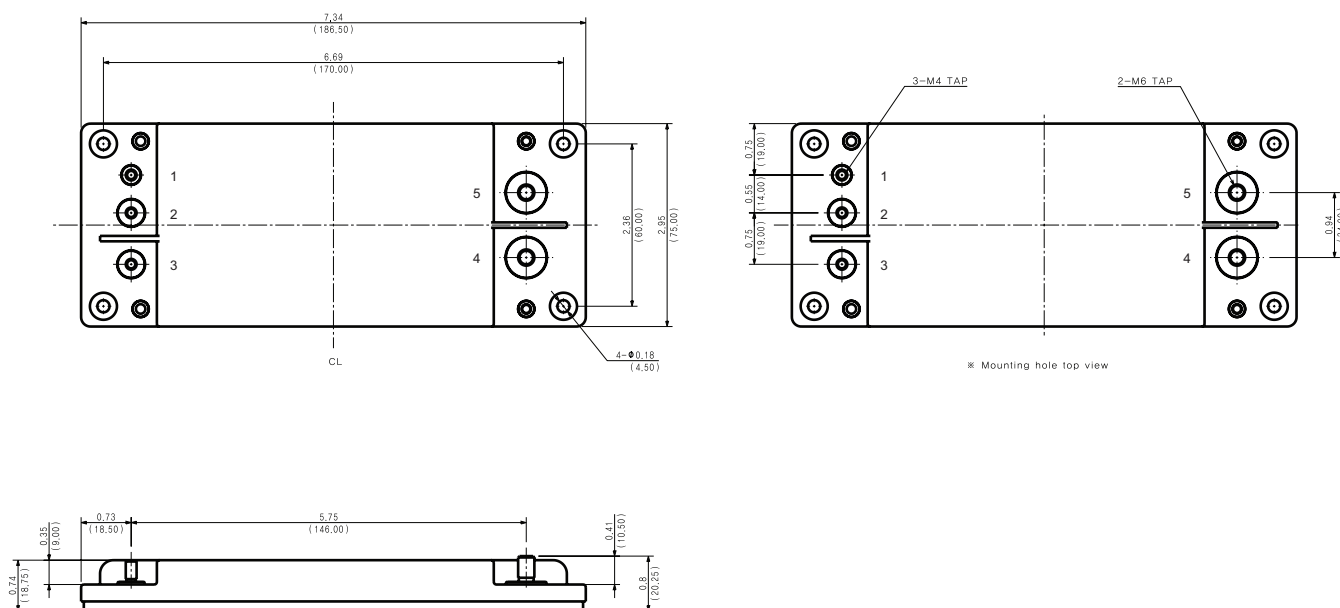
PIN ASSIGNMENTS

Single Output

1. CNT
2. - Vin
3. +Vin

4. +Vout
5. - Vout

DIMENSIONS



- NOTE**
- 1 All dimension are in inches (mm)
 - 2 Weight : 515g or less
 - 3 Material
 - Case : PBT + GF
 - Cooling Plate : Aluminium Base Plate
 - Screw Pin (1-5) : Phosphor Bronze / Gold Flash
 - 4 For Screw Pin Attachment, Apply Mounting Torque of Max. 4Nm

LPM600 Series

600W ISOLATED DC-DC CONVERTER



FEATURES 48V, 72V, 96V Inputs / Single Output

- High Efficiency
- Screw Type Pin
- 1500Vdc Input to Output Isolation
- Constant Current (CC), Constant Voltage (CV) Control
- Output Over Voltage Protection (OVP)
- Input Over Voltage Protection (OVLO)
- Input Under Voltage Protection (UVLO)
- Over Temperature Protection (OTP)
- Over Current Protection (OCP)
- Short Circuit Protection (Hiccup, Auto-Restart)
- Remote On/Off Control (CNT)
- Parallel Operation (No Current Sharing)

ELECTRICAL SPECIFICATIONS

Input

- Input Range DC 48V(36 - 75), 72V(50 - 100), 96V(60 - 115)
- Efficiency 91.2 - 92.1% Typ.
- Remote On/Off Control
 - On : Short to -Vin
 - Off : Open

Output

- Output Voltages 13.8V
- Output Voltage Tolerance $\pm 2.0\%$
- Line Regulation $\pm 0.5\%$ Max.
- Load Regulation $\pm 0.5\%$ Max.
- Ripple and Noise 1% of Vout (Bandwidth : 20MHz)

Protection Circuit

- Short Circuit Over Current Protection Hiccup, Auto-Restart at 115 - 140% of Rating
- Under Voltage Protection Auto-Restart
- Output Over Voltage Protection Auto-Restart About 120% Vout Nom.
- Thermal Shut Down 100°C (Base Plate), Auto-Restart

Electrically Isolated

- Isolation Input-Output, Input-Case, Output-Case / DC1500V, DC1000V, DC1000V
- Isolation Resistance 100M Ω

ENVIRONMENTAL

- Operating Temperature Range -40°C ~ 90°C (Base Plate)
- Operating Humidity (Non-Condensing) 20% ~ 90%RH
- Storage Temperature Range -40°C ~ 125°C
- Cooling Method Forced Air, Heat Sink

ORDERING INFORMATION

Input	Output	Maximum Power	Ripple & Noise Max.	Efficiency Typ.	Model Number
36 - 75V	13.8V@43.50A	600.30W	120mVp-p	91.2%	LPM600-48-13R8
50 - 100V	13.8V@43.50A	600.30W	120mVp-p	92.1%	LPM600-72-13R8
60 - 115V	13.8V@43.50A	600.30W	120mVp-p	91.9%	LPM600-96-13R8

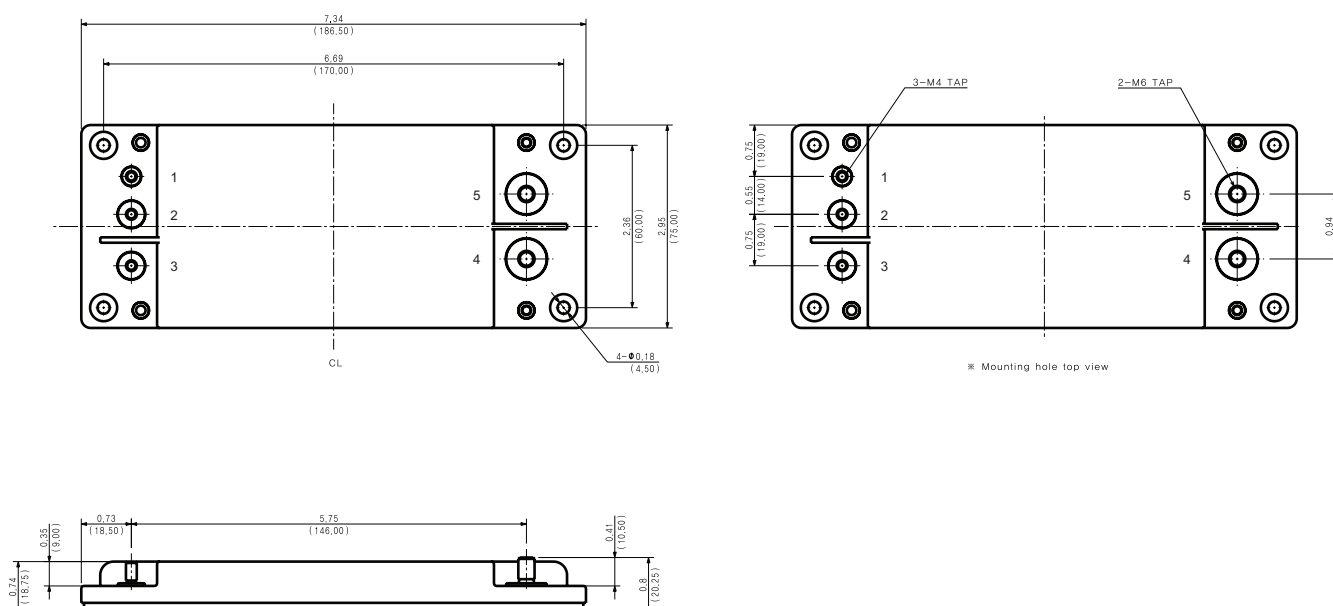
PIN ASSIGNMENTS

Single Output

1. CNT
2. - Vin
3. +Vin

4. +Vout
5. - Vout

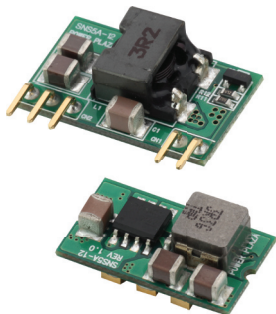
DIMENSIONS



- NOTE**
- 1 All dimension are in inches (mm)
 - 2 Weight : 515g or less
 - 3 Material
 - Case : PBT + GF
 - Cooling Plate : Aluminium Base Plate
 - Screw Pin (1-5) : Phosphor Bronze / Gold Flash
 - 4 For Screw Pin Attachment, Apply Mounting Torque of Max. 4Nm

SNS5A Series

NON-ISOLATED DC-DC POL CONVERTER



FEATURES 5V, 12V Inputs

- Delivers 5A of Output Current
- High Efficiency
- Compact Footprint / Low Profile
- Single-in-Line SIP / SMT Package
- Cost-Efficient Open Frame Design
- Remote On/Off Control (CNT) (Active Low)
- Trimmable Output Voltage via External Resistor
- Low Output Ripple / Noise
- Over Current Protection (OCP)
- Over Temperature Protection (OTP)
- 3 Year Warranty

ELECTRICAL SPECIFICATIONS

SNS5A - 5 Packages

• Input Range	5V(3.0 - 5.5V) 4.5 - 5.5V (Only Output 3.3V)
• Efficiency	94%@3.3V
• Remote On/Off Control	On : Open, 0 - 1.0V Off : +1.2V to +Vin
• Output Voltages	1.0 - 3.3V
• Output Voltage Tolerance	±2.0%
• Line Regulation	±0.3% Max.
• Load Regulation	±0.4% Max.
• Switching Frequency	300kHz
• * Ripple and Noise	30mVp-p (@3.3V)

SNS5A - 12 Packages

• Input Range	12V(10-14V)
• Efficiency	93%@5.0V
• Remote On/Off Control	On : Open, 0 - 1.0V Off : +1.2V to +Vin
• Output Voltages	1.0 - 5.0V
• Output Voltage Tolerance	±2.0%
• Line Regulation	±0.3% Max.
• Load Regulation	±0.4% Max.
• Switching Frequency	300kHz
• * Ripple and Noise	50mVp-p (@5.0V)

ENVIRONMENTAL

• Operating Temperature Range	-40°C ~ 85°C
• Storage Temperature Range	-40°C ~ 125°C
• Lead Temperature (Soldering , 10sec)	+300°C
• Thermal ShUTDOWN	+135°C
• MTBF (MIL-HDBK-217F)	1.5 x 10 ⁶ hrs

* Ripple & Noise is tested / Specified over a 20MHz bandwidth and may be reduced with external filtering.

ORDERING INFORMATION

Input	Output	Maximum Power	Ripple & Noise Max.	Efficiency Typ.	Model Number
3.0 - 5.5V	1.0V@5.00A	5.00W	30mVp-p	82%	SNS5A-5-1R0V(H)
3.0 - 5.5V	1.2V@5.00A	6.00W	30mVp-p	83%	SNS5A-5-1R2V(H)
3.0 - 5.5V	1.5V@5.00A	7.50W	30mVp-p	87%	SNS5A-5-1R5V(H)
3.0 - 5.5V	1.8V@5.00A	9.00W	30mVp-p	88%	SNS5A-5-1R8V(H)
3.0 - 5.5V	2.0V@5.00A	10.00W	30mVp-p	89%	SNS5A-5-2R0V(H)
3.0 - 5.5V	2.5V@5.00A	12.50W	30mVp-p	91%	SNS5A-5-2R5V(H)
4.5 - 5.5V	3.3V@5.00A	16.50W	30mVp-p	94%	SNS5A-5-3R3V(H)
10 - 14V	1.0V@5.00A	5.00W	50mVp-p	78%	SNS5A-12-1R0V(H)
10 - 14V	1.2V@5.00A	6.00W	50mVp-p	81%	SNS5A-12-1R2V(H)
10 - 14V	1.5V@5.00A	7.50W	50mVp-p	84%	SNS5A-12-1R5V(H)
10 - 14V	1.8V@5.00A	9.00W	50mVp-p	85%	SNS5A-12-1R8V(H)
10 - 14V	2.0V@5.00A	10.00W	50mVp-p	87%	SNS5A-12-2R0V(H)
10 - 14V	2.5V@5.00A	12.50W	50mVp-p	89%	SNS5A-12-2R5V(H)
10 - 14V	3.3V@5.00A	16.50W	50mVp-p	91%	SNS5A-12-3R3V(H)
10 - 14V	5.0V@5.00A	25.00W	50mVp-p	93%	SNS5A-12-5R0V(H)

V : SIP package H : SMT package

- Typical at $T_a = +25^\circ\text{C}$ under nominal line voltage and full load conditions, unless otherwise noted. All models are tested and specified with external input and output capacitors. ($C_{in}=100\mu\text{F} \times 2$ $C_{out} = 10\mu\text{F}$), These capacitors are necessary to accommodate our test equipment.
- Ripple & Noise is tested / specified over a 20MHz bandwidth and may be reduced with external filtering. See I/O Filtering.
- These device have no minimum-load requirement and will regulate under no-load conditions. Regulation specification describe the output voltage deviation as the line voltage or load is varied from its minimum value to either extreme.

PIN ASSIGNMENTS

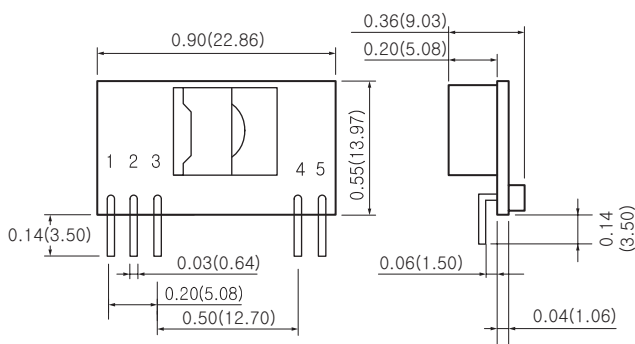
Single Output (SIP)

1. +Vout
2. TRM
3. COM
4. +Vin
5. CNT

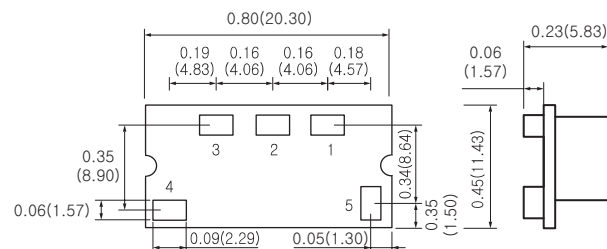
Single Output (SMT)

1. +Vout
2. TRM
3. COM
4. +Vin
5. CNT

DIMENSIONS



[SIP TYPE]

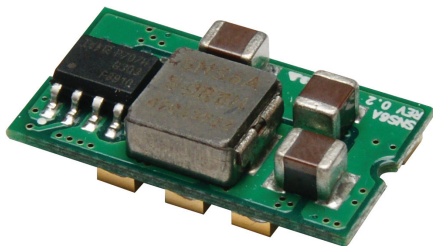


[SMT TYPE]

- NOTE**
- All dimension are in inches (mm)
 - Weight : 3.3g or less (SIP)
2.2g or less (SMT)
 - SIP Type Dimension "H"
0.36(9.03) for 5V Input
0.32(8.23) for 12V Input
 - SMT Type Dimension "H"
0.23(5.83) for 5V Input
0.28(7.13) for 12V Input

SNS6A Series

NON-ISOLATED DC-DC POL CONVERTER



FEATURES 5V Inputs

- Delivers 6A of Output Current
- High Efficiency
- Compact Footprint / Low Profile
- Single-in-Line SMT Package
- Cost-Efficient Open Frame Design
- Remote On/Off Control (CNT) (Active Low)
- Trimmable Output Voltage via External Resistor
- Low Output Ripple / Noise
- Over Current Protection (OCP)
- Over Temperature Protection (OTP)
- 3 Year Warranty

ELECTRICAL SPECIFICATIONS

SNS6A - 5 Packages

• Input Range	4.5 - 5.5V
• Efficiency	93%@3.3V
• Remote On/Off Control	On : Open, 0 - 1.0V Off : +1.2V to +Vin
• Output Voltages	1.0 - 3.3V
• Output Voltage Tolerance	±2.0%
• Line Regulation	±0.3% Max.
• Load Regulation	±0.4% Max.
• Switching Frequency	300kHz
• * Ripple and Noise	40mVp-p (@3.3V)

ENVIRONMENTAL

• Operating Temperature Range	-40°C ~ 85°C
• Storage Temperature Range	-55°C ~ 125°C
• Lead Temperature (Soldering , 10sec)	+300°C
• Thermal ShUTDOWN	+135°C
• MTBF (MIL-HDBK-217F)	1.5 x 10 ⁶ hrs

* Ripple & Noise is tested / Specified over a 20MHz bandwidth and may be reduced with external filtering.

ORDERING INFORMATION

Input	Output	Maximum Power	Ripple & Noise Max.	Efficiency Typ.	Model Number
4.5 - 5.5V	1.0V@6.00A	6.00W	40mVp-p	80%	SNS6A-5-1R0H
4.5 - 5.5V	1.2V@6.00A	7.20W	40mVp-p	81%	SNS6A-5-1R2H
4.5 - 5.5V	1.5V@6.00A	9.00W	40mVp-p	85%	SNS6A-5-1R5H
4.5 - 5.5V	1.8V@6.00A	10.80W	40mVp-p	86%	SNS6A-5-1R8H
4.5 - 5.5V	2.0V@6.00A	12.00W	40mVp-p	88%	SNS6A-5-2R0H
4.5 - 5.5V	2.5V@6.00A	15.00W	40mVp-p	90%	SNS6A-5-2R5H
4.5 - 5.5V	3.3V@6.00A	19.80W	40mVp-p	93%	SNS6A-5-3R3H

H : SMT package

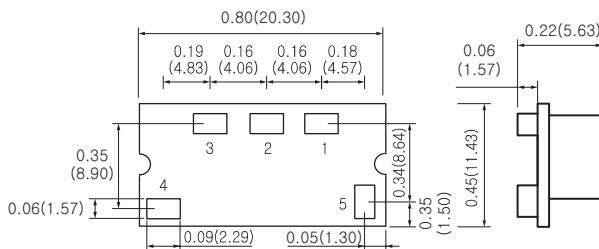
1. Typical at $T_a = +25^{\circ}\text{C}$ under nominal line voltage and full load conditions, unless otherwise noted. All models are tested and specified with external input and output capacitors. ($C_{in}=100\mu\text{F} \times 2$ $C_{out} = 10\mu\text{F}$), These capacitors are necessary to accommodate our test equipment.
2. Ripple & Noise is tested / specified over a 20MHz bandwidth and may be reduced with external filtering. See I/O Filtering.
3. These device have no minimum-load requirement and will regulate under no-load conditions. Regulation specification describe the output voltage deviation as the line voltage or load is varied from its minimum value to either extreme.

PIN ASSIGNMENTS

Single Output (SMT)

1. +Vout
2. TRM
3. COM
4. +Vin
5. CNT

DIMENSIONS

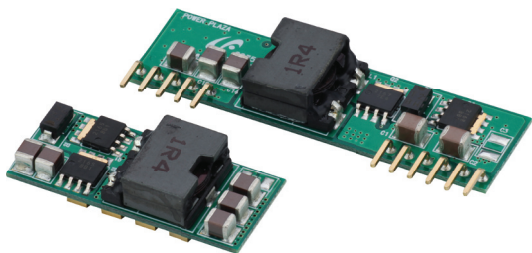


[SMT TYPE]

NOTE 1 All dimension are in inches (mm)
2 Weight : 2.2g or less

SNS10A Series

NON-ISOLATED DC-DC POL CONVERTER



FEATURES 5V, 12V Inputs

- Delivers 10A of Output Current
- High Efficiency
- Compact Footprint / Low Profile
- Single-in-Line SIP / SMT Package
- Cost-Efficient Open Frame Design
- Remote On/Off Control (CNT) (Active Low)
- Remote Sense
- Trimmable Output Voltage via External Resistor
- Low Output Ripple / Noise
- Over Current Protection (OCP)
- Over Temperature Protection (OTP)
- 3 Year Warranty

ELECTRICAL SPECIFICATIONS

SNS10A - 5 Packages

• Input Range	5V(3.0 - 5.5) 4.5 - 5.5V(Only Output 3.3V)
• Efficiency	95%@3.3V
• Remote On/Off Control	On : Open, 0 - 1.0V Off : +1.2V to +Vin
• Output Voltages	1.0 - 3.3V
• Output Voltage Tolerance	±2.0%
• Line Regulation	±0.3% Max.
• Load Regulation	±0.4% Max.
• Switching Frequency	300kHz
• * Ripple and Noise	30mVp-p (@3.3V)

SNS10A - 12 Packages

• Input Range	12V(10 - 14)
• Efficiency	95%@5.0V
• Remote On/Off Control	On : Open, 0 - 1.0V Off : +1.2V to +Vin
• Output Voltages	1.0 - 5.0V
• Output Voltage Tolerance	±2.0%
• Line Regulation	±0.3% Max.
• Load Regulation	±0.4% Max.
• Switching Frequency	300kHz
• * Ripple and Noise	50mVp-p (@5.0V)

ENVIRONMENTAL

• Operating Temperature Range	-40℃ ~ 85℃
• Storage Temperature Range	-40℃ ~ 125℃
• Lead Temperature (Soldering , 10sec)	+300℃
• Thermal ShUTDOWN	+135℃
• MTBF (MIL-HDBK-217F)	8.0 x 10 ⁵ hrs (5V Input) 7.6 x 10 ⁵ hrs (12V Input)

* Ripple & Noise is tested / Specified over a 20MHz bandwidth and may be reduced with external filtering.

ORDERING INFORMATION

Input	Output	Maximum Power	Ripple & Noise Max.	Efficiency Typ.	Model Number
3.0 - 5.5V	1.0V@10.00A	10.00W	30mVp-p	87%	SNS10A-5-1R0V(H)
3.0 - 5.5V	1.2V@10.00A	12.00W	30mVp-p	89%	SNS10A-5-1R2V(H)
3.0 - 5.5V	1.5V@10.00A	15.00W	30mVp-p	90%	SNS10A-5-1R5V(H)
3.0 - 5.5V	1.8V@10.00A	18.00W	30mVp-p	91%	SNS10A-5-1R8V(H)
3.0 - 5.5V	2.0V@10.00A	20.00W	30mVp-p	92%	SNS10A-5-2R0V(H)
3.0 - 5.5V	2.5V@10.00A	25.00W	30mVp-p	94%	SNS10A-5-2R5V(H)
4.5 - 5.5V	3.3V@10.00A	33.00W	30mVp-p	96%	SNS10A-5-3R3V(H)
10 - 14V	1.0V@10.00A	10.00W	50mVp-p	83%	SNS10A-12-1R0V(H)
10 - 14V	1.2V@10.00A	12.00W	50mVp-p	87%	SNS10A-12-1R2V(H)
10 - 14V	1.5V@10.00A	15.00W	50mVp-p	88%	SNS10A-12-1R5V(H)
10 - 14V	1.8V@10.00A	18.00W	50mVp-p	90%	SNS10A-12-1R8V(H)
10 - 14V	2.0V@10.00A	20.00W	50mVp-p	91%	SNS10A-12-2R0V(H)
10 - 14V	2.5V@10.00A	25.00W	50mVp-p	92%	SNS10A-12-2R5V(H)
10 - 14V	3.3V@10.00A	33.00W	50mVp-p	93%	SNS10A-12-3R3V(H)
10 - 14V	5.0V@10.00A	50.00W	50mVp-p	95%	SNS10A-12-5R0V(H)

V : SIP package H : SMT package

1. Typical at $T_a = +25^{\circ}\text{C}$ under nominal line voltage and full load conditions, unless otherwise noted. All models are tested and specified with external input and output capacitors. ($C_{in}=100\mu\text{F} \times 2$ $C_{out} = 10\mu\text{F}$), These capacitors are necessary to accommodate our test equipment.
2. Ripple & Noise is tested / specified over a 20MHz bandwidth and may be reduced with external filtering. See I/O Filtering.
3. These device have no minimum-load requirement and will regulate under no-load conditions. Regulation specification describe the output voltage deviation as the line voltage or load is varied from its minimum value to either extreme.

PIN ASSIGNMENTS

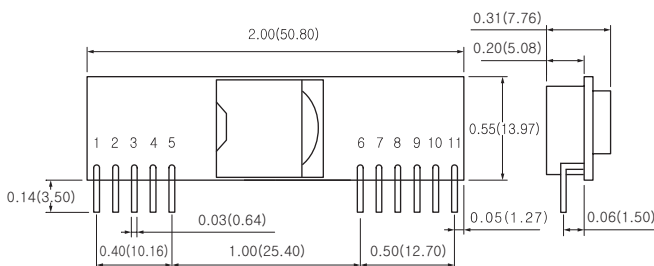
Single Output (SIP)

1. +Vout
2. +Vout
3. Sense
4. +Vout
5. COM
6. COM
7. +Vin
8. +Vin
9. No Pin
10. TRM
11. CNT

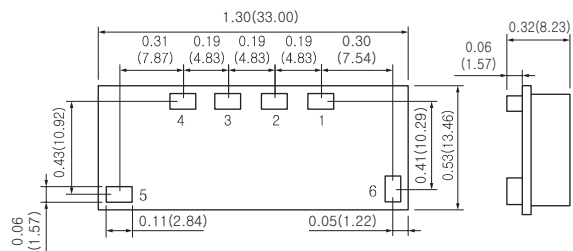
Single Output (SMT)

1. Sense
2. TRM
3. +Vout
4. COM
5. +Vin
6. CNT

DIMENSIONS



[SIP TYPE]



[SMT TYPE]

- NOTE**
- 1 All dimension are in inches (mm)
 - 2 Weight : 6.2g or less (SIP)
5.5g or less (SMT)

SNS15A Series

NON-ISOLATED DC-DC POL CONVERTER

FEATURES 5V, 12V Inputs

- Delivers 15A of Output Current
- High Efficiency
- Compact Footprint / Low Profile
- Single-in-Line SIP / SMT Package
- Cost-Efficient Open Frame Design
- Remote On/Off Control (CNT) (Active Low)
- Remote Sense
- Trimmable Output Voltage via External Resistor
- Low Output Ripple / Noise
- Over Current Protection (OCP)
- Over Temperature Protection (OTP)
- 3 Year Warranty



ELECTRICAL SPECIFICATIONS

SNS15A - 5 Packages

Input Range	5V(3.0 - 5.5V) 4.5 - 5.5V(Only Output 3.3V)
Efficiency	94%@3.3V
Remote On/Off Control	On : Open, 0 - 1.0V Off : +1.2V to +Vin
Output Voltages	1.0 - 3.3V
Output Voltage Tolerance	±2.0%
Line Regulation	±0.3% Max.
Load Regulation	±0.4% Max.
Switching Frequency	300kHz
* Ripple and Noise	40mVp-p (@3.3V)

SNS15A - 12 Packages

Input Range	12V(10 - 14V)
Efficiency	94%@5.0V
Remote On/Off Control	On : Open, 0 - 1.0V Off : +1.2V to +Vin
Output Voltages	1.0 - 5.0V
Output Voltage Tolerance	±2.0%
Line Regulation	±0.3% Max.
Load Regulation	±0.4% Max.
Switching Frequency	300kHz
* Ripple and Noise	60mVp-p (@5.0V)

ENVIRONMENTAL

Operating Temperature Range	-40°C ~ 85°C
Storage Temperature Range	-40°C ~ 125°C
Lead Temperature (Soldering , 10sec)	+300°C
Thermal ShUTDOWN	+135°C
MTBF (MIL-HDBK-217F)	8.0 x 10 ⁵ hrs (5V Input) 7.6 x 10 ⁵ hrs (12V Input)

* Ripple & Noise is tested / Specified over a 20MHz bandwidth and may be reduced with external filtering.

ORDERING INFORMATION

Input	Output	Maximum Power	Ripple & Noise Max.	Efficiency Typ.	Model Number
3.0 - 5.5V	1.0V@15.00A	15.00W	40mVp-p	84%	SNS15A-5-1R0V(H)
3.0 - 5.5V	1.2V@15.00A	18.00W	40mVp-p	86%	SNS15A-5-1R2V(H)
3.0 - 5.5V	1.5V@15.00A	22.50W	40mVp-p	88%	SNS15A-5-1R5V(H)
3.0 - 5.5V	1.8V@15.00A	27.00W	40mVp-p	89%	SNS15A-5-1R8V(H)
3.0 - 5.5V	2.0V@15.00A	30.00W	40mVp-p	91%	SNS15A-5-2R0V(H)
3.0 - 5.5V	2.5V@15.00A	37.50W	40mVp-p	92%	SNS15A-5-2R5V(H)
4.5 - 5.5V	3.3V@15.00A	49.50W	40mVp-p	94%	SNS15A-5-3R3V(H)
10 - 14V	1.0V@15.00A	15.00W	60mVp-p	80%	SNS15A-12-1R0V(H)
10 - 14V	1.2V@15.00A	18.00W	60mVp-p	82%	SNS15A-12-1R2V(H)
10 - 14V	1.5V@15.00A	22.50W	60mVp-p	85%	SNS15A-12-1R5V(H)
10 - 14V	1.8V@15.00A	27.00W	60mVp-p	87%	SNS15A-12-1R8V(H)
10 - 14V	2.0V@15.00A	30.00W	60mVp-p	88%	SNS15A-12-2R0V(H)
10 - 14V	2.5V@15.00A	37.50W	60mVp-p	90%	SNS15A-12-2R5V(H)
10 - 14V	3.3V@15.00A	49.50W	60mVp-p	92%	SNS15A-12-3R3V(H)
10 - 14V	5.0V@15.00A	75.00W	60mVp-p	94%	SNS15A-12-5R0V(H)

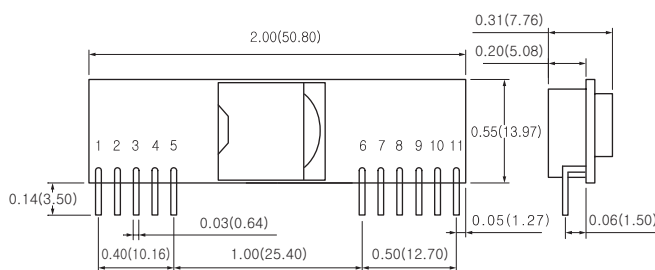
V : SIP package H : SMT package

1. Typical at $T_a = +25^{\circ}\text{C}$ under nominal line voltage and full load conditions, unless otherwise noted. All models are tested and specified with external input and output capacitors. ($C_{in}=100\mu\text{F} \times 2$ $C_{out} = 10\mu\text{F}$), These capacitors are necessary to accommodate our test equipment.
2. Ripple & Noise is tested / specified over a 20MHz bandwidth and may be reduced with external filtering. See I/O Filtering.
3. These device have no minimum-load requirement and will regulate under no-load conditions. Regulation specification describe the output voltage deviation as the line voltage or load is varied from its minimum value to either extreme.

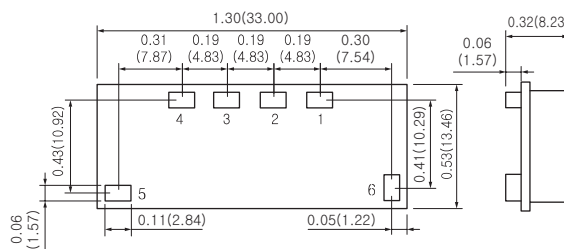
PIN ASSIGNMENTS

Single Output (SIP)	Single Output (SMT)
1. +Vout	1. Sense
2. +Vout	2. TRM
3. Sense	3. +Vout
4. +Vout	4. COM
5. COM	5. +Vin
6. COM	6. CNT
7. +Vin	
8. +Vin	
9. No Pin	
10. TRM	
11. CNT	

DIMENSIONS

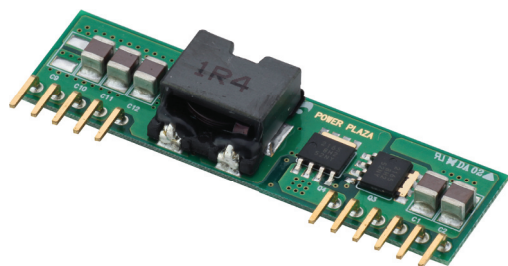


[SIP TYPE]



[SMT TYPE]

- NOTE**
- 1 All dimension are in inches (mm)
 - 2 Weight : 6.2g or less (SIP)
5.5g or less (SMT)
 - 3 SIP Type Dimension "H"
0.31(7.76) for 5V Input
0.36(9.09) for 12V Input



FEATURES 5V Inputs

- Delivers 16A of Output Current
- High efficiency
- Compact Footprint / Low Profile
- Single-in-Line SIP Package
- Cost-Efficient Open Frame Design
- Remote On/Off (CNT) (Active Low)
- Remote Sense
- Trimmable Output Voltage via External Resistor
- Low Output Ripple / Noise
- Over Current Protection (OCP)
- Over Temperature Protection (OTP)
- 3 Year Warranty

ELECTRICAL SPECIFICATIONS

SNS16A - 5 Packages

· Input Range	5V(4.5 - 5.5V)
· Efficiency	94%@3.3V
· Remote On/Off Control	On : Open, 0 - 1.0V Off : +1.2V to +Vin
· Output Voltages	1.0 - 3.3V
· Output Voltage Tolerance	±2.0%
· Line Regulation	±0.3% Max.
· Load Regulation	±0.4% Max.
· Switching Frequency	300kHz
· * Ripple and Noise	45mVp-p (@3.3V)

ENVIRONMENTAL

· Operating Temperature Range	-40°C ~ 85°C
· Storage Temperature Range	-40°C ~ 125°C
· Lead Temperature (Soldering , 10sec)	+300°C
· Thermal ShUTDOWN	+135°C
· MTBF (MIL-HDBK-217F)	8.0 x 10 ⁵ hrs

* Ripple & Noise is tested / Specified over a 20MHz bandwidth and may be reduced with external filtering.

ORDERING INFORMATION

Input	Output	Maximum Power	Ripple & Noise Max.	Efficiency Typ.	Model Number
4.5 - 5.5V	1.0V@16.00A	16.00W	40mVp-p	84%	SNS16A-5-1R0V
4.5 - 5.5V	1.2V@16.00A	19.20W	40mVp-p	86%	SNS16A-5-1R2V
4.5 - 5.5V	1.5V@16.00A	24.00W	40mVp-p	88%	SNS16A-5-1R5V
4.5 - 5.5V	1.8V@16.00A	28.80W	45mVp-p	89%	SNS16A-5-1R8V
4.5 - 5.5V	2.0V@16.00A	32.00W	45mVp-p	91%	SNS16A-5-2R0V
4.5 - 5.5V	2.5V@16.00A	40.00W	45mVp-p	92%	SNS16A-5-2R5V
4.5 - 5.5V	3.3V@16.00A	52.80W	45mVp-p	94%	SNS16A-5-3R3V

V : SIP package

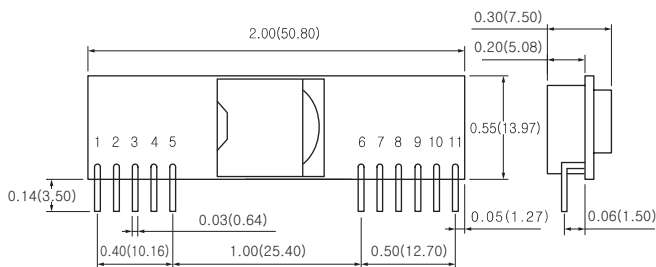
1. Typical at $T_a = +25^{\circ}\text{C}$ under nominal line voltage and full load conditions, unless otherwise noted. All models are tested and specified with external input and output capacitors. ($C_{in}=100\mu\text{F} \times 2$ $C_{out} = 10\mu\text{F}$), These capacitors are necessary to accommodate our test equipment.
2. Ripple & Noise is tested / specified over a 20MHz bandwidth and may be reduced with external filtering. See I/O Filtering.
3. These device have no minimum-load requirement and will regulate under no-load conditions. Regulation specification describe the output voltage deviation as the line voltage or load is varied from its minimum value to either extreme.

PIN ASSIGNMENTS

Single Output (SIP)

1. +Vout
2. +Vout
3. Sense
4. +Vout
5. COM
6. COM
7. +Vin
8. +Vin
9. No Pin
10. TRM
11. CNT

DIMENSIONS

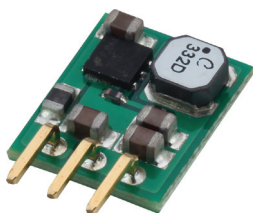


[SIP TYPE]

NOTE 1 All dimension are in inches (mm)
2 Weight : 7.3g or less

78NS1R5A Series

3-TERMINAL NON-ISOLATED DC-DC CONVERTER



FEATURES 5V Inputs

- Delivers 1.5A of Output Current
- High Efficiency
- Single-in-Line SIP Package
- Small Size / Low Profile
- Low Output Ripple / Noise
- Cost-Efficient Open Frame Design
- High Quality EMI Characteristic
- Compatible with TO-220 Package Pin Out
- High Frequency Switching (Typ. 1.3MHz)
- UVLO (Typ. 3.7Vin)
- Over Current Protection (OCP)
- Over Temperature Protection (OTP)
- 3 Year Warranty

ELECTRICAL SPECIFICATIONS

78NS1R5A - 5 Packages

• Input Range	DC 5V(4.5 - 5.5)
• Efficiency	65 - 85%
• Output Voltages	1.0 - 3.3V
• Output Voltage Tolerance	±3.0%
• Line Regulation	±0.2% Max.
• Load Regulation	±2.0% Max. (Input from 0A to 1.5A)
• Switching Frequency	Typ. 1.3MHz (Min. 1.0MHz, Max. 1.6MHz)
• * Ripple and Noise	20mVp-p (@3.3V)

ENVIRONMENTAL

• Operating Temperature Range	-40°C ~ 85°C
• Storage Temperature Range	-40°C ~ 85°C
• Lead Temperature (Soldering , 10sec)	+300°C
• Thermal Shutdown	Convection, Forced Air
• MTBF (MIL-HDBK-217F)	4.0 x 10 ⁶ hrs

* Ripple & Noise is tested / Specified over a 20MHz bandwidth and may be reduced with external filtering.

ORDERING INFORMATION

Input	Output	Maximum Power	Ripple & Noise Max.	Efficiency Typ.	Model Number
4.5 - 5.5V	1.0V@1.50A	1.50W	20mVp-p	65%	78NS1R5A-5-1R0V
4.5 - 5.5V	1.2V@1.50A	1.80W	20mVp-p	69%	78NS1R5A-5-1R2V
4.5 - 5.5V	1.5V@1.50A	2.25W	20mVp-p	72%	78NS1R5A-5-1R5V
4.5 - 5.5V	1.8V@1.50A	2.70W	20mVp-p	76%	78NS1R5A-5-1R8V
4.5 - 5.5V	2.0V@1.50A	3.00W	20mVp-p	77%	78NS1R5A-5-2R0V
4.5 - 5.5V	2.5V@1.50A	3.75W	20mVp-p	81%	78NS1R5A-5-2R5V
4.5 - 5.5V	3.3V@1.50A	4.95W	20mVp-p	85%	78NS1R5A-5-3R3V

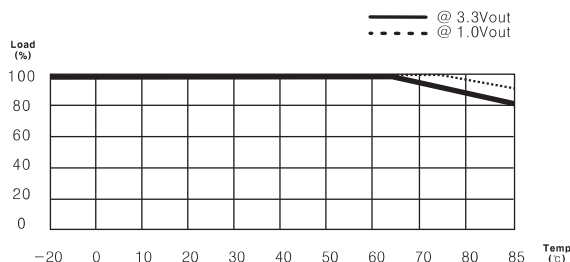
1. Typical at $T_a = +25^\circ\text{C}$ under nominal line voltage and full load conditions, unless otherwise noted. All models are tested and specified with external input and output capacitors. ($C_{in}=100\mu\text{F} \times 2 \ C_{out} = 10\mu\text{F}$), These capacitors are necessary to accommodate our test equipment.
2. Ripple & Noise is tested / specified over a 20MHz bandwidth and may be reduced with external filtering. See I/O Filtering.
3. These device have no minimum-load requirement and will regulate under no-load conditions. Regulation specification describe the output voltage deviation as the line voltage or load is varied from its minimum value to either extreme.

PIN ASSIGNMENTS

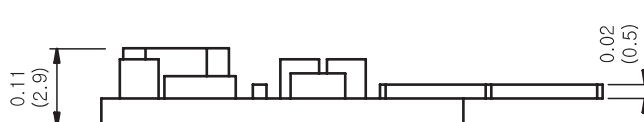
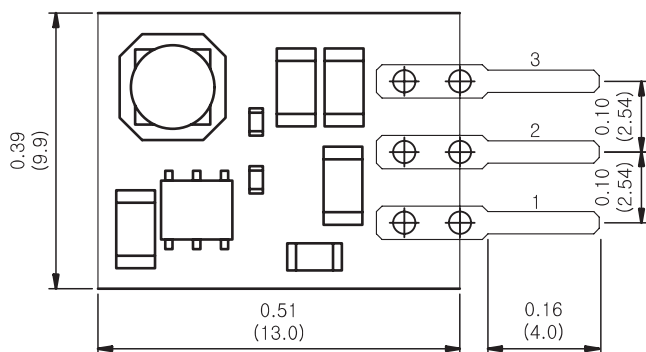
Single Output (SIP)

1. +Vin
2. COM
3. +Vout

DERATING CURVE



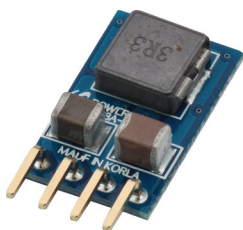
DIMENSIONS



NOTE 1 All dimension are in inches (mm)
2 Weight : 0.58g or less

78NS3A Series

4-TERMINAL NON-ISOLATED DC-DC CONVERTER



FEATURES 12V Inputs

- Delivers 3A of Output Current
- High Efficiency
- Single-In-Line SIP Package
- Small Size / Low Profile
- Low Output Ripple / Noise
- Short Circuit Protection
- Remote On/Off Control (CNT)
- Cost-Efficient Open Frame Design
- Compatible with TO-220 Package Pin Out
- High Frequency Switching (Typ. 600kHz)
- UVLO (Typ. 4.3V_{in})
- Over Current Protection (OCP)
- Over Temperature Protection (OTP)
- 3 Year Warranty

ELECTRICAL SPECIFICATIONS

78NS3A - 12 Packages

• Input Range	DC 12V(6.5 - 18) @3.3V, 12V(10 - 18) @5.0V
• Efficiency	89 - 92%
• Remote On/Off Control	{ On : Open 1.2V to 2V Off : 0 to 1.1V
• Output Voltages	3.3V, 5.5V
• Output Voltage Tolerance	±3.0%
• Line Regulation	±0.2% Max.
• Load Regulation	±1.0% Max. (Input form 0A to 3A)
• Switching Frequency	Typ. 600KHz (Min. 540KHz, Max. 660KHz)
• * Ripple and Noise	40mVp-p (@3.3V), 60mVp-p (@5.0V)

ENVIRONMENTAL

• Operating Temperature Range	-40°C ~ 85°C
• Storage Temperature Range	-40°C ~ 105°C
• Lead Temperature (Soldering , 10sec)	+300°C
• Thermal ShUTDOWN	Convection, Forced Air
• MTBF (MIL-HDBK-217F)	1.14 x 10 ⁶ hrs

* Ripple & Noise is tested / Specified over a 20MHz bandwidth and may be reduced with external filtering.

ORDERING INFORMATION

Input	Output	Maximum Power	Ripple & Noise Max.	Efficiency Typ.	Model Number
6.5 - 18V 10 - 18V	3.3V@3.00A 5.0V@3.00A	9.90W 15.00W	40mVp-p 60mVp-p	89% 92%	78NS3A-12-3R3V 78NS3A-12-5R0V

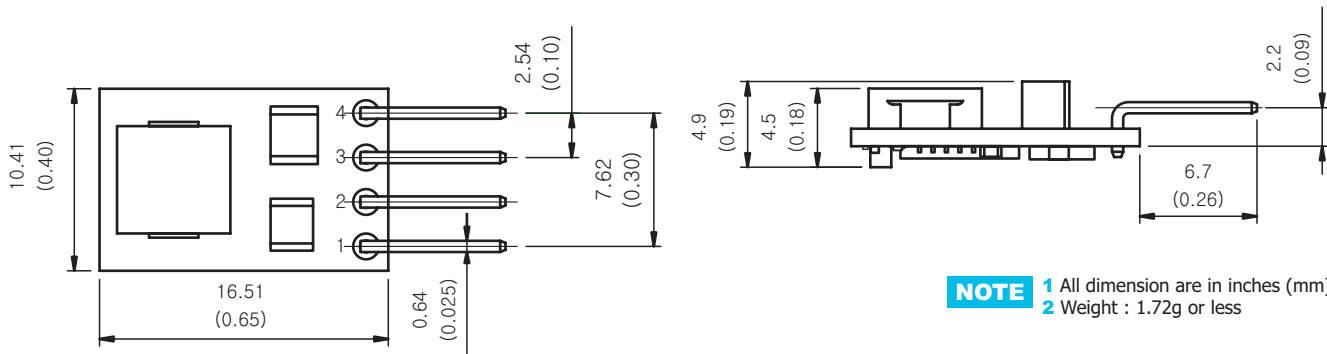
1. Typical at $T_a = +25^{\circ}\text{C}$ under nominal line voltage and full load conditions, unless otherwise noted. All models are tested and specified with external input and output capacitors. ($C_{in}=100\mu\text{F} \times 2$ $C_{out} = 10\mu\text{F}$), These capacitors are necessary to accommodate our test equipment.
2. Ripple & Noise is tested / specified over a 20MHz bandwidth and may be reduced with external filtering. See I/O Filtering.
3. These device have no minimum-load requirement and will regulate under no-load conditions. Regulation specification describe the output voltage deviation as the line voltage or load is varied from its minimum value to either extreme.

PIN ASSIGNMENTS

Single Output (SIP)

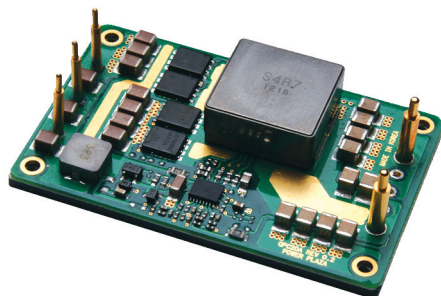
1. CNT
2. +Vin
3. COM
4. +Vout

DIMENSIONS



QPC20A Series

NON-ISOLATED QUARTER BRICK BUCK CONVERTER



FEATURES 48V Inputs

- High Efficiency
- Industry Standard Quarter-Brick
- Constant Switching Frequency
- Synchronous-Rectifier Topology
- Input Under Voltage Lock Out
- Over Current Protection (OCP)
- Output Short-Circuit Protection
- Over Temperature Protection (OTP)
- Remote ON/OFF Control (CNT)
- Output Voltage Adjustment (TRM)
- Output Voltage Sense Terminal (option)
- Power Good Signal (option)

ELECTRICAL SPECIFICATIONS

Input

- Input Range DC 48V(36 - 58)
- Efficiency 94.5% Typ.
- Remote On/Off Control
 - On : Short to -Vin
 - Off : Open
- Low ESR Capacitor should be used at input terminal (Min 330 μ F)

Output

- Output Voltages 12V
- Output Voltage Tolerance $\pm 2.0\%$
- Line Regulation $\pm 0.3\%$ Typ.
- Load Regulation $\pm 0.4\%$ Typ.
- Ripple and Noise 120mVp-p (@12V) (**NOTE 2**)
- Output Voltage Trim Range $\pm 10.0\%$ Typ.

Protection Circuit

- Over Current Protection Work Over 105% of Rating (Current Limited Output) (**NOTE 1**)

ENVIRONMENTAL

- Operating Temperature Range $-40^{\circ}\text{C} \sim 85^{\circ}\text{C}$
- Operating Humidity (Non-Condensing) 30% $\sim$ 95%RH
- Storage Temperature Range $-40^{\circ}\text{C} \sim 125^{\circ}\text{C}$
- Storage Humidity (Non-Condensing) 5% $\sim$ 95%RH

NOTE 1. Long term continuous operation into a short circuit will compromise the reliability of the unit.
 2. Ripple & Noise is tested / specified over a 20MHz bandwidth and are tested specified with 1 μ F / 15 μ F ceramic / tantalum output.

ORDERING INFORMATION

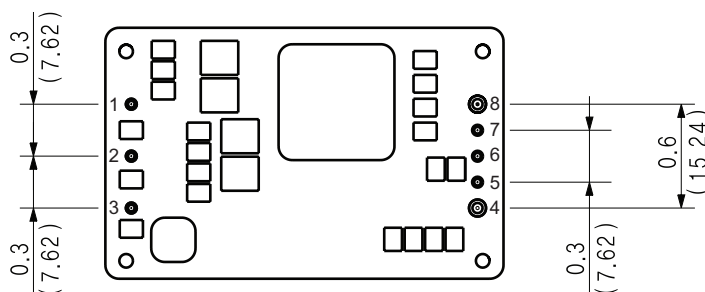
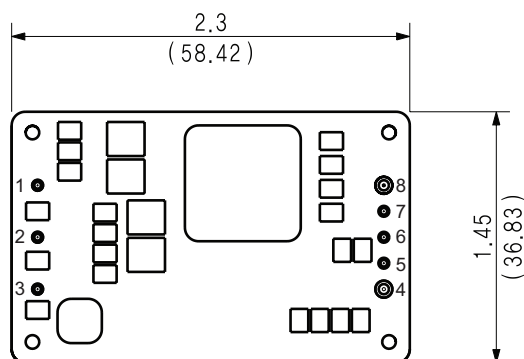
Input	Output	Maximum Power	Ripple & Noise Max.	Efficiency Typ.	Model Number
36 - 60V	12V@20A	240W	120mVp-p	94.5%	QPC20A-48-12

PIN ASSIGNMENTS

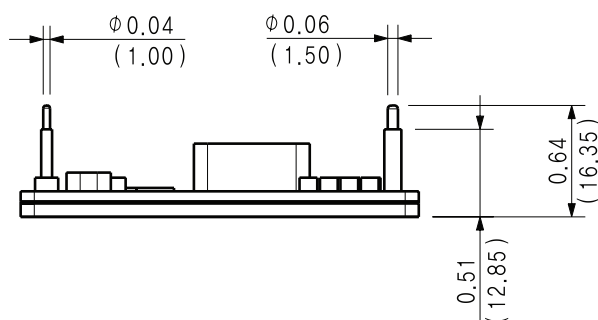
Single Output

1. - Vin
2. CNT
3. +Vin
4. +Vout
5. +Sense (option)
6. Trim
7. PG (option)
8. - Vout

DIMENSIONS



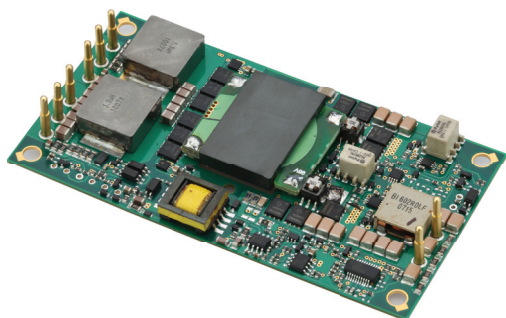
※ Mounting hole top view



NOTE 1 All dimension are in inches (mm)
2 Weight : 40g or less

NB600 Series

600W ISOLATED DC-DC CONVERTER



FEATURES 48V, 72V, 96V Inputs / Single Output

- High Efficiency
- Industrial Standard Full Brick Size
- 1500Vdc Input to Output Isolation
- Over Voltage Protection (OVP)
- Input Over Voltage Protection (OVLO)
- Input Under Voltage Protection (UVLO)
- Over Temperature Protection (OTP)
- Over Current Protection (OCP)
- Short Circuit Protection (Hiccup, Auto-Restart)
- Remote On/Off Control (CNT)
- Remote Sense Compensations to 10% Vout
- Output Voltage Adjustment (TRM)
- Power Good Function
- Aux Voltage 10V, 50mA

ELECTRICAL SPECIFICATIONS

Input

- Input Range DC 48V(36 - 75), 72V(50 - 100), 96V(60 - 115)
- Efficiency 91.2 - 92.1% typ.
- Remote On/Off Control
 - On : Short to -Vin
 - Off : Open

Output

- Output Voltages 12V
- Output Voltage Tolerance $\pm 2.0\%$
- Line Regulation $\pm 0.5\%$ Max.
- Load Regulation $\pm 0.5\%$ Max.
- Ripple and Noise 1% of Vout (Bandwidth : 20MHz)

Protection Circuit

- Short Circuit Over Current Protection Hiccup, Auto-Restart at 115 - 140% of Rating
- Under Voltage Protection Auto-Restart
- Output Over Voltage Protection Auto-Restart About 120% Vout Nom.
- Thermal Shut Down 100°C (Baseplate), Auto-Restart

Electrically Isolated

- Isolation Input-Output, Input-Case, Output-Case / DC1500V, DC1000V, DC1000V
- Isolation Resistance 100M Ω

ENVIRONMENTAL

- Operating Temperature Range -40°C ~ 90°C (Baseplate)
- Operating Humidity (Non-Condensing) 20% ~ 90%RH
- Storage Temperature Range -40°C ~ 125°C
- Cooling Method Forced Air, Heat Sink

* Ripple & Noise is tested / Specified over a 20MHz bandwidth and may be reduced with external filtering.

ORDERING INFORMATION

Input	Output	Maximum Power	Ripple & Noise Max.	Efficiency Typ.	Model Number
36 - 75V	12V@50.00A	600.00W	120mVp-p	91.2%	NB600-48-12
50 - 100V	12V@50.00A	600.00W	120mVp-p	92.1%	NB600-72-12
60 - 115V	12V@50.00A	600.00W	120mVp-p	91.9%	NB600-96-12

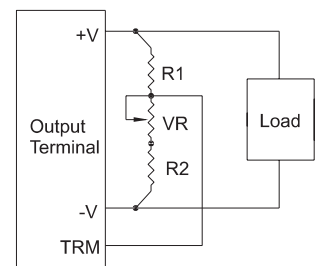
PIN ASSIGNMENTS

Single Output
1. - Vin
2. +Vin
3. - CNT
4. +CNT
5. AUX
6. PG
7. NC
8. TRM
9. +Sense
10. - Sense
11. +Vout
12. +Vout
13. +Vout
14. - Vout
15. - Vout
16. - Vout

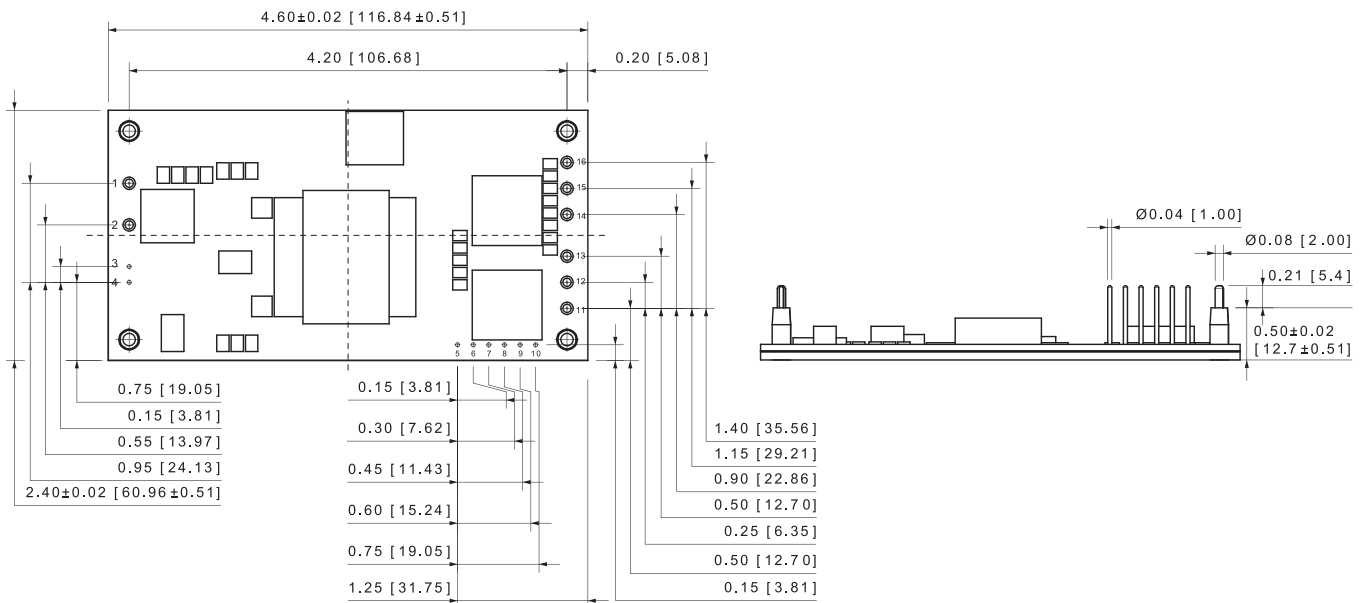
EXTERNAL PARTS

Model	Output Voltage	VR	R1	R2
NB600	12V	1kΩ	3.9kΩ	680Ω

TRIM METHOD



DIMENSIONS



NOTE 1 All dimension are in inches (mm)
 2 Weight : 150g or less
 3 Cooling Plate Material : Aluminium Base Plate

NHS / NS Series

150W DC-DC CONVERTER



FEATURES 24V, 48V Inputs / Single Output

- High Efficiency
- Industrial Standard Half Brick Size
- Six-Sided Shield (HS series)
- Fixed Frequency Operation
- Wide 2:1 Input Range
- Precision Thermal Protection (Accuracy $\pm 3^{\circ}\text{C}$)
- Short Circuit and Over Current Protection (Hiccup, Auto-Restart)
- Under Voltage Protection (UVLO) (Auto-Resart)
- Output Over Voltage Protection (Latch Up, Shut Down)
- Remote On/Off Control (CNT)
- Remote Sense Compensations to 10% Vout
- Fully Isolated 1500Vdc
- 2 Years Warranty

ELECTRICAL SPECIFICATIONS

Input

- Input Range DC 24V(18 - 36), 48V(36 - 75)
- Efficiency 89.6 - 92.6% Typ.
- Remote On/Off Control TTL Compatible
 - On : 2.5 to 7 Vdc or Open
 - Off : 0 to 0.8 Vdc

Output

- Output Voltages 3.3V, 5V, 12V, 24V (HS100-24-24)
- Output Voltage Tolerance $\pm 2.0\%$
- Line Regulation $\pm 0.5\%$ Max.
- Load Regulation $\pm 0.5\%$ Max.
- Ripple and Noise
 - Bandwidth : 20MHz
 - Magnitude : 1.5% of Vout

Protection Circuit

- Short Circuit Over Current Protection Hiccup, Auto-Restart at 115 - 140% of Rating
- Under Voltage Protection Auto-Restart
- Output Over Voltage Protection Latch Up (Shut Down) About 120% Vout Nom.
- Thermal Shut Down 100°C , Auto-Restart About 90°C

Electrically Isolated

- Isolation
 - Input-Output / DC1500V
 - Input-Case / DC1000V
 - Output-Case / DC1000V
- Isolation Resistance $100\text{M}\Omega$

ENVIRONMENTAL

- Operating Temperature Range $-40^{\circ}\text{C} \sim 85^{\circ}\text{C}$
- Operating Humidity (Non-Condensing) 20% ~ 90%RH
- Storage Temperature Range $-40^{\circ}\text{C} \sim 105^{\circ}\text{C}$
- Storage Humidity (Non-Condensing) 10% ~ 95%RH
- EMI / RFI Six-Sided Shield
- MTBF (MIL-HDBK-217F) 2.24×10^4 hrs

ORDERING INFORMATION

Input	Output	Maximum Power	Ripple & Noise Max.	Efficiency Typ.	Model Number
18 - 36V	3.3V@30.00A	99.00W	75mVp-p	90%	(N)HS150-24-3R3
18 - 36V	5.0V@30.00A	150.00W	75mVp-p	90%	(N)HS150-24-5
18 - 36V	12.0V@12.50A	150.00W	120mVp-p	92%	(N)HS150-24-12
18 - 36V	24.0V@4.20A	100.80W	240mVp-p	89.6%	HS100-24-24
36 - 75V	3.3V@30.00A	99.00W	75mVp-p	90%	(N)HS150-48-3R3
36 - 75V	5.0V@30.00A	150.00W	75mVp-p	91%	(N)HS150-48-5
36 - 75V	12.0V@12.50A	150.00W	120mVp-p	92.6%	(N)HS150-48-12

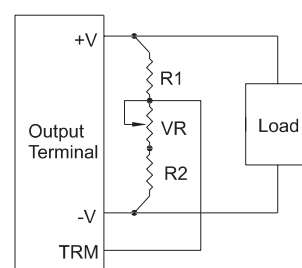
PIN ASSIGNMENTS

Single Output
1. +Vin
2. CNT
3. Case
4. -Vin
5. -Vout
6. -Sense
7. TRM
8. +Sense
9. +Vout

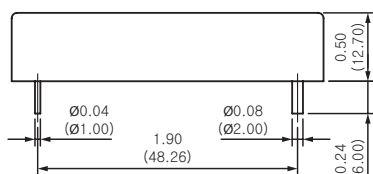
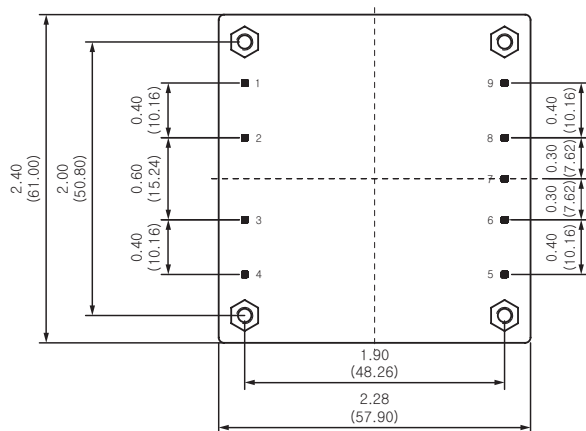
EXTERNAL PARTS

Model	Output Voltage	VR	R1	R2
HS150	3.3V	500Ω	1kΩ	560Ω
	5V	1kΩ	1kΩ	680Ω
	12V	1kΩ	3.9kΩ	680Ω
HS100	24V	5kΩ	9kΩ	820Ω

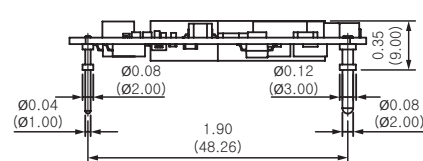
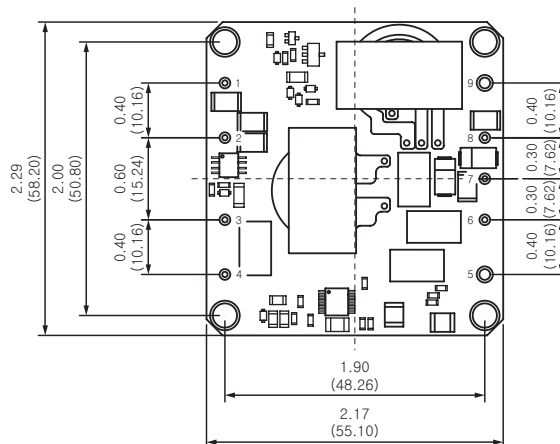
TRIM METHOD



DIMENSIONS



HS-series
[CASE TYPE]



NHS-series
[OPEN TYPE]

- NOTE**
- 1 All dimension are in inches (mm)
 - 2 Weight
 - Case Type : 180g or less
 - Open Type : 48g or less
 - 3 Case Material : Al

NHF / HF100 Series

ULTRA WIDE INPUT DC-DC CONVERTER



FEATURES 24V, 48V Inputs / Single Output

- High Efficiency
- Industrial Standard Half Brick Size
- Six-Sided Shield (HF series)
- Fixed Frequency Operation
- Ultra Wide 4:1 Input Range
- Precision Thermal Protection (Accuracy $\pm 3^{\circ}\text{C}$)
- Short Circuit and Over Current Protection (Hiccup, Auto-Restart)
- Under Voltage Protection (UVLO) (Auto-Resart)
- Output Over Voltage Protection (Latch Up, Shut Down)
- Remote On/Off Control (CNT)
- Remote Sense Compensations to 10% Vout
- Fully Isolated 1500Vdc
- 2 Years Warranty

ELECTRICAL SPECIFICATIONS

Input

- Input Range DC 24V(10 or 12 - 36), 48V(18 or 22 - 75)
- Efficiency 85 - 89% Typ.
- Remote On/Off Control TTL Compatible
 - On : 2.5 to 7 Vdc or Open
 - Off : 0 to 0.8 Vdc

Output

- Output Voltages 3.3V, 5V
- Output Voltage Tolerance $\pm 2.0\%$
- Line Regulation $\pm 0.5\%$ Max.
- Load Regulation $\pm 0.5\%$ Max.
- Ripple and Noise
 - Bandwidth : 20MHz
 - Magnitude : 1.5% of Vout

Protection Circuit

- Short Circuit Over Current Protection Hiccup, Auto-Restart at 115 - 140% of Rating
- Under Voltage Protection Auto-Restart
- Output Over Voltage Protection Latch Up (Shut Down) About 120% Vout Nom.
- Thermal Shut Down 100°C , Auto-Restart About 90°C

Electrically Isolated

- Isolation
 - Input-Output / DC1500V
 - Input-Case / DC1000V
 - Output-Case / DC1000V
- Isolation Resistance $100\text{M}\Omega$

ENVIRONMENTAL

- Operating Temperature Range $-40^{\circ}\text{C} \sim 85^{\circ}\text{C}$
- Operating Humidity (Non-Condensing) 20% ~ 90%RH
- Storage Temperature Range $-40^{\circ}\text{C} \sim 105^{\circ}\text{C}$
- Storage Humidity (Non-Condensing) 10% ~ 95%RH
- EMI / RFI Six-Sided Shield
- MTBF (MIL-HDBK-217F) 2.24×10^4 hrs

ORDERING INFORMATION

Input	Output	Maximum Power	Ripple & Noise Max.	Efficiency Typ.	Model Number
12 - 36V	3.3V@30.00A	99.00W	75mVp-p	88%	(N)HF100-Q24-3R3
10 - 36V	5.0V@20.00A	100.00W	75mVp-p	85%	(N)HF100-Q24-5
22 - 75V	3.3V@30.00A	99.00W	75mVp-p	89%	(N)HF100-Q48-3R3
18 - 75V	5.0V@20.00A	100.00W	75mVp-p	87%	(N)HF100-Q48-5

PIN ASSIGNMENTS

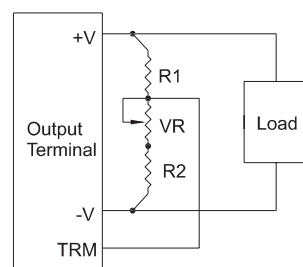
Single Output

1. +Vin
2. CNT
3. Case
4. - Vin
5. - Vout
6. - Sense
7. TRM
8. +Sense
9. +Vout

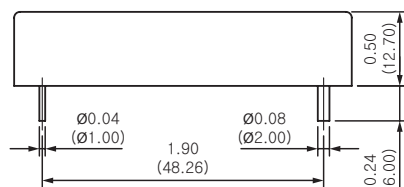
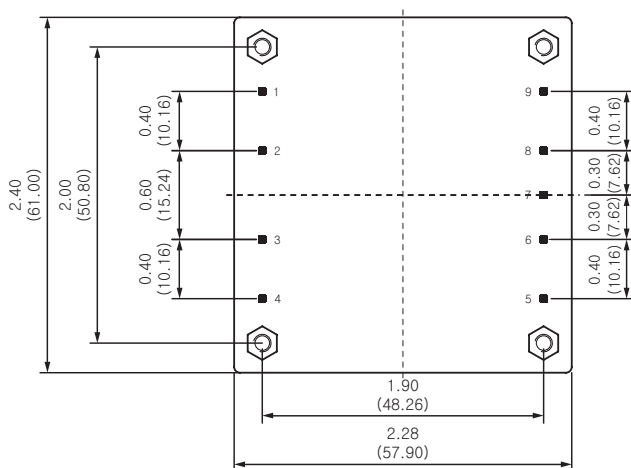
EXTERNAL PARTS

Model	Output Voltage	VR	R1	R2
HF100	3.3V	500Ω	1kΩ	560Ω
	5V	1kΩ	1kΩ	680Ω

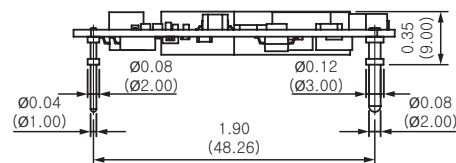
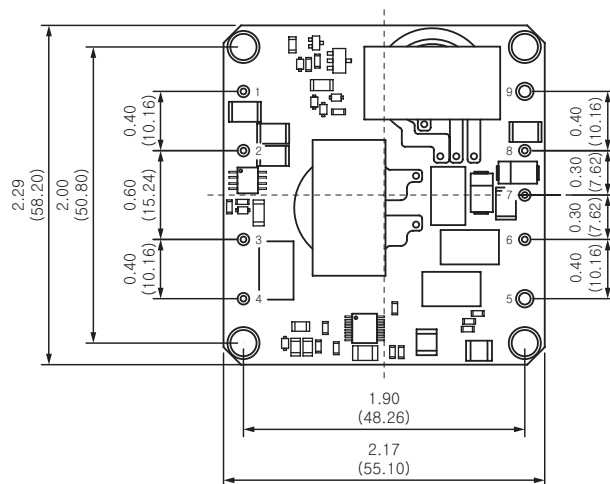
TRIM METHOD



DIMENSIONS



HF-series
[CASE TYPE]



NHF-series
[OPEN TYPE]

NOTE 1 All dimension are in inches (mm)
 2 Weight
 · Case Type : 180g or less
 · Open Type : 48g or less
 3 Case Material : Al

HRS50 Series

WIDE INPUT DC-DC CONVERTER



FEATURES 48V, 72V, 96V Inputs / Single Output

- High Efficiency
- Industrial Standard Half Brick Size
- Six-Sided Shield
- Optional Heat Sink Available
- Fixed Frequency Operation
- Wide 2:1 Input Range
- Precision Thermal Protection (Accuracy $\pm 3^{\circ}\text{C}$)
- Short Circuit and Over Current Protection (Hiccup, Auto-Restart)
- Under Voltage Protection (UVLO) (Auto-Resart)
- Output Over Voltage Protection (Latch Up, Shut Down)
- Remote On/Off Control (CNT)
- Output Voltage Variation (TRM)
- Fully Isolated 1500Vdc
- 2 Years Warranty

ELECTRICAL SPECIFICATIONS

Input

- Input Range DC 48V(36 - 76), 72V(50 - 100), 96V(65 - 150)
- Efficiency 86 - 89% Typ.
- Remote On/Off Control TTL Compatible - On : Short to-Vin Off : Open

Output

- Output Voltages 3.3V, 5V, 12V, 15V, 24V
- Output Voltages Tolerance $\pm 2.0\%$
- Line Regulation $\pm 0.5\%$ Max.
- Load Regulation $\pm 1.0\%$ Max.
- Ripple and Noise
 - Bandwidth : 20MHz
 - Magnitude : 1.5% of Vout

Protection Circuit

- Over Current Protection Work Over 105% of Rating (Hiccup)
- Under Voltage Protection Auto-Restart
- Output Over Voltage Protection Work at 115 - 140% of Rating
- Thermal Shut Down 100°C , Auto-Restart About 90°C

Electrically Isolated

- Isolation
 - Input-Output / AC1500V
 - Input-Case / AC1000V
 - Output-Case / AC1000V
- Isolation Resistance $100\text{M}\Omega$

ENVIRONMENTAL

- Operating Temperature Range $-40^{\circ}\text{C} \sim 85^{\circ}\text{C}$
- Operating Humidity (Non-Condensing) 20% ~ 90%RH
- Storage Temperature Range $-40^{\circ}\text{C} \sim 105^{\circ}\text{C}$
- Storage Humidity (Non-Condensing) 10% ~ 95%RH
- EMI / RFI Six-Sided Shield
- MTBF (MIL-HDBK-217F) 4.5×10^5 hrs

ORDERING INFORMATION

Input	Output	Maximum Power	Ripple & Noise Max.	Efficiency Typ.	Model Number
36 - 76V	3.3V@15.00A	49.50W	75mVp-p	86%	HRS50-48-3R3
36 - 76V	5V@10.00A	50.00W	75mVp-p	90%	HRS50-48-5
36 - 76V	12V@4.10A	49.20W	120mVp-p	91%	HRS50-48-12
36 - 76V	15V@3.30A	49.50W	150mVp-p	91%	HRS50-48-15
36 - 76V	24V@2.10A	50.40W	240mVp-p	89%	HRS50-48-24
50 - 100V	3.3V@15.00A	49.50W	75mVp-p	88%	HRS50-72-3R3
50 - 100V	5V@10.00A	50.00W	75mVp-p	89%	HRS50-72-5
50 - 100V	12V@4.10A	49.20W	120mVp-p	89%	HRS50-72-12
50 - 100V	15V@3.30A	49.50W	150mVp-p	90%	HRS50-72-15
50 - 100V	24V@2.10A	50.40W	240mVp-p	88%	HRS50-72-24
65 - 150V	3.3V@15.00A	49.50W	75mVp-p	86%	HRS50-96-3R3
65 - 150V	5V@10.00A	50.00W	75mVp-p	89%	HRS50-96-5
65 - 150V	12V@4.10A	49.20W	120mVp-p	89%	HRS50-96-12
65 - 150V	15V@3.30A	49.50W	150mVp-p	89%	HRS50-96-15
65 - 150V	24V@2.10A	50.40W	240mVp-p	87%	HRS50-96-24

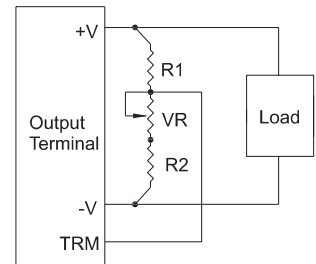
PIN ASSIGNMENTS

Single Output
1. +Vin
2. CNT
3. Case
4. - Vin
5. - Vout
6. No Pin
7. TRM
8. No Pin
9. +Vout

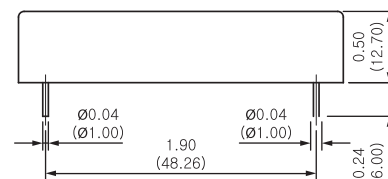
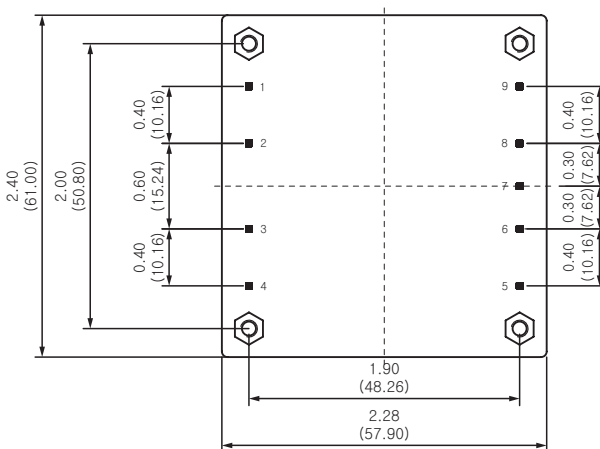
EXTERNAL PARTS

Model	Output Voltage	VR	R1	R2
HRS50	3.3V	500Ω	1kΩ	560Ω
	5V	1kΩ	1kΩ	680Ω
	12V	1kΩ	3.9kΩ	680Ω
	15V	1kΩ	5.6kΩ	750Ω
	24V	2kΩ	24kΩ	2kΩ

TRIM METHOD



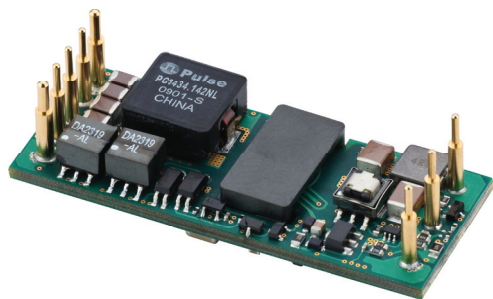
DIMENSIONS



NOTE 1 All dimension are in inches (mm)
 2 Weight : 75g or less
 3 Case Material : Al

NES50 Series

50W ISOLATED DC-DC CONVERTER



FEATURES 48V Inputs / Single Output

- High Efficiency
- Industrial Standard Eight-Brick Pin Map
- Low No-Load Power Dissipation
- Precision Thermal Protection (Accuracy $\pm 3^{\circ}\text{C}$)
- Over Current and Short Circuit Protection
- Under Voltage Lockout (UVLO)
- Input Over Voltage Protection
- Output Over Voltage Protection
- Over Temperature Protection (OTP)
- Remote On/Off Control (CNT)
- Output Voltage Adjustment (TRM)
- Positive / Negative Remote Sense
- 2 Year Warranty

ELECTRICAL SPECIFICATIONS

Input

- Input Range DC 48V(36 - 75)
- Efficiency 87 - 88% Typ.
- Remote On / Off
 - On : 2.5 to 6 Vdc or Open
 - Off : 0 to 0.8 Vdc

Output

- Output Voltages 1.5V, 1.8V, 2.5V, 3.3V
- Output Voltage Tolerance $\pm 2.0\%$
- Line Regulation $\pm 0.5\%$ Max.
- Load Regulation $\pm 0.5\%$ Max.
- Ripple and Noise 50mVp-p
- Dynamic Response 100mV
(50% $\rightarrow$ 75%, 75% $\rightarrow$ 50%, 0.1A/ μs)
- Sense Range 10% Max.
- Trim Range $\pm 10\%$ Max.

Protection Circuit

- Over Current Protection Over 105% of Rating (Auto-Recovery)
- Over Voltage Protection About 125% of Rating (Latch-Up)
- Input Under Voltage Protection DC 32V (Auto-Recovery)
- Input Over Voltage Protection DC 80V (Auto-Recovery)
- Over Temperature Protection 125 $^{\circ}\text{C}$ (Auto-Recovery)

Electrically Isolated

- Isolation Input-Output / DC1500V

ENVIRONMENTAL

- Operating Temperature Range -40 $^{\circ}\text{C}$ ~ 85 $^{\circ}\text{C}$
- Operating Humidity (Non-Condensing) 20% ~ 90%RH
- Storage Temperature Range -40 $^{\circ}\text{C}$ ~ 125 $^{\circ}\text{C}$
- Storage Humidity (Non-Condensing) 10% ~ 95%RH
- MTBF (MIL-HDBK-217F) 7.0×10^5 hrs

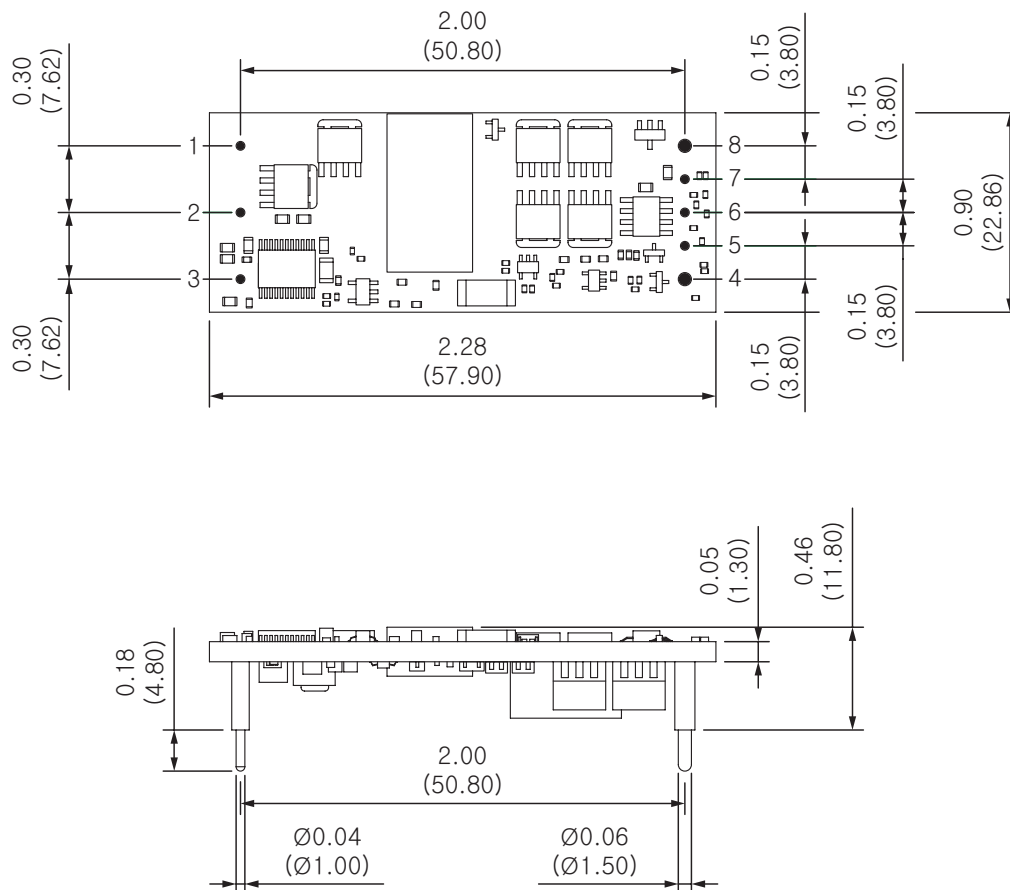
Input		Output	Maximum Power	Ripple&Noise Max.	Efficiency Typ.	Model Number
36 - 75V		1.5V@30.00A	45.00W	50mVp-p	87%	NES50-48-1R5
36 - 75V		1.8V@30.00A	54.00W	50mVp-p	87%	NES50-48-1R8
36 - 75V		2.5V@20.00A	50.00W	50mVp-p	86%	NES50-48-2R5
36 - 75V		3.3V@20.00A	66.00W	50mVp-p	88%	NES50-48-3R3

- ## PIN ASSIGNMENTS

1. +Vin
2. CNT
3. - Vin

4. - Vout
5. - Sense
6. TRM
7. +Sense
8. +Vout

DIMENSIONS



Main Branch +82-2-855-4955 / sales@powerplaza.co.kr

UQC18A Series

INTERMEDIATE BUS DC-DC CONVERTER



FEATURES 48V Inputs

- High Efficiency
- Industry Standard Eight-Brick
- Single Unregulated Output
- Constant Switching Frequency
- Synchronous Rectifier Topology
- Input Under Voltage Lock Out
- Output Short Circuit Protection
- Over Current Protection (OCP)
- Over Temperature Protection (OTP)
- Remote On/Off Control (CNT)
- 1500Vdc Input to Output Isolation
- 3 Year Warranty

ELECTRICAL SPECIFICATIONS

Input

- Input Range DC 48V(36 - 60)
- Efficiency 95% Typ.
- Remote On / Off

On : Open
Off : Short to - Vin

Output

- Output Voltages 12V
- Output Voltage Tolerance $\pm 2.0\%$
- Line Regulation $V_{in} / 4$ (**NOTE 1**)
- Load Regulation $\pm 8.0\%$ Max.
- Temp Drift $\pm 2.0\%$ Typ.
- Switching Frequency 200kHz
- Ripple and Noise 150mVp-p (@12V) (**NOTE 2**)

Electrically Isolated

- Isolation Input-Output / DC1500V

ENVIRONMENTAL

- Operating Temperature Range $-40^{\circ}\text{C} \sim 85^{\circ}\text{C}$
- Operating Humidity (Non-Condensing) 20% ~ 90%RH
- Storage Temperature Range $-55^{\circ}\text{C} \sim 125^{\circ}\text{C}$
- Storage Humidity (Non-Condensing) 10% ~ 95%RH
- Cooling Method Convection Cooled / Forced Air
- MTBF (MIL-HDBK-217F) 5.1×10^5 hrs

NOTE 1. Unregulated output will track input voltage with 6:1 or 4:1 ratio.
 2. Ripple & Noise is tested / specified over a 20MHz bandwidth and are tested specified with 1 μ F / 15 μ F ceramic / tantalum output.

ORDERING INFORMATION

Input	Output	Maximum Power	Ripple & Noise Max.	Efficiency Typ.	Model Number
36 - 60V	12V@18.00A	200.00W	150mVp-p	95%	UQC18A-48-12

1. Typical at $T_a = +25^{\circ}\text{C}$ under nominal line voltage and full load conditions.

2. Ripple & Noise is tested / specified over a 20MHz bandwidth and are tested specified with $1\mu\text{F}$ / $15\mu\text{F}$ ceramic / tantalum output.

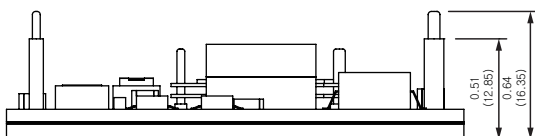
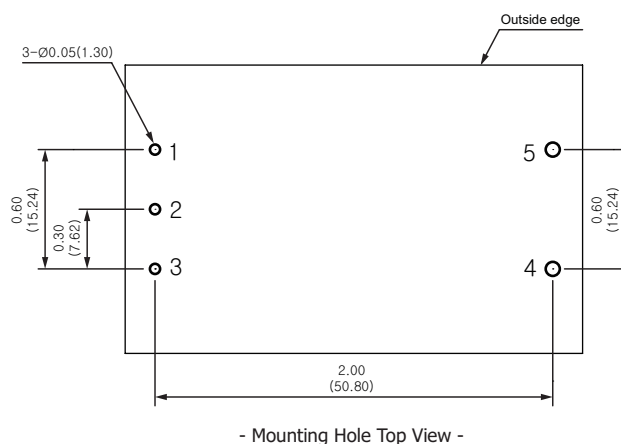
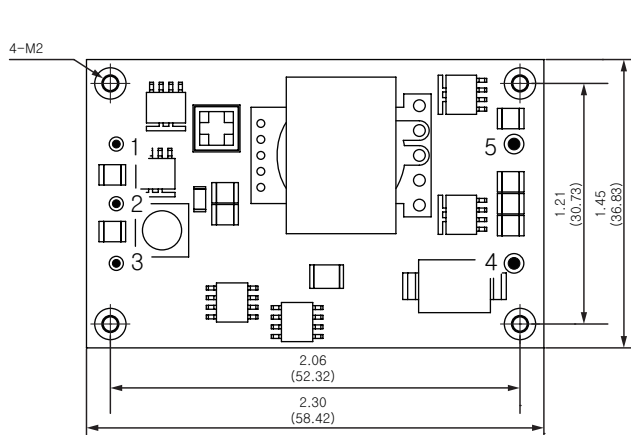
PIN ASSIGNMENTS

Single Output

1. - Vin
2. CNT
3. +Vin

4. +Vout
5. - Vout

DIMENSIONS



NOTE 1 All dimension are in inches (mm)
 2 Weight : 40g or less
 3 Cooling Plate Material : Aluminium Base Plate

SF5, 10 Series

5/10W AC-DC CONVERTER



FEATURES Single, Dual Outputs

- High Efficiency
- Encapsulated, Compact Case
- Universal Input
- External EMI Filter Needed
- Surface Mounting Technology
- 100kHz (SF5), 132kHz (SF10) Fixed Frequency
- Thermal Shut Down / Output Short Circuit Protection
- Low Output Ripple / Noise
- Isolated Output
- Over Voltage Protection
- Over Current Protection
- Low Power Consumption at No Load (Max. 0.3W)
- 5 Year Warranty

ELECTRICAL SPECIFICATIONS

Input

- Input Range AC 85V - 264V (or DC 110 - 340V) 50/60Hz (**NOTE**)
- Current $\left\{ \begin{array}{l} \text{SF55 : 0.15A Max. @110Vac / 0.08A Max. @220Vac} \\ \text{SF10 : 0.25A Max. @110Vac / 10.13A Max. @220Vac} \end{array} \right.$
- Frequency 47 - 440Hz Max. (50 - 60Hz Typ.)
- Efficiency 68-81% Typ.
- Inrush Current (at Cold Start) 20A Max. @120Vac / 40A Max. @240Vac
- Leakage Current 0.5mA Max. @110Vac / 0.75mA Max. @220Vac

Output

- Output Voltage Tolerance $\pm 2.0\%$ (Single and Uncomplementary Dual), $\pm 3.0\%$ (Complementary Dual)
- Ripple and Noise $\pm 1.0\%$ Max.
- Line Regulation $\pm 1.0\%$ Max.
- Load Regulation $\pm 1.0\%$ Max. @Output 1 / $\pm 2.0\%$ Max. @Output 2
- Dynamic Load Regulation $\pm 3.0\%$ Max. @Output 1
- Temp Drift $\pm 1.0\%$ Typ.
- Rising Time 100ms Max.
- Holding Time 10ms Min.

Protection Circuit

- Over Current Protection Work Over 105% of Rating (Recovers Automatically)
- Over Voltage Protection Work at 130 - 150% of Rating (Zenor Clamp)
- Over Temperature Protection SF55 : 150°C Min / SF10 : 130°C Latching, Recovering

Electrically Isolated

- Input - Output AC 3KV, 1minute, 10mA / DC 500V, 100M Ω Min.

ENVIRONMENTAL

- Operating Temperature Range -20°C ~ 70°C
- Operating Humidity (Non-Condensing) 20% ~ 90%RH
- Storage Temperature Range -40°C ~ 80°C
- Storage Humidity (Non - Condensing) 10% ~ 95%RH

- Vibration 10 ~ 55Hz at 10G 3Minutes Period
- Impact 50G for 11ms, once on each X, Y and Z-axis
- Cooling Method Convection
- MTBF (MIL-HDBK-217F) 4.5×10^5 hrs
- Safety (Single Output)

UL (UL 60950-1, CSA C22.2 NO.60950-1) : E227474

CB (IEC 60950-1) / CE_LVD (EN 60950-1) through TÜV
- EMC (Single Output) *Approved EN 61204-3 CLASS B / EN 6100-3-2 / EN 61000-3-3 through TÜV

* To meet the standard of EN61204-3 Class-B, use the external noise filter between L and N (Refer to manual)

NOTE For cases where conformance to various safety specs(UL, CSA, CE, CB etc)are required input voltage and frequency range will be 100-240 Vac, 50~60Hz.

ORDERING INFORMATION

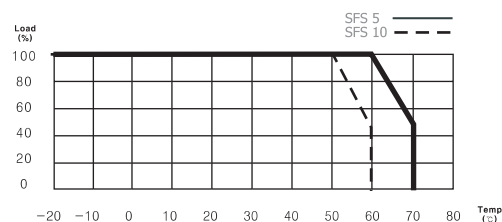
Input	Output1	Output2	Maximum Power	Ripple&Noise Max.	Efficiency Typ.	Model Number
AC 85 ~ 264V or DC 110 ~ 340V	3.3V@1.25A		4.125W	80mVp-p	68%	SFS5-3R3(C)
	5V@1.00A		5.00W	80mVp-p	75%	SFS5-5(C)
	12V@0.42A		5.00W	120mVp-p	77%	SFS5-12(C)
	15V@0.33A		5.00W	150mVp-p	77%	SFS5-15(C)
	24V@0.21A		5.00W	200mVp-p	77%	SFS5-24(C)
	+12V@0.21A	-12V@0.21A	5.00W	120/120mVp-p	72%	SFD5-1212
	+15V@0.17A	-15V@0.17A	5.00W	150/150mVp-p	72%	SFD5-1515
	3.3V@2.50A		8.25W	80mVp-p	70%	SFS10-3R3(C)
	5V@2.00A		10.00W	80mVp-p	76%	SFS10-5(C)
	12V@0.83A		9.96W	120mVp-p	77%	SFS10-12(C)
	15V@0.66A		9.90W	150mVp-p	78%	SFS10-15(C)
	24V@0.42A		10.08W	200mVp-p	80%	SFS10-24(C)
	+5V@1.00A	-5V@1.00A	10.00W	50/50mVp-p	76%	SFD10-0505
	+12V@0.45A	-12V@0.45A	10.80W	120/120mVp-p	80%	SFD10-1212
	+15V@0.35A	-15V@0.35A	10.50W	150/150mVp-p	81%	SFD10-1515

C: Chassis Mount Type

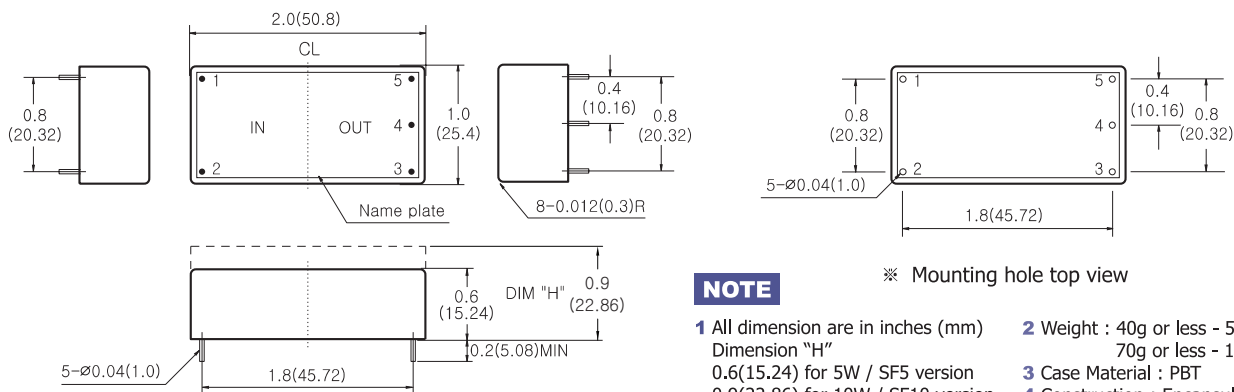
PIN ASSIGNMENTS

Single Output	Dual Output
1. AC(N)	1. AC(N)
2. AC(L)	2. AC(L)
3. No Pin	3. - Vout
4. - Vout	4. GND
5. +Vout	5. +Vout

DERATING CURVE



DIMENSION



NOTE

- 1 All dimension are in inches (mm)
- 2 Weight : 40g or less - 5W
70g or less - 10W
- 3 Case Material : PBT
- 4 Construction : Encapsulated, Soft Pot

CFS5 Series

5W ISOLATED AC-DC CONVERTER



FEATURES Single Output

- High Efficiency
- Low Profile, Small Size Case
- Non-Potting Type
- 100KHz Fixed Switching Frequency
- Low Power Consumption at no load (0.3W@220VAC)
- Universal Input Range
- Over Current Protection (Hiccup)
- Over Voltage Protection (Zenor Clamp)
- Output Short Circuit Protection
- Input-Output Isolated
- 5 Year Warranty

ELECTRICAL SPECIFICATIONS

Input

- Voltage AC 85V - 264V (or DC 110 - 340V) 50/60Hz **(NOTE)**
- Current 0.15A Max. @110Vac / 0.08A Max. @220Vac
- Frequency 44 - 140Hz Max. (50 - 60Hz Typ.)
- Efficiency 68 - 77% Typ.
- Inrush Current (at Cold Start) 20A Max. @110Vac / 40A Max. @220Vac
- Leakage Current 0.5mA Max. @110Vac / 0.75mA Max. @220Vac

Output

- Output Voltage Tolerance $\pm 2.0\%$ (Single and Uncomplementary Dual)
- Ripple and Noise $\pm 1.0\%$ Max.
- Line Regulation $\pm 1.0\%$ Max.
- Load Regulation $\pm 1.0\%$ Max.
- Dynamic Load Regulation $\pm 3.0\%$ Max.
- Temp Drift $\pm 1.0\%$ Typ.
- Rising Time 100ms Max.
- Holding Time 10ms Min.

Protection Circuit

- Over Current Protection Work Over 105% of Rating (Recovers Automatically)
- Over Temperature Protection 140°C Min.

Electrically Isolated

- Input - Output AC 3KV, 1min. 10mA / DC 500V, 100M Ω Min.

ENVIRONMENTAL

- Operating Temperature Range -10°C ~ 60°C
- Operating Humidity (Non-Condensing) 5% ~ 95%RH
- Storage Temperature Range -20°C ~ 70°C
- Storage Humidity (Non - Condensing) 20% ~ 90%RH

- Vibration 10 ~ 55Hz at 10G 3Minutes Period
- Impact 50G for 11ms, once on each X, Y and Z-axis
- Cooling Method Convection
- MTBF (MIL-HDBK-217F) 4.5×10^5 hrs

* To meet the standard of EN61204-3 Class-B, use the external noise filter between L and N (Refer to manual)

NOTE For cases where conformance to various safety specs(UL, CSA, CE, CB etc)are required input voltage and frequency rabge will be 100-240 Vac, 50~60Hz.

ORDERING INFORMATION

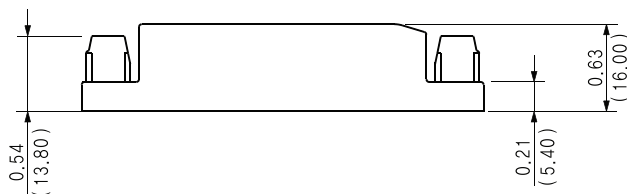
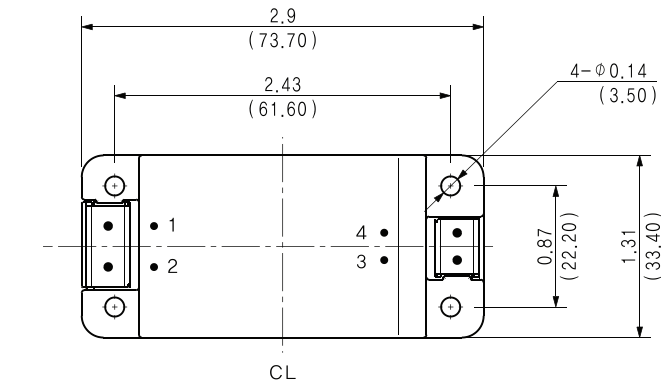
Input	Output	Maximum Power	Ripple&Noise Max.	Efficiency Typ.	Model Number
AC 85 ~ 264V or DC 110 ~ 340V	3.3V@1.25A	4.125W	80mVp-p	68%	CFS5-3R3
	5V@1.00A	5.00W	80mVp-p	75%	CFS5-5
	12V@0.42A	5.00W	120mVp-p	77%	CFS5-12
	15V@0.33A	5.00W	150mVp-p	77%	CFS5-15
	24V@0.21A	5.00W	200mVp-p	77%	CFS5-24

PIN ASSIGNMENTS

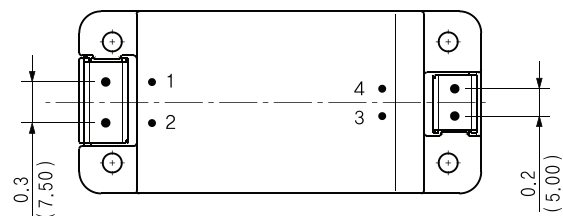
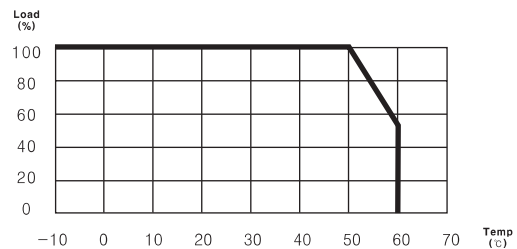
Single Output

1. AC(N)
2. AC(L)
3. - Vout
4. +Vout

DIMENSION



DERATING CURVE



※ Mounting hole top view

NOTE

- 1 All dimensions are in mm
- 2 Weight : 58.8g or less
- 3 Case Material : PBT

FS10 Series

10W Series AC-DC CONVERTER



FEATURES Single, Dual, Triple Outputs

- High Efficiency
- Encapsulated, Compact Case
- Universal Input
- Surface Mounting Technology
- Built-in EMI Filter
- Inrush Current Limit
- Fixed Output Voltage
- Thermal Shutdown
- Output Short Circuit Protection
- Low Output Ripple / Noise
- Isolated Output
- 2 Year Warranty

ELECTRICAL SPECIFICATIONS

Input

- Voltage AC 85V - 264V (or DC 110 - 340V) 50/60Hz (**NOTE**)
- Current 0.21A Max. @110Vac / 0.11A Max. @220Vac
- Frequency 47 - 440Hz Max. (50 - 60Hz Typ.)
- Efficiency 70 - 82% Typ.
- Inrush Current (at cold start) 30A Max. @110Vac / 60A Max. @220Vac
- Leakage Current 0.5mA Max. @110Vac / 0.75mA Max. @220Vac

Output

- Output Voltage Tolerance $\pm 2.0\%$ (Single and Uncomplementary Dual) / $\pm 3\%$ (Complementary Dual)
- Ripple and Noise $\pm 1.0\%$ Max.
- Line Regulation $\pm 1.0\%$ Max.
- Load Regulation $\pm 1.0\%$ Max. @Output1 / $\pm 2.0\%$ Max. @Output2,3
- Dynamic Load Regulation $\pm 3.0\%$ Max. @Output1
- Temp Drift $\pm 1.0\%$ Typ.
- Rising Time 400ms Max.
- Holding Time 10ms Min.

Protection Circuit

- Over Current Protection Work Over 105% of Rating & Recovers Automatically
- Over Temperature Protection 140°C Min.

Electrically Isolated

- Input - Output AC 3KV, 1Min. 10mA / DC 500V, 100M Ω Min.
- Input - FG AC 2KV, 1Min. 10mA / DC 500V, 100M Ω Min.
- Output - FG AC 0.5KV, 1Min. 10mA / DC 500V, 70M Ω Min.

ENVIRONMENTAL

- Operating Temperature Range -10°C ~ 60°C
- Operating Humidity (Non-Condensing) 20% ~ 90%RH
- Storage Temperature Range -20°C ~ 70°C
- Storage Humidity (Non - Condensing) 20% ~ 90%RH

- Vibration 10 ~ 55Hz at 10G 3Minutes Period
- Impact 50G for 11ms, once on each X, Y and Z-axis
- Cooling Method Convection
- MTBF (MIL-HDBK-217F) 3.5×10^5 hrs
- Safety (Single Output) *Approved

[

UL (UL 60950, CSA C22.2 NO.60950) : E227474
 CB (IEC 60950-1) / CE_LVD (EN 60950) through TÜV
- Safety (Dual Output) *Approved CE_LVD (EN 60950) through TÜV
- EMC (Single Output) *Approved EN 61204-3 CLASS B / EN 6100-3-2 / EN 61000-3-3 through TÜV

* To meet the standard of EN61204-3 Class-B, use the external noise filter between L and N (Refer to manual)

NOTE For cases where conformance to various safety specs(UL, CSA, CE, CB etc)are required input voltage and frequency rabge will be 100-240 Vac, 50~60Hz.

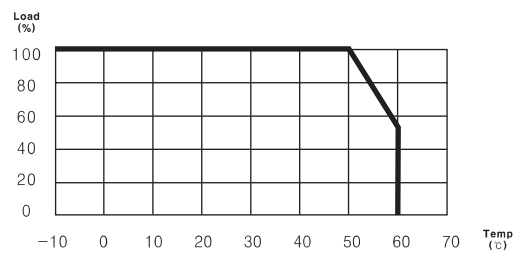
ORDERING INFORMATION

Input	Output1	Output2	Output3	Maximum Power	Ripple&Noise Max.	Efficiency Typ.	Model Number
AC 85 ~ 264V or DC 110 ~ 340V	3.3V@2.00A			6.60W	80mVp-p	70%	FS10-3R3
	5V@2.00A			10.00W	80mVp-p	75%	FS10-5
	12V@0.90A			10.80W	120mVp-p	78%	FS10-12
	15V@0.70A			10.50W	150mVp-p	80%	FS10-15
	24V@0.45A			10.80W	200mVp-p	82%	FS10-24
	+12V@0.45A	-12V@0.45A		10.80W	120/120mVp-p	75%	FSD10-1212
	+15V@0.35A	-15V@0.35A		10.50W	150/150mVp-p	75%	FSD10-1515
	5V@1.50A	+12V@0.15A	-12V@0.15A	11.10W	80/120/120mVp-p	75%	FST10-522M
	5V@1.50A	+15V@0.12A	-15V@0.12A	11.10W	80/150/150mVp-p	75%	FST10-5FFM

PIN ASSIGNMENTS

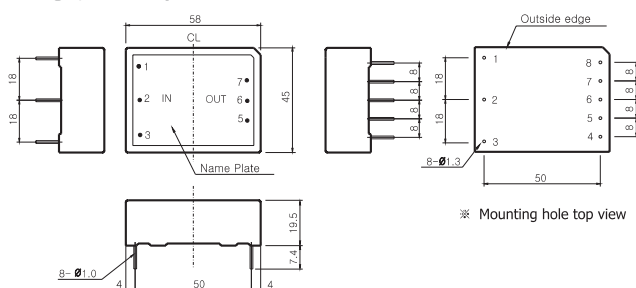
Single Output	Dual Output	Triple Output
1. FG	1. FG	1. FG
2. AC(N)	2. AC(N)	2. AC(N)
3. AC(L)	3. AC(L)	3. AC(L)
4. No Pin	4. No Pin	4. Output 1
5. Output 1	5. Output 1	5. GND
6. No Pin	6. GND	6. Output 2
7. GND	7. Output2	7. GND
8. No Pin	8. No Pin	8. Output 3

DERATING CURVE

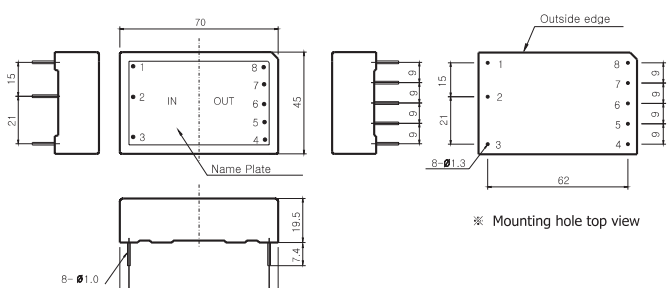


DIMENSION

Single, Dual Output



Triple Output



NOTE

- 1 All dimensions are in mm
- 2 Weight : 90g or less (Single, Dual)
100g or less (Tripe)
- 3 Case Material : PBT

FS15 Series

15W Series AC-DC CONVERTER



FEATURES Single, Dual Outputs

- High Efficiency
- Encapsulated, Compact Case
- Universal Input
- Surface Mounting Technology
- Built-in EMI Filter
- Inrush Current Limit
- Fixed Output Voltage
- Thermal Shutdown
- Output Short Circuit Protection
- Low Output Ripple / Noise
- Isolated Output
- 2 Year Warranty

ELECTRICAL SPECIFICATIONS

Input

- Voltage AC 85V - 264V (or DC 110 - 340V) 50/60Hz (**NOTE**)
- Current 0.31A Max. @110Vac / 0.16A Max. @220Vac
- Frequency 47 - 440Hz Max. (50 - 60Hz Typ.)
- Efficiency 71 - 78% Typ.
- Inrush Current (at Cold Start) 30A Max. @110Vac / 60A Max. @220Vac
- Leakage Current 0.5mA Max. @110Vac / 0.75mA Max. @220Vac

Output

- Output Voltage Tolerance $\pm 2.0\%$ (Single and Uncomplementary Dual)
 $\pm 3.0\%$ (Complementary Dual)
- Ripple and Noise $\pm 1.0\%$ Max.
- Line Regulation $\pm 1.0\%$ Max.
- Load Regulation $\pm 1.0\%$ Max.
- Dynamic Load Regulation $\pm 3.0\%$ Max.
- Temp Drift $\pm 1.0\%$ Typ.
- Rising Time 400ms Max.
- Holding Time 10ms Min.

Protection Circuit

- Over Current Protection Work Over 105% of Rating (Recovers Automatically)
- Over Temperature Protection 140°C Min.

Electrically Isolated

- Input - Output AC 3KV, 1min. 10mA / DC 500V, 100M Ω Min.
- Input - FG AC 2KV, 1min. 10mA / DC 500V, 100M Ω Min.
- Output - FG AC 0.5KV, 1min. 10mA / DC 500V, 700M Ω Min.

ENVIRONMENTAL

- Operating Temperature Range -10°C ~ 60°C
- Operating Humidity (Non-Condensing) 20% ~ 90%RH
- Storage Temperature Range -20°C ~ 70°C
- Storage Humidity (Non - Condensing) 20% ~ 90%RH

- Vibration 10 ~ 55Hz at 10G 3Minutes Period
- Impact 50G for 11ms, once on each X, Y and Z-axis
- Cooling Method Convection
- MTBF (MIL-HDBK-217F) 3.5×10^5 hrs
- Safety (Single Output) *Approved

[

UL (UL 60950, CSA C22.2 NO.60950) : E227474
 CB (IEC 60950-1) / CE_LVD (EN 60950) through TÜV
- EMC (Single Output) *Approved EN 61204-3 CLASS B / EN 6100-3-2 / EN 61000-3-3 through TÜV

* To meet the standard of EN61204-3 Class-B, use the external noise filter between L and N (Refer to manual)

NOTE For cases where conformance to various safety specs(UL, CSA, CE, CB etc)are required input voltage and frequency rabge will be 100-240 Vac, 50~60Hz.

ORDERING INFORMATION

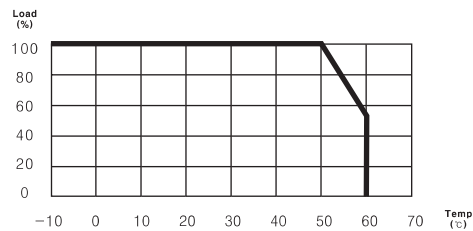
Input	Output1	Output2	Maximum Power	Ripple&Noise Max.	Efficiency Typ.	Model Number
AC 85 ~ 264V or DC 110 ~ 340V	3.3V@3.00A		9.90W	80mVp-p	71%	FS15-3R3(C)
	5V@3.00A		15.00W	80mVp-p	75%	FS15-5(C)
	12V@1.30A		15.60W	120mVp-p	78%	FS15-12(C)
	15V@1.00A		15.00W	150mVp-p	78%	FS15-15(C)
	24V@0.65A		15.60W	200mVp-p	78%	FS15-24(C)
	+12V@0.65A	-12V@0.65A	15.60W	120/120mVp-p	75%	FSD15-1212
	+15V@0.50A	-15V@0.50A	15.00W	150/150mVp-p	75%	FSD15-1515

C: Chassis Mount Type

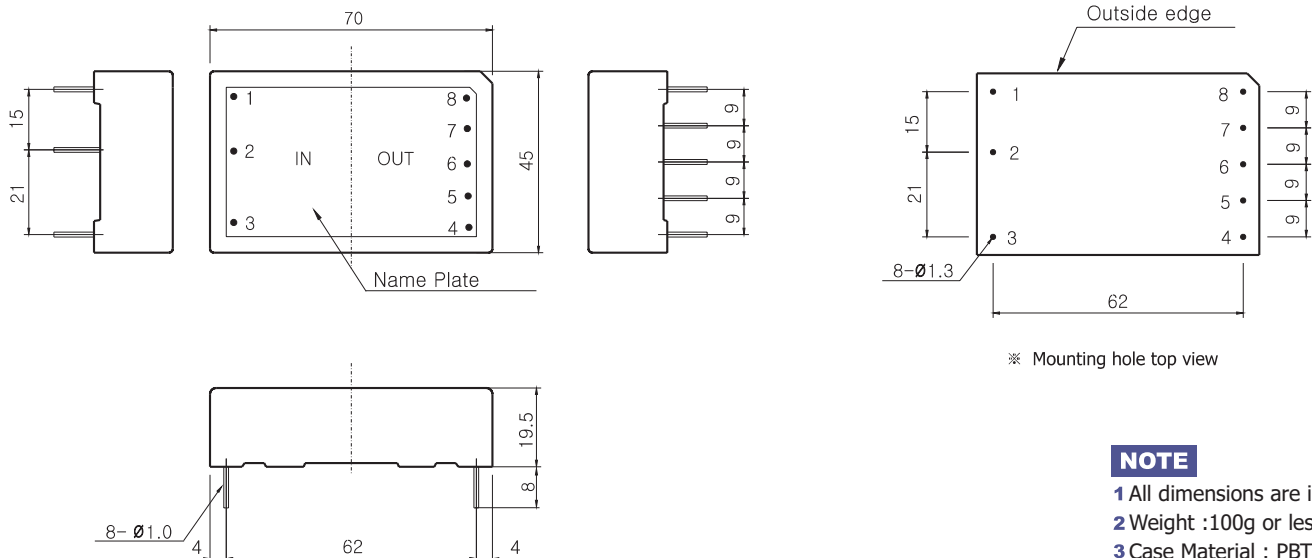
PIN ASSIGNMENTS

Single Output	Dual Output
1. FG	1. FG
2. AC(N)	2. AC(N)
3. AC(L)	3. AC(L)
4. No Pin	4. No Pin
5. Output 1	5. Output 1
6. No Pin	6. GND
7. GND	7. Output 2
8. No Pin	8. No Pin

DERATING CURVE



DIMENSION



NOTE

- 1 All dimensions are in mm
- 2 Weight :100g or less
- 3 Case Material : PBT



FEATURES Single, Dual Outputs

- High Efficiency
- Encapsulated, Compact Case
- Universal Input
- Surface Mounting Technology
- Built-in EMI Filter
- Inrush Current Limit
- Fixed Output Voltage
- Thermal Shutdown
- Low Power Consumption at No Load (0.2W)
- Output Short Circuit Protection
- Low Output Ripple / Noise
- Isolated Output
- 2 Year Warranty

ELECTRICAL SPECIFICATIONS

Input

- Voltage AC 85V - 264V (or DC 110 - 340V)
- Current 0.34A Max. @110Vac / 0.58A Max. @220Vac
- Frequency 47 - 440Hz Max. (50 - 60Hz Typ.)
- Efficiency 77 - 87% Typ.
- Inrush Current (at Cold Start) 30A Max. @110Vac / 60A Max. @220Vac
- Leakage Current 0.5mA Max. @110Vac / 0.75mA Max. @220Vac

Output

- Output Voltage Tolerance $\pm 2.0\%$ (Single and Uncomplementary Dual)
 $\pm 3.0\%$ (Complementary Dual)
- Ripple and Noise $\pm 1.0\%$ Max.
- Line Regulation $\pm 1.0\%$ Max.
- Load Regulation $\pm 1.0\%$ Max.
- Dynamic Load Regulation $\pm 3.0\%$ Max.
- Temp Drift $\pm 1.0\%$ Typ.
- Rising Time 400ms Max.
- Holding Time 10ms Min.

Protection Circuit

- Over Current Protection Work Over 105% of Rating (Recovers Automatically)
- Over Temperature Protection 140°C Min.

Electrically Isolated

- Input - Output AC 3KV, 1Min. 10mA / DC 500V, 100M Ω Min.
- Input - FG AC 2KV, 1Min. 10mA / DC 500V, 100M Ω Min.
- Output - FG AC 0.5KV, 1Min. 10mA / DC 500V, 70M Ω Min.

ENVIRONMENTAL

- Operating Temperature Range -10°C ~ 60°C
- Operating Humidity (Non-Condensing) 20% ~ 90%RH
- Storage Temperature Range -20°C ~ 70°C
- Storage Humidity (Non - Condensing) 20% ~ 90%RH

- Vibration 10 ~ 55Hz at 10G 3Minutes Period
- Impact 50G for 11ms, once on each X, Y and Z-axis
- Cooling Method Convection
- MTBF (MIL-HDBK-217F) 3.0×10^5 hrs
- Safety (Single Output) *Approval Pending
 - UL (UL 60950, CSA C22.2 NO.60950) : E227474
 - CE_LVD (EN 60950) through TÜV
- Noise Meets Fcc Class B (Need External Filter)

* To meet the standard of EN61204-3 Class-B, use the external noise filter between L and N (Refer to manual)

ORDERING INFORMATION

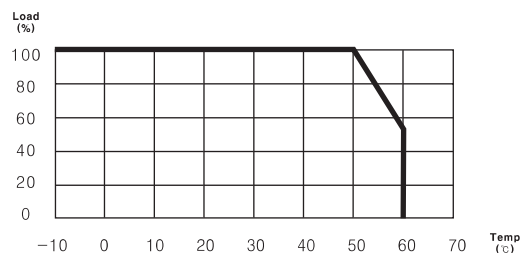
Input	Output1	Output2	Output3	Maximum Power	Ripple&Noise Max.	Efficiency Typ.	Model Number
AC 85 ~ 264V or DC 110 ~ 340V	3.3V@6.00A			19.80W	80mVp-p	77%	eFS30-3R3(C)
	5V@6.00A			30.00W	80mVp-p	81%	eFS30-5(C)
	12V@2.50A			30.00W	120mVp-p	85%	eFS30-12(C)
	15V@2.00A			30.00W	150mVp-p	87%	eFS30-15(C)
	24V@1.25A			30.00W	200mVp-p	88%	eFS30-24(C)
	+12V@1.25A	-12V@1.25A		30.00W	120/120mVp-p	86%	eFD30-1212
	+15V@1.00A	-15V@1.00A		30.00W	150/150mVp-p	87%	eFD30-1515

C: Chassis Mount Type

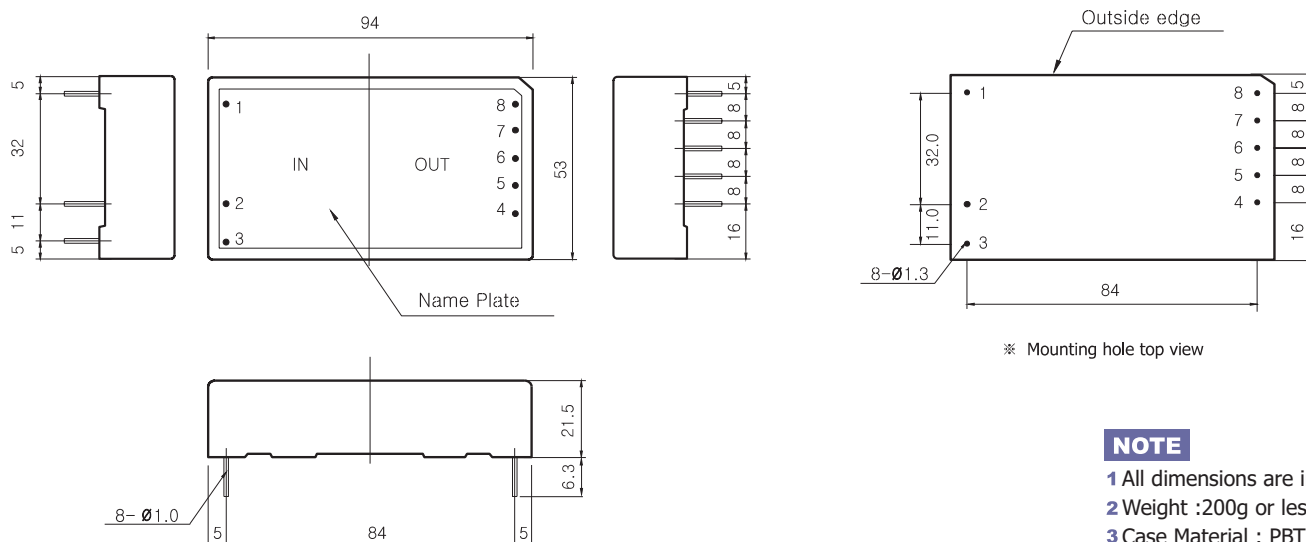
PIN ASSIGNMENTS

Single Output	Dual Output	Triple Output
1. FG	1. FG	1. FG
2. AC(N)	2. AC(N)	2. AC(N)
3. AC(L)	3. AC(L)	3. AC(L)
4. No Connect	4. No Pin	4. Output 1
5. No Pin	5. Output 1	5. GND
6. +Vout	6. GND	6. Output 2
7. No Pin	7. Output2	7. GND
8. - Vout	8. No Pin	8. Output 3

DERATING CURVE



DIMENSION



NOTE

- 1 All dimensions are in mm
- 2 Weight :200g or less
- 3 Case Material : PBT

FS60 Series

60W Series AC-DC CONVERTER



FEATURES Single, Dual Outputs

- High Efficiency
- Encapsulated, Compact Case
- Universal Input
- Surface Mounting Technology
- Built-in EMI Filter
- Inrush Current Limit
- Fixed Output Voltage
- Thermal Shutdown
- Output Short Circuit Protection
- Over Voltage Protection
- Low Output Ripple / Noise
- Isolated Output
- 2 Year Warranty

ELECTRICAL SPECIFICATIONS

Input

- Voltage AC 85V - 264V (or DC 110 - 340V)
- Current 0.49A Max. @110Vac / 0.69A Max. @220Vac
- Frequency 47 - 440Hz Max. (50 - 60Hz Typ.)
- Efficiency 68 - 86% Typ.
- Inrush Current (at Cold Start) 30A Max. @110Vac / 60A Max. @220Vac
- Leakage Current 0.5mA Max. @110Vac / 0.75mA Max. @220Vac

Output

- Output Voltage Tolerance $\pm 2.0\%$ (Single and Uncomplementary Dual)
 $\pm 3.0\%$ (Complementary Dual)
- Ripple and Noise $\pm 1.0\%$ Max.
- Line Regulation $\pm 1.0\%$ Max.
- Load Regulation $\pm 1.0\%$ Max.
- Dynamic Load Regulation $\pm 3.0\%$ Max.
- Temp Drift $\pm 1.0\%$ Typ.
- Rising Time 400ms Max.
- Holding Time 10ms Min.

Protection Circuit

- Over Current Protection Work Over 105% of Rating (Recovers Automatically)
- Over Temperature Protection 140°C Min.

Electrically Isolated

- Input - Output AC 3KV, 1Min. 10mA / DC 500V, 100M Ω Min.
- Input - FG AC 2KV, 1Min. 10mA / DC 500V, 100M Ω Min.
- Output - FG AC 0.5KV, 1Min. 10mA / DC 500V, 70M Ω Min.

ENVIRONMENTAL

- Operating Temperature Range -10°C ~ 60°C
- Operating Humidity (Non-Condensing) 20% ~ 90%RH
- Storage Temperature Range -20°C ~ 70°C
- Storage Humidity (Non - Condensing) 20% ~ 90%RH

- Vibration 10 ~ 55Hz at 10G 3Minutes Period
- Impact 50G for 11ms, once on each X, Y and Z-axis
- Cooling Method Convection
- MTBF (MIL-HDBK-217F) 5.3×10^5 hrs
- Noise Meets Fcc Class B (Need External Filter)

ORDERING INFORMATION

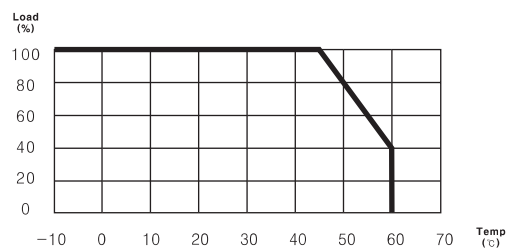
Input	Output1	Output2	Maximum Power	Ripple&Noise Max.	Efficiency Typ.	Model Number
AC 85 ~ 264V or DC 110 ~ 340V	5V@10.00A 12V@5.00A 15V@4.00A 24V@2.50A		50.00W 60.00W 60.00W 60.00W	80mVp-p 120mVp-p 150mVp-p 200mVp-p	82% 87% 86% 89%	FS60-5(C) FS60-12(C) FS60-15(C) FS60-24(C)
	+12V@2.50A +15V@2.00A	-12V@2.50A -15V@2.00A	60.00W 60.00W	120/120mVp-p 150/150mVp-p	86% 87%	FSD60-1212 FSD60-1515

C: Chassis Mount Type

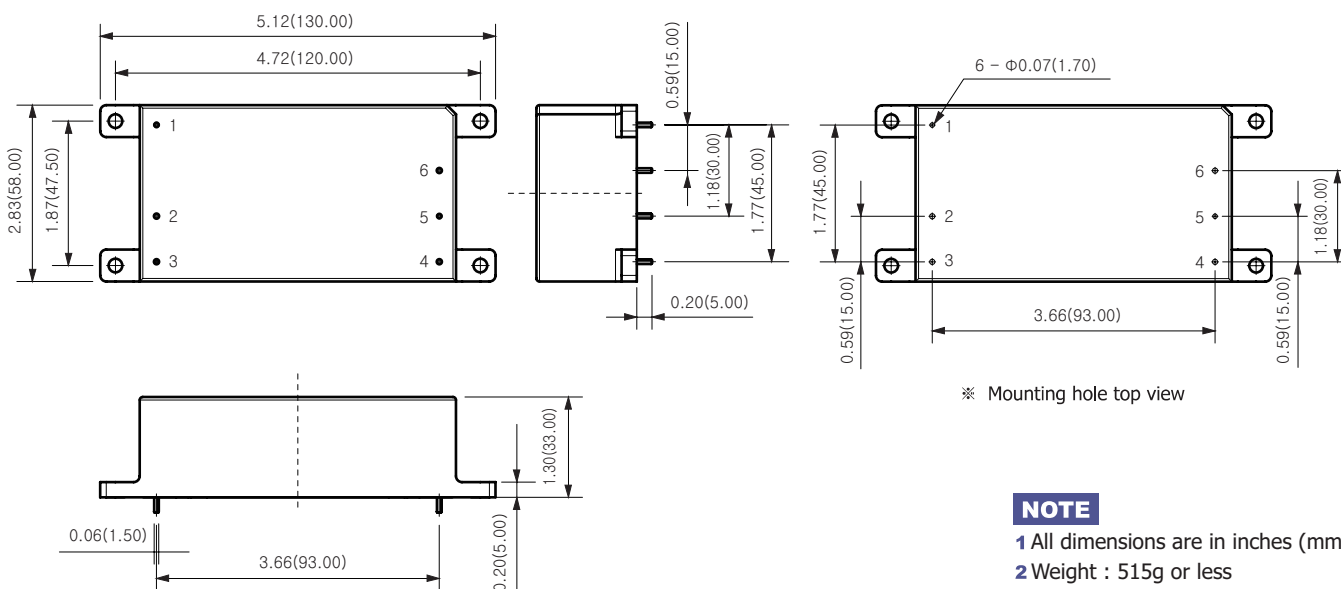
PIN ASSIGNMENTS

Single Output	Dual Output
1. FG	1. FG
2. AC(N)	2. AC(N)
3. AC(L)	3. AC(L)
4. +Vout	4. - Vout
5. - Vout	5. COM
6. NC	6. +Vout

DERATING CURVE



DIMENSION



NOTE

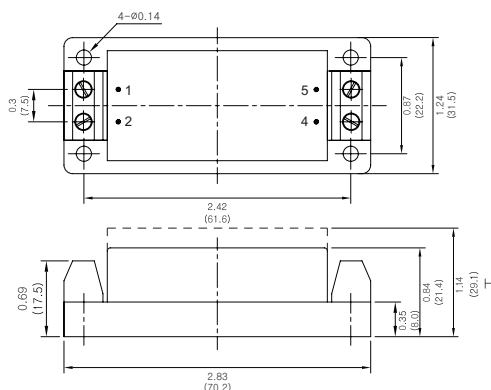
- 1 All dimensions are in inches (mm)
- 2 Weight : 515g or less
- 3 Case Material : PBT

SF/FS Chassis

Chassis Series AC-DC CONVERTER

DIMENSION (Chassis Mount Type - Terminal Block)

SFS5C / SFS10C



PIN ASSIGNMENTS

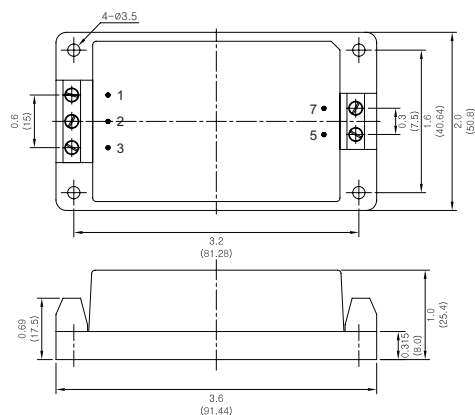
Single Output

- | | |
|----------|-----------|
| 1. AC(N) | 4. - Vout |
| 2. AC(L) | 5. +Vout |

NOTE

- 1 All dimension are in inches (mm)
Dimension "H"
0.84(21.4) for 5W / SF5 version
1.14(29.1) for 10W / SF10 version
- 2 Weight : 60g or less (SFS5C)
90g or less (SFS10C)

FS15C



PIN ASSIGNMENTS

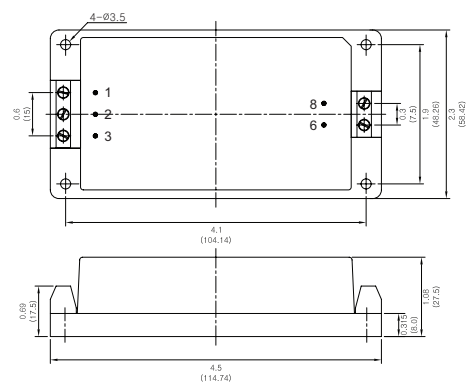
Single Output

- | | |
|----------|-----------|
| 1. FG | 5. +Vout |
| 2. AC(N) | 7. - Vout |
| 3. AC(L) | |

NOTE

- 1 All dimension are in inches (mm)
- 2 Weight : 100g or less

eFS30C



PIN ASSIGNMENTS

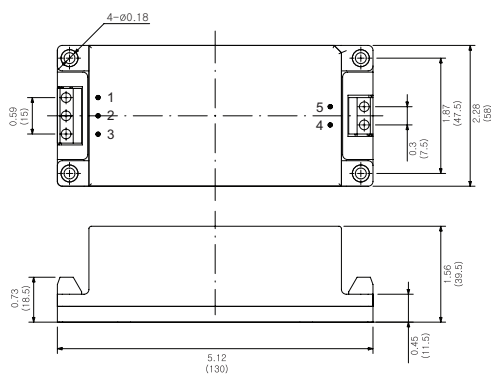
Single Output

- | | |
|----------|-----------|
| 1. FG | 6. +Vout |
| 2. AC(N) | 8. - Vout |
| 3. AC(L) | |

NOTE

- 1 All dimension are in inches (mm)
- 2 Weight : 200g or less

FS60C



PIN ASSIGNMENTS

Single Output

- | | |
|----------|-----------|
| 1. FG | 4. +Vout |
| 2. AC(N) | 5. - Vout |
| 3. AC(L) | |

NOTE

- 1 All dimension are in inches (mm)
- 2 Weight : 560g or less

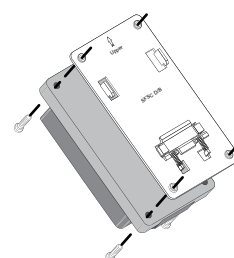
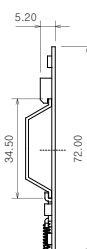
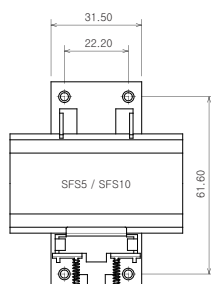
SFS5C/10C-Din-Rail



SPECIAL FEATURES

SFS5-3R3C
SFS5-5C
SFS5-12C
SFS5-15C
SFS5-24C

▲ DIMENSION



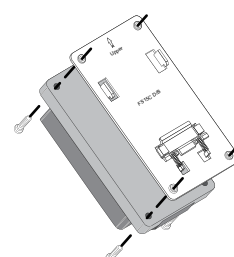
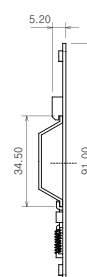
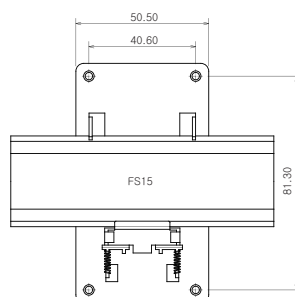
FS15C-Din-Rail



SPECIAL FEATURES

FS15-3R3C
FS15-5C
FS15-12C
FS15-15C
FS15-24C

▲ DIMENSION



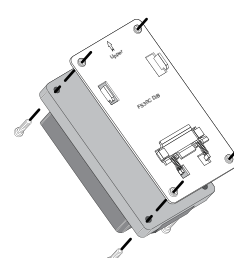
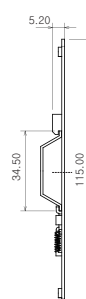
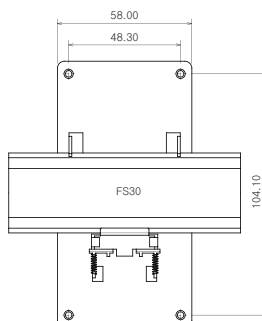
FS30C-Din-Rail



SPECIAL FEATURES

FS30-3R3C
FS30-5C
FS30-12C
FS30-15C
FS30-24C

▲ DIMENSION



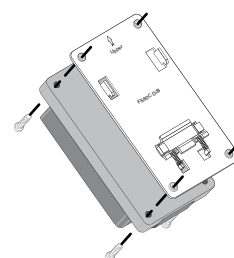
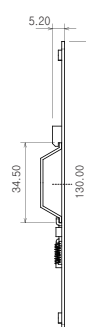
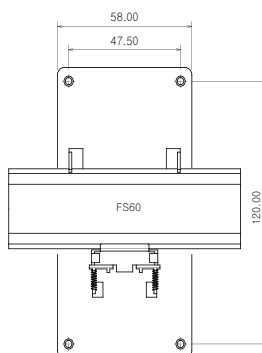
FS60C-Din-Rail

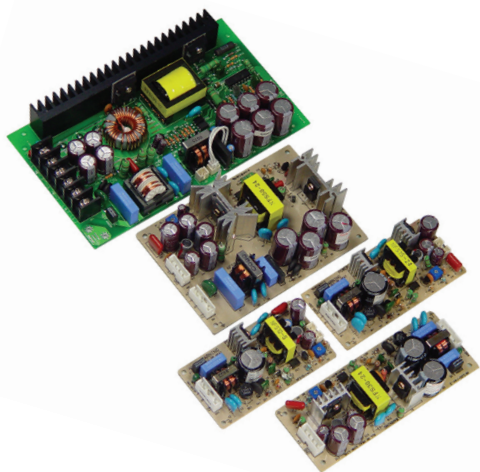


SPECIAL FEATURES

FS60-3R3C
FS60-5C
FS60-12C
FS60-15C
FS60-24C

▲ DIMENSION

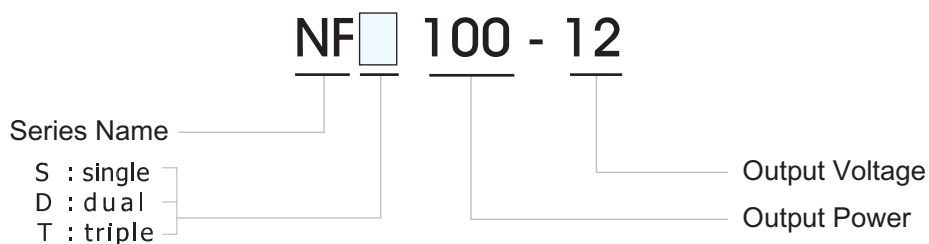




FEATURES

- High Efficiency
- Small, Compact Size
- Universal Input
- Over Current Protection
- Inrush Current Limit
- Adjustable Output Voltage
- Built-in EMI Filter
- Low Output Ripple & Noise
- Isolated Output
- 2 Years Warranty

ORDERING INFORMATION



INPUT

AC85 - 264V or DC110 - 340V : 10W, 15W, 30W
 AC85 - 132V/170 - 264V or DC110 - 340V : 50W, 100W

OUTPUT

5V, 12V, 15V, 24V, 5V/+12V, 5V/+15V, 5V/+24V
 5V/±12V, 5V/±15V, ±5V/+12V

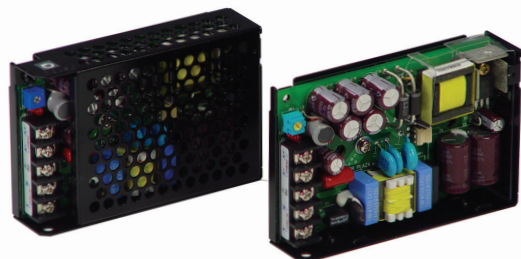
NF Series

Series Name	Input Voltage	Output1	Output2	Output3	Output4	Model
NF 10 	AC85~264V or DC110~340V	5.0V / 2.00A				NFS10-5
		12.0V / 0.90A				NFS10-12
		15.0V / 0.70A				NFS10-15
		24.0V / 0.45A				NFS10-24
NF 15 	AC85~264V or DC110~340V	5.0V / 3.00A				NFS15-5
		12.0V / 1.25A				NFS15-12
		15.0V / 1.00A				NFS15-15
		24.0V / 0.65A				NFS15-24
		5.0V / 2.0A	+12.0V / 0.50A			NFD15-52
		5.0V / 2.0A	+15.0V / 0.35A			NFD15-5F
		5.0V / 2.0A	+24.0V / 0.20A			NFD15-54
		5.0V / 1.5A	+12.0V / 0.30A	-12V / 0.30A		NFT15-522
		5.0V / 1.5A	+15.0V / 0.25A	-15V / 0.25A		NFT15-5FF
NF 30 	AC85~264V or DC110~340V	5.0V / 5.0A				NFS30-5
		12.0V / 2.5A				NFS30-12
		15.0V / 2.0A				NFS30-15
		24.0V / 1.3A				NFS30-24
		5.0V / 3.0A	+12.0V / 1.0A			NFS30-52
		5.0V / 3.0A	+15.0V / 0.8A			NFS30-5F
		5.0V / 3.0A	+24.0V / 0.5A			NFS30-54
		5.0V / 3.0A	+12.0V / 0.7A	-12.0V / 0.3A		NFT30-522A
		5.0V / 3.0A	+12.0V / 0.7A	-5.0V / 0.6A		NFT30-525A
		5.0V / 3.0A	+15.0V / 0.6A	-15.0V / 0.2A		NFT30-5FFA
NF 50 	AC85~132V / 170~264V or DC240~340V	5.0V / 10.0A				NFS50-5
		12.0V / 4.2A				NFS50-12
		15.0V / 3.4A				NFS50-15
		24.0V / 2.1A				NFS50-24
		5.0V / 5.0A	+12.0V / 2.0A			NFS50-52
		5.0V / 5.0A	+15.0V / 1.6A			NFS50-5F
		5.0V / 5.0A	+24.0V / 1.0A			NFS50-54
NF 100 	AC100~132V / 185~264V or DC240~340V	5.0V / 20.0A				NFS100-5
		12.0V / 8.4A				NFS100-12
		15.0V / 6.7A				NFS100-15
		24.0V / 4.2A				NFS100-24

* For more information on NF series, visit our web site at www.powerplaza.com

C15 Series

15W AC-DC CONVERTER



FEATURES Single Output

- High Efficiency
- Small, Compact Size
- Universal Input
- Surface Mounting Technology
- Built-in EMI Filter
- Inrush Current Limit
- Adjustable Output Voltage
- Output Over Current Protection
- Output Over Voltage Protection
- Over Temperature Protection
- Low Output Ripple / Noise
- Isolated Output
- 2 Years Warranty

ELECTRICAL SPECIFICATIONS

Input

- Voltage AC 90V - 264V (or DC 110 - 340V) (**NOTE**)
- Current 0.49A Max.
- Frequency 47 - 440Hz Max. (50 - 60Hz typ.)
- Efficiency 70 - 79% Typ.
- Inrush Current (at cold start) 30A Max. @110Vac / 60A Max. @220Vac
- Leakage Current 0.5mA Max. @110Vac / 0.75mA Max. @220Vac

Output

- Output Voltage Tolerance $\pm 10\%$
- Ripple and Noise $\pm 1.0\%$ Max.
- Line Regulation $\pm 1.0\%$ Max.
- Load Regulation $\pm 1.0\%$ Max.
- Dynamic Load Regulation $\pm 3.0\%$ Max.
- Temperature Drift $\pm 1.0\%$ Typ.
- Rising Time 100ms Max.
- Holding Time 17ms Min.

Protection Circuit

- Over Current Protection Work Over 105% of Rating (Auto-Restart)
- Over Voltage Protection Work at 115~140% of Rating (Latch-Up Mode)
- Over Temperature Protection 140°C Min.

Electrically Isolated

- Input - Output AC 3KV, 1min. 10mA / DC 500V, 100M Ω Min.
- Input - FG AC 2KV, 1min. 10mA / DC 500V, 100M Ω Min.
- Output - FG AC 0.5KV, 1min. 10mA / DC 500V, 70M Ω Min.

NOTE For cases where conformance to various safety specs (UL, CSA, CE, etc) are required, input voltage and frequency range will be 100-240VAC, 50/60Hz.

 ENVIRONMENTAL

- | | |
|---------------------------------------|---|
| • Operating Temperature Range | -10℃ ~ 60℃ |
| • Operating Humidity (Non-Condensing) | 20% ~ 90%RH |
| • Storage Temperature Range | -20℃ ~ 70℃ |
| • Storage Humidity (Non-Condensing) | 20% ~ 90%RH |
| • Vibration | 10 ~ 55Hz at 2G 3Minutes Period |
| • Impact | 20G for 11ms, once on each X, Y and Z-axis |
| • Cooling Method | Natural Air Convection |
| • MTBF (MIL-HDBK-217F) | 1.9 X 10 ⁵ hrs |
| • Safety (Single Output) | UL (UL 60950), CSA C22.2 (NO.60950) : E227474
CB (IEC 60950) / CE_LVD (EN 60950) through TÜV |
| • Noise | Meets CISPR22-B / FCC class B |

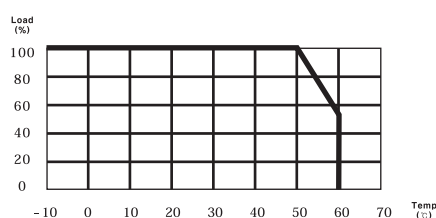
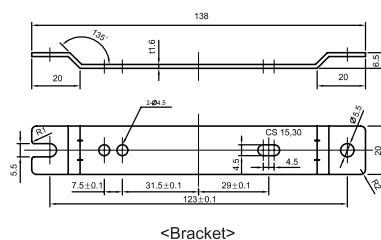
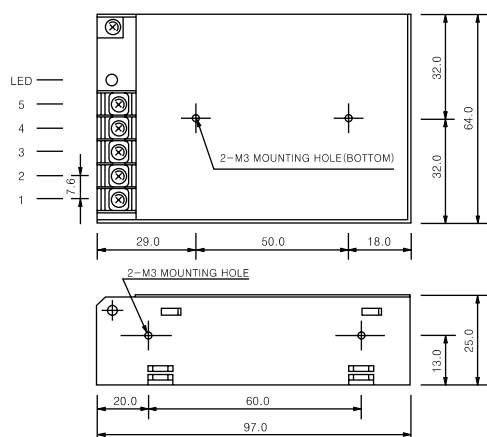
ORDERING INFORMATION

Input	Output	Maximum Power	Ripple&Noise Max.	Efficiency Typ.	Model Number
AC 90 ~ 264V or DC 120 ~340V	3.3V@3.00A	9.90W	30mVp-p	70%	CS15-3R3
	5V@3.00A	15.00W	50mVp-p	71%	CS15-5
	12V@1.25A	15.00W	80mVp-p	72%	CS15-12
	15V@1.00A	15.00W	80mVp-p	77%	CS15-15
	24V@0.63A	15.12W	100mVp-p	79%	CS15-24

PIN ASSIGNMENTS

Connector	Single
CN 1	1. AC(L) 2. AC(N) 3. FG 4. - V 5. +V

DERATING CURVE


DIMENSION

NOTE

- 1 All dimensions are in mm.
- 2 Weight : 210g or less (single)
- 3 Mounting holes(4) for M3 screw , which should not enter
- 4 The supply surface by more than 2.5mm.



FEATURES Single, Dual Output

- High Efficiency
- Small, Compact Size
- Universal Input
- Surface Mounting Technology
- Built-in EMI Filter
- Inrush Current Limit
- Adjustable Output Voltage (Output1)
- Output Over Current Protection
- Output Over Voltage Protection
- Over Temperature Protection
- Low Output Ripple / Noise
- Isolated Output
- 2 Years Warranty

ELECTRICAL SPECIFICATIONS

Input

- Voltage AC 90V - 264V (or DC 110 - 340V) (**NOTE**)
- Current 0.89A Max.
- Frequency 47 - 440Hz Max. (50 - 60Hz typ.)
- Efficiency 72 - 79% Typ.
- Inrush Current (at cold start) 30A Max. @110Vac / 60A Max. @220Vac
- Leakage Current 0.5mA Max. @110Vac / 0.75mA Max. @220Vac

Output

- Output Voltage Tolerance $\pm 10\%$ Typ. @Output1
- Ripple and Noise $\pm 1.0\%$ Max.
- Line Regulation $\pm 1.0\%$ Max.
- Load Regulation $\pm 1.0\%$ Max. @Output1 / $\pm 2.0\%$ Max. @Output2
- Dynamic Load Regulation $\pm 3.0\%$ Max. @Output1
- Temperature Drift $\pm 1.0\%$ Typ.
- Rising Time 100ms Max.
- Holding Time 17ms Min.
- Min Load Output1 Current > Output2 Current (Dual)

Protection Circuit

- Over Current Protection Work Over 105% of Rating (Recovers Automatically)
- Over Voltage Protection Work at 115~140°C of Rating (Latch-Up Mode)
- Over Temperature Protection 80°C Min.

Electrically Isolated

- Input - Output AC 3KV, 1min. 10mA / DC 500V, 100M Ω Min.
- Input - FG AC 2KV, 1min. 10mA / DC 500V, 100M Ω Min.
- Output - FG AC 0.5KV, 1min. 10mA / DC 500V, 70M Ω Min.

NOTE For cases where conformance to various safety specs (UL, CSA, CE, etc) are required, input voltage and frequency range will be 100-240VAC, 50/60Hz.

ENVIRONMENTAL

• Operating Temperature Range	-10℃ ~ 60℃
• Operating Humidity (Non-Condensing)	20% ~ 90%RH
• Storage Temperature Range	-20℃ ~ 70℃
• Storage Humidity (Non-Condensing)	20% ~ 90%RH
• Vibration	10 ~ 55Hz at 2G 3Minutes Period
• Impact	20G for 11ms, once on each X, Y and Z-axis
• Cooling Method	Convection
• MTBF (MIL-HDBK-217F)	2.1 X 10 ⁵ hrs
• Safety (Single Output)	UL (UL 60950), CSA C22.2 (NO.60950) : E227474 CB (IEC 60950) / CE_LVD (EN 60950) through TÜV
• Noise	Meets CISPR22-B / FCC class B

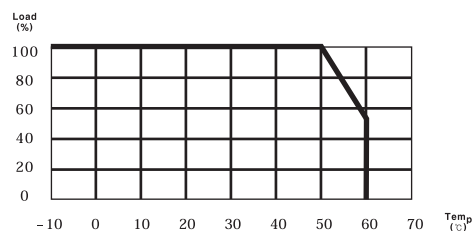
ORDERING INFORMATION

Input	Output1	Output2	Maximum Power	Ripple&Noise Max.	Efficiency Typ.	Model Number
AC 90 ~ 264V or DC 120 ~ 340V	3.3V@6.00A		19.80W	30mVp-p	72%	CS30-3R3
	5V@6.00A		30.00W	50mVp-p	73%	CS30-5
	12V@2.50A		30.00W	100mVp-p	75%	CS30-12
	15V@2.00A		30.00W	120mVp-p	78%	CS30-15
	24V@1.50A		36.00W	150mVp-p	79%	CS30-24
	5V@3.00A	+5.0V@3.00A	30.00W	50/50mVp-p	75%	CD30-55
	5V@3.00A	+12.0V@1.20A	29.40W	50/120mVp-p	77%	CD30-52
	5V@3.00A	+15.0V@1.00A	30.00W	50/150mVp-p	77%	CD30-5F
	5V@3.00A	+24.0V@0.60A	29.40W	50/200mVp-p	78%	CD30-54
	12V@1.20A	+12.0V@1.20A	28.80W	120/120mVp-p	78%	CD30-1212
	15V@1.00A	+15.0V@1.00A	30.00W	150/150mVp-p	78%	CD30-1515

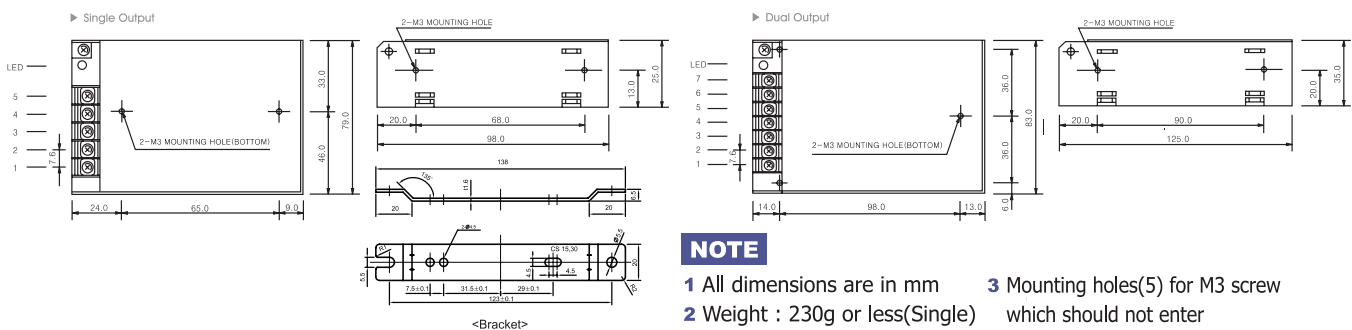
PIN ASSIGNMENTS

Connector	Single	Dual
CN 1	1. AC(L)	1. AC(L)
	2. AC(N)	2. AC(N)
	3. FG	3. FG
	4. - V	4. - V ₂
	5. +V	5. +V ₂
		6. - V ₁
		7. +V ₁

DERATING CURVE



DIMENSION





FEATURES Single Output

- High Efficiency
- Small, Compact Size
- Universal Input
- Surface Mounting Technology
- Built-in EMI Filter
- Inrush Current Limit
- Adjustable Output Voltage
- Output Over Current Protection
- Output Over Voltage Protection
- Over Temperature Protection
- Low Output Ripple / Noise
- Isolated Output
- 2 Years Warranty

ELECTRICAL SPECIFICATIONS

Input

- Voltage AC 90V - 264V (or DC 110 - 340V) (**NOTE**)
- Current 1.25A Max.
- Frequency 47 - 440Hz Max. (50 - 60Hz typ.)
- Efficiency 75 - 82% Typ.
- Inrush Current (at Cold Start) 30A Max. @110Vac / 60A Max. @220Vac
- Leakage Current 0.5mA Max. @110Vac / 0.75mA Max. @220Vac

Output

- Output Voltage Tolerance $\pm 10\%$ Typ.
- Ripple and Noise $\pm 1.0\%$ Max.
- Line Regulation $\pm 1.0\%$ Max.
- Load Regulation $\pm 1.0\%$ Max.
- Dynamic Load Regulation $\pm 3.0\%$ Max.
- Temperature Drift $\pm 1.0\%$ Typ.
- Rising Time 100ms Max.
- Holding Time 17ms Min.

Protection Circuit

- Over Current Protection Work Over 105% of Rating (Recovers Automatically)
- Over Voltage Protection Work at 115~140% of Rating (Latch-Up Mode)
- Over Temperature Protection 80°C Min.

Electrically Isolated

- Input - Output AC 3KV, 1min. 10mA / DC 500V, 100M Ω Min.
- Input - FG AC 2KV, 1min. 10mA / DC 500V, 100M Ω Min.
- Output - FG AC 0.5KV, 1min. 10mA / DC 500V, 70M Ω Min.

NOTE For cases where conformance to various safety specs (UL, CSA, CE, etc) are required, input voltage and frequency range will be 100-240VAC, 50/60Hz.

ENVIRONMENTAL

- Operating Temperature Range -10℃ ~ 60℃
- Operating Humidity (Non-Condensing) 20% ~ 90%RH
- Storage Temperature Range -20℃ ~ 70℃
- Storage Humidity (Non-Condensing) 20% ~ 90%RH
- Vibration 10 ~ 55Hz at 2G 3Minutes Period
- Impact 20G for 11ms, once on each X, Y and Z-axis
- Cooling Method Convection
- MTBF (MIL-HDBK-217F) 1.8×10^5 hrs
- Safety (Single Output)
 - UL (UL 60950), CSA C22.2 (NO.60950) : E227474
 - CB (IEC 60950) / CE_LVD (EN 60950) through TÜV
- Noise Meets CISPR22-B / FCC class B

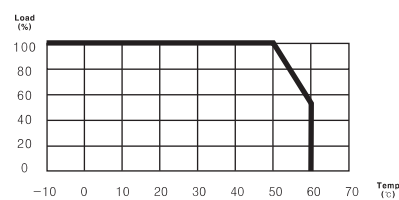
ORDERING INFORMATION

Input	Output	Maximum Power	Ripple&Noise Max.	Efficiency Typ.	Model Number
AC 90 ~ 264V or DC 120 ~ 340V	3.3V@10.00A	33.00W	50mVp-p	75%	CS50-3R3
	5V@10.00A	50.00W	80mVp-p	75%	CS50-5
	12V@4.20A	50.40W	100mVp-p	77%	CS50-12
	15V@3.40A	51.00W	120mVp-p	80%	CS50-15
	24V@2.10A	50.40W	150mVp-p	82%	CS50-24

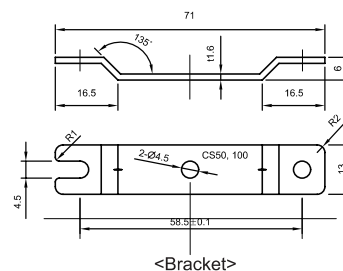
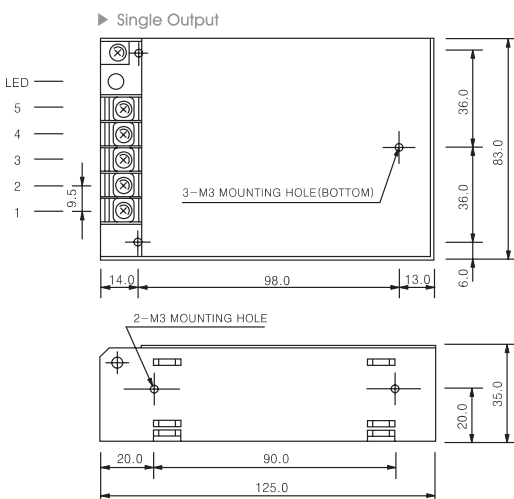
PIN ASSIGNMENTS

Connector	Single
CN 1	1. AC(L)
	2. AC(N)
	3. FG
	4. - V
	5. +V

DERATING CURVE



DIMENSION



NOTE

- 1 All dimensions are in mm
- 2 Weight : 360g or less (single)
- 3 Mounting holes(5) for M3 screw, which should not enter the supply surface by more than 3.5mm.

FEATURES Single Output



- High Efficiency
- Small, Compact Size
- Universal Input
- Surface Mounting Technology
- Built-in EMI Filter
- Inrush Current Limit
- Adjustable Output Voltage
- Output Over Current Protection
- Output Over Voltage Protection
- Over Temperature Protection
- Low Output Ripple / Noise
- Isolated Output
- 2 Years Warranty

ELECTRICAL SPECIFICATIONS

Input

• Voltage	CS75L : AC 90V - 132V (NOTE1) CS75 : AC 170V - 264V (or DC 240 - 340V) (NOTE2)
• Current	1.7A Max. (CS75L) / 0.9A Max. (CS75)
• Frequency	47 - 440Hz Max. (50 - 60Hz typ.)
• Efficiency	77 - 86% Typ.
• Inrush Current (at Cold Start)	20A Max. @110Vac (CS75L) / 40A Max. @220Vac (CS75)
• Leakage Current	0.5mA Max. @110Vac (CS75L) / 0.75mA Max. @220Vac (CS75)

Output

• Output Voltage Tolerance	±10% Typ.
• Ripple and Noise	±1.0% Max.
• Line Regulation	±1.0% Max.
• Load Regulation	±1.0% Max.
• Dynamic Load Regulation	±3.0% Max.
• Temperature Drift	±1.0% Typ.
• Rising Time	100ms Max.
• Holding Time	17ms Min.

Protection Circuit

• Over Current Protection	Work Over 105% of Rating (Recovers Automatically)
• Over Voltage Protection	Work at 115~140% of Rating (Latch-Up Mode)
• Over Temperature Protection	80°C Min.

Electrically Isolated

• Input - Output	AC 3KV, 1min. 10mA / DC 500V, 100MΩ Min.
• Input - FG	AC 2KV, 1min. 10mA / DC 500V, 100MΩ Min.
• Output - FG	AC 0.5KV, 1min. 10mA / DC 500V, 70MΩ Min.

NOTE 1. For cases where conformance to various safety specs (CE) are required, input voltage and frequency range will be 100-120VAC, 50/60Hz.
2. For cases where conformance to various safety specs (CE) are required, input voltage and frequency range will be 200-240VAC, 50/60Hz.

 ENVIRONMENTAL

- | | |
|---------------------------------------|--|
| • Operating Temperature Range | -10°C ~ 60°C |
| • Operating Humidity (Non-Condensing) | 20% ~ 90%RH |
| • Storage Temperature Range | -20°C ~ 70°C |
| • Storage Humidity (Non - Condensing) | 20% ~ 90%RH |
| • Vibration | 10 ~ 55Hz at 2G 3Minutes Period |
| • Impact | 20G for 11ms, once on each X, Y and Z-axis |
| • Cooling Method | Convection |
| • MTBF (MIL-HDBK-217F) | 1.8 X 10 ⁵ hrs |
| • Safety (Single Output) | CE_LVD (EN 60950-1) through TÜV |
| • Noise | Meets CISPR22-B / FCC class B |

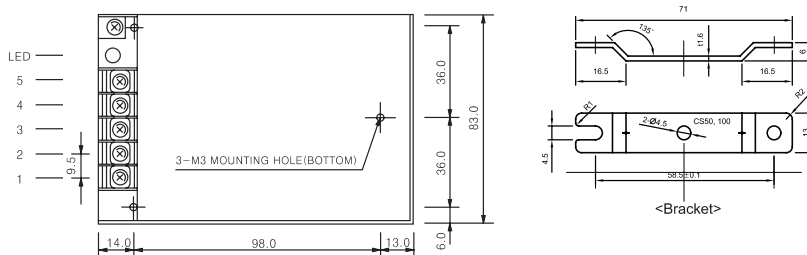
ORDERING INFORMATION

Input	Output	Maximum Power	Ripple&Noise Max.	Efficiency Typ.	Model Number
AC 90 ~ 132V or AC 170 ~ 264V (DC 240~340V)	3.3V@15.00A	49.50W	80mVp-p	77%	CS75L-3R3
	5V@15.00A	75.00W	100mVp-p	81%	CS75L-5
	12V@6.30A	75.60W	120mVp-p	83%	CS75L-12
	15V@5.00A	75.00W	150mVp-p	84%	CS75L-15
	24V@3.20A	76.80W	200mVp-p	85%	CS75L-24
	48V@1.60A	76.80W	300mVp-p	85%	CS75L-48
	3.3V@15.00A	49.50W	80mVp-p	78%	CS75-3R3
	5V@15.00A	75.00W	100mVp-p	82%	CS75-5
	12V@6.30A	75.60W	120mVp-p	84%	CS75-12
	15V@5.00A	75.00W	150mVp-p	85%	CS75-15
	24V@3.20A	76.80W	200mVp-p	86%	CS75-24
	48V@1.60A	76.80W	300mVp-p	86%	CS75-48

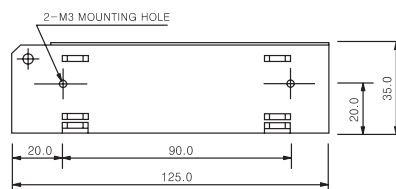
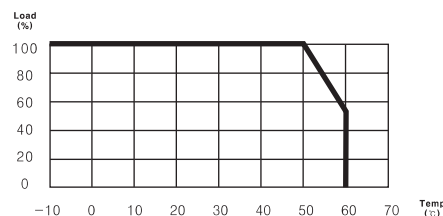
PIN ASSIGNMENTS

Connector	Single
CN 1	1. AC(L) 2. AC(N) 3. FG 4. - V 5. +V

DIMENSION



DERATING CURVE



NOTE

- 1** All dimensions are in mm
- 2** Weight : 400g or less (single)
Mounting holes(5) for M3 screw,
- 3** which should not enter the supply surface by more than 3.5mm.

C100 Series

100W AC-DC CONVERTER



FEATURES Single Output

- High Efficiency
- Small, Compact Size
- Universal Input
- Surface Mounting Technology
- Built-in EMI Filter
- Inrush Current Limit
- Adjustable Output Voltage
- Output Over Current Protection
- Output Over Voltage Protection
- Over Temperature Protection
- Low Output Ripple / Noise
- Isolated Output
- 2 Years Warranty

ELECTRICAL SPECIFICATIONS

Input

• Voltage	CS100L : AC 90V - 132V (NOTE1) CS100 : AC 170V - 264V (or DC 240 - 340V) (NOTE2)
• Current	2.3A Max. (CS100L) / 1.2A Max. (CS100)
• Frequency	47 - 440Hz Max. (50 - 60Hz typ.)
• Efficiency	78 - 87% Typ.
• Inrush Current (at Cold Start)	20A Max. @110Vac (CS100L) / 40A Max. @220Vac (CS100)
• Leakage Current	0.5mA Max. @110Vac (CS100L) / 0.75mA Max. @220Vac (CS100)

Output

• Output Voltage Tolerance	±10% Typ.
• Ripple and Noise	±1.0% Max.
• Line Regulation	±1.0% Max.
• Load Regulation	±1.0% Max.
• Dynamic Load Regulation	±3.0% Max.
• Temperature Drift	±1.0% Typ.
• Rising Time	100ms Max.
• Holding Time	17ms Min.

Protection Circuit

• Over Current Protection	Work Over 105% of Rating (Auto-Restart)
• Over Voltage Protection	Work at 115~140% of Rating (Latch-Up Mode)
• Over Temperature Protection	80°C Min.

Electrically Isolated

• Input - Output	AC 3KV, 1min. 10mA / DC 500V, 100MΩ Min.
• Input - FG	AC 2KV, 1min. 10mA / DC 500V, 100MΩ Min.
• Output - FG	AC 0.5KV, 1min. 10mA / DC 500V, 70MΩ Min.

NOTE 1. For cases where conformance to various safety specs (CE) are required, input voltage and frequency range will be 100-120VAC, 50/60Hz.
2. For cases where conformance to various safety specs (CE) are required, input voltage and frequency range will be 200-240VAC, 50/60Hz.

ENVIRONMENTAL

- Operating Temperature Range -10℃ ~ 60℃
- Operating Humidity (Non-Condensing) 20% ~ 90%RH
- Storage Temperature Range -20℃ ~ 70℃
- Storage Humidity (Non-Condensing) 20% ~ 90%RH
- Vibration 10 ~ 55Hz at 2G 3Minutes Period
- Impact 20G for 11ms, once on each X, Y and Z-axis
- Cooling Method Convection
- MTBF (MIL-HDBK-217F) 1.7 X 10⁵ hrs
- Safety (Single Output) CE_LVD (EN 60950-1) through TÜV
- Noise Meets CISPR22-B / FCC class B

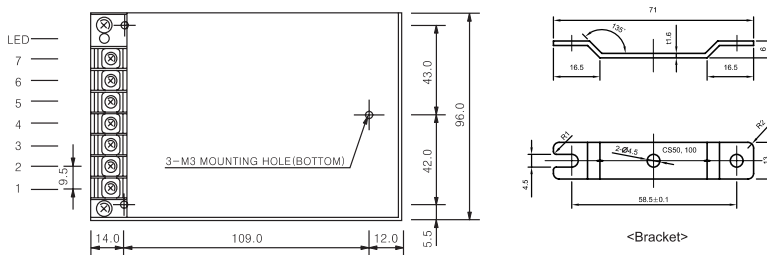
ORDERING INFORMATION

Input	Output	Maximum Power	Ripple&Noise Max.	Efficiency Typ.	Model Number
AC 90 ~ 132V or AC 170 ~ 264V (DC 240~340V)	3.3V@20.00A	66.00W	80mVp-p	78%	CS100L-3R3
	5V@20.00A	100.00W	100mVp-p	82%	CS100L-5
	12V@8.40A	100.80W	120mVp-p	84%	CS100L-12
	15V@6.70A	100.50W	150mVp-p	85%	CS100L-15
	24V@4.20A	100.80W	200mVp-p	85%	CS100L-24
	48V@2.10A	100.80W	300mVp-p	86%	CS100L-48
	3.3V@20.00A	66.00W	80mVp-p	79%	CS100-3R3
	5V@20.00A	100.00W	100mVp-p	83%	CS100-5
	12V@8.40A	100.80W	120mVp-p	85%	CS100-12
	15V@6.70A	100.50W	150mVp-p	86%	CS100-15
	24V@4.20A	100.80W	200mVp-p	86%	CS100-24
	48V@2.10A	100.80W	300mVp-p	87%	CS100-48

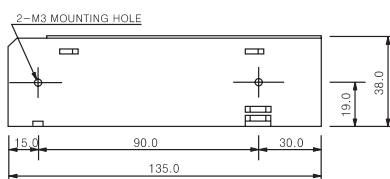
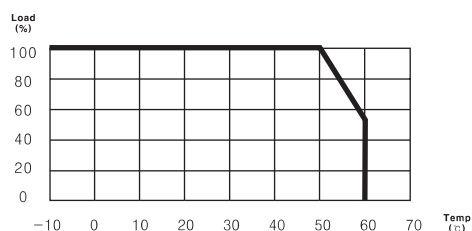
PIN ASSIGNMENTS

Connector	Single
CN 1	1. AC(N)
	2. AC(L)
	3. FG
	4. - V
	5. - V
	6. +V
	7. +V

DIMENSION



DERATING CURVE



NOTE

- 1 All dimensions are in mm
- 2 Weight : 530g or less (single)
Mounting holes(5) for M3 screw, which should not enter the supply surface by more than 3.5mm.

C150 Series

150W AC-DC CONVERTER

FEATURES Single Output



- High Efficiency
- Small, Compact Size
- Universal Input
- Surface Mounting Technology
- Built-in EMI Filter
- Inrush Current Limit
- Adjustable Output Voltage
- Output Over Current Protection
- Output Over Voltage Protection
- Over Temperature Protection
- Low Output Ripple / Noise
- Isolated Output
- 2 Years Warranty

ELECTRICAL SPECIFICATIONS

Input

• Voltage	CS150L : AC 90V - 132V (NOTE1) CS150 : AC 170V - 264V (or DC 240 - 340V) (NOTE2)
• Current	3.3A Max. (CS150L) / 1.8A Max. (CS150)
• Frequency	47 - 440Hz Max. (50 - 60Hz typ.)
• Efficiency	81 - 90% Typ.
• Inrush Current (at Cold Start)	20A Max. @110Vac (CS150L) / 40A Max. @220Vac (CS150)
• Leakage Current	0.5mA Max. @110Vac (CS150L) / 0.75mA Max. @220Vac (CS150)

Output

• Output Voltage Tolerance	±10% Typ.
• Ripple and Noise	±1.0% Max.
• Line Regulation	±1.0% Max.
• Load Regulation	±1.0% Max.
• Dynamic Load Regulation	±3.0% Max.
• Temperature Drift	±1.0% Typ.
• Rising Time	100ms Max.
• Holding Time	17ms Min.

Protection Circuit

• Over Current Protection	Work Over 105% of Rating (Auto-Restart)
• Over Voltage Protection	Work at 115~140°C of Rating (Latch-Up Mode)
• Over Temperature Protection	80°C Min.

Electrically Isolated

• Input - Output	AC 3KV, 1min. 10mA / DC 500V, 100MΩ Min.
• Input - FG	AC 2KV, 1min. 10mA / DC 500V, 100MΩ Min.
• Output - FG	AC 0.5KV, 1min. 10mA / DC 500V, 70MΩ Min.

NOTE 1. For cases where conformance to various safety specs (CE) are required, input voltage and frequency range will be 100-120VAC, 50/60Hz.
2. For cases where conformance to various safety specs (CE) are required, input voltage and frequency range will be 200-240VAC, 50/60Hz.

ENVIRONMENTAL

- Operating Temperature Range -10℃ ~ 60℃
- Operating Humidity (Non-Condensing) 20% ~ 90%RH
- Storage Temperature Range -20℃ ~ 70℃
- Storage Humidity (Non-Condensing) 20% ~ 90%RH
- Vibration 10 ~ 55Hz at 2G 3Minutes Period
- Impact 20G for 11ms, once on each X, Y and Z-axis
- Cooling Method Convection
- MTBF (MIL-HDBK-217F) 1.5 X 10⁵ hrs
- Safety (Single Output) CE_LVD (EN 60950-1) through TÜV
- Noise Meets CISPR22-B / FCC class B

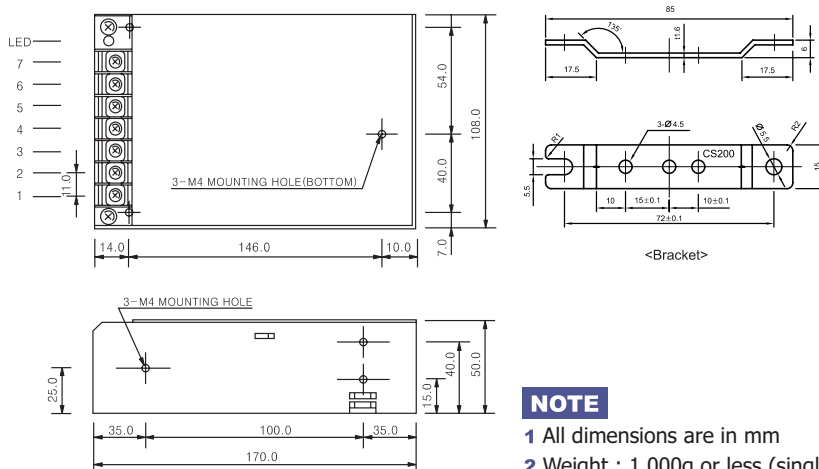
ORDERING INFORMATION

Input	Output	Maximum Power	Ripple&Noise Max.	Efficiency Typ.	Model Number
AC 90 ~ 132V or AC 170 ~ 264V (DC 240~340V)	3.3V@30.00A	99.0W	80mVp-p	81%	CS150L-3R3
	5V@30.00A	150.0W	100mVp-p	84%	CS150L-5
	12V@12.50A	150.0W	120mVp-p	87%	CS150L-12
	15V@10.00A	150.0W	150mVp-p	88%	CS150L-15
	24V@6.30A	151.2W	200mVp-p	88%	CS150L-24
	48V@3.20A	153.6W	300mVp-p	89%	CS150L-48
	3.3V@30.00A	99.0W	80mVp-p	82%	CS150-3R3
	5V@30.00A	150.0W	100mVp-p	85%	CS150-5
	12V@12.50A	150.0W	120mVp-p	88%	CS150-12
	15V@10.00A	150.0W	150mVp-p	89%	CS150-15
	24V@6.30A	151.2W	200mVp-p	89%	CS150-24
	48V@3.20A	153.6W	300mVp-p	90%	CS150-48

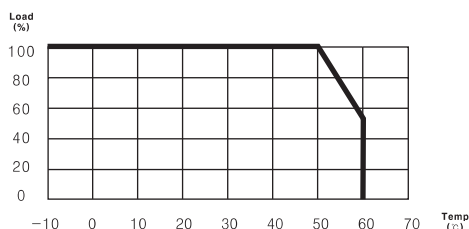
PIN ASSIGNMENTS

Connector	Single
CN 1	1. AC(N)
	2. AC(L)
	3. FG
	4. - V
	5. - V
	6. +V
	7. +V

DIMENSION



DERATING CURVE



NOTE

- 1 All dimensions are in mm
- 2 Weight : 1,000g or less (single)
Mounting holes(5) for M3 screw, which should not enter the supply surface by more than 3.5mm.

C200 Series

200W AC-DC CONVERTER

FEATURES Single Output



- High Efficiency
- Small, Compact Size
- Universal Input
- Surface Mounting Technology
- Built-in EMI Filter
- Inrush Current Limit
- Adjustable Output Voltage
- Output Over Current Protection
- Output Over Voltage Protection
- Over Temperature Protection
- Low Output Ripple / Noise
- Isolated Output
- 2 Years Warranty

ELECTRICAL SPECIFICATIONS

Input

• Voltage	CS200L : AC 90V - 132V (NOTE1) CS200 : AC 170V - 264V (or DC 240 - 340V) (NOTE2)
• Current	4.4A Max. (CS200L) / 2.3A Max. (CS200)
• Frequency	47 - 440Hz Max. (50 - 60Hz typ.)
• Efficiency	80 - 89% Typ.
• Inrush Current (at Cold Start)	20A Max. @110Vac (CS200L) / 40A Max. @220Vac (CS200)
• Leakage Current	0.5mA Max. @110Vac (CS200L) / 0.75mA Max. @220Vac (CS200)

Output

• Output Voltage Tolerance	±10% Typ.
• Ripple and Noise	±1.0% Max.
• Line Regulation	±1.0% Max.
• Load Regulation	±1.0% Max.
• Dynamic Load Regulation	±3.0% Max.
• Temperature Drift	±1.0% Typ.
• Rising Time	100ms Max.
• Holding Time	17ms Min.

Protection Circuit

• Over Current Protection	Work Over 105% of Rating (Auto-Restart)
• Over Voltage Protection	Work at 115~140% of Rating (Latch-Up Mode)
• Over Temperature Protection	80°C Min.

Electrically Isolated

• Input - Output	AC 3KV, 1min. 10mA / DC 500V, 100MΩ Min.
• Input - FG	AC 2KV, 1min. 10mA / DC 500V, 100MΩ Min.
• Output - FG	AC 0.5KV, 1min. 10mA / DC 500V, 70MΩ Min.

NOTE 1. For cases where conformance to various safety specs (CE) are required, input voltage and frequency range will be 100-120VAC, 50/60Hz.
 2. For cases where conformance to various safety specs (CE) are required, input voltage and frequency range will be 200-240VAC, 50/60Hz.

 ENVIRONMENTAL

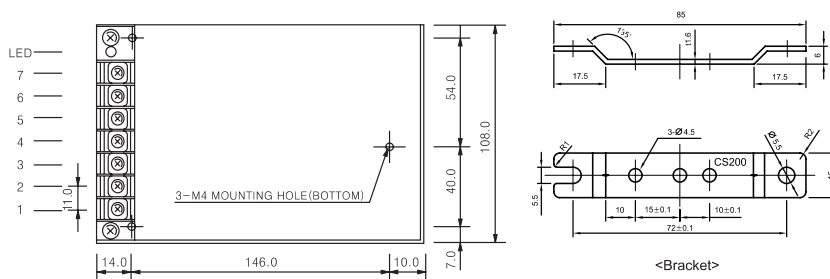
- | | |
|---------------------------------------|--|
| • Operating Temperature Range | -10°C ~ 60°C |
| • Operating Humidity (Non-Condensing) | 20% ~ 90%RH |
| • Storage Temperature Range | -20°C ~ 70°C |
| • Storage Humidity (Non-Condensing) | 20% ~ 90%RH |
| • Vibration | 10 ~ 55Hz at 2G 3Minutes Period |
| • Impact | 20G for 11ms, once on each X, Y and Z-axis |
| • Cooling Method | Convection |
| • MTBF (MIL-HDBK-217F) | 1.3 X 10 ⁵ hrs |
| • Safety (Single Output) | CE_LVD (EN 60950-1) through TÜV |
| • Noise | Meets CISPR22-B / FCC class B |

ORDERING INFORMATION

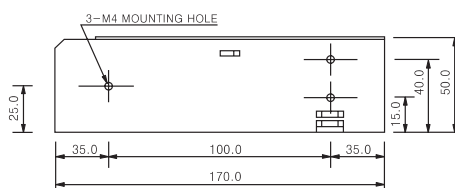
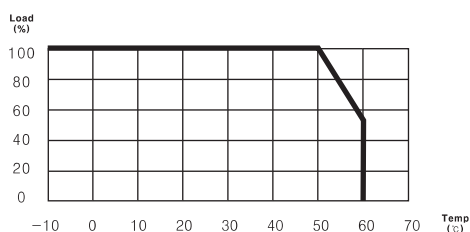
Input	Output	Maximum Power	Ripple&Noise Max.	Efficiency Typ.	Model Number
AC 90 ~ 132V or AC 170 ~ 264V (DC 240~340V)	+3.3V@40.00A	132.00W	80mVp-p	80%	CS200L-3R3
	+5.0V@40.00A	200.00W	100mVp-p	83%	CS200L-5
	+12.0V@16.80A	201.60W	120mVp-p	86%	CS200L-12
	+15.0V@13.50A	202.50W	150mVp-p	86%	CS200L-15
	+24.0V@8.40A	201.60W	200mVp-p	87%	CS200L-24
	+48.0V@4.20A	201.60W	300mVp-p	88%	CS200L-48
	+3.3V@40.00A	132.00W	80mVp-p	81%	CS200-3R3
	+5.0V@40.00A	200.00W	100mVp-p	84%	CS200-5
	+12.0V@16.80A	201.60W	120mVp-p	87%	CS200-12
	+15.0V@13.50A	202.50W	150mVp-p	87%	CS200-15
	+24.0V@8.40A	201.60W	200mVp-p	88%	CS200-24
	+48.0V@4.20A	201.60W	300mVp-p	89%	CS200-48

PIN ASSIGNMENTS

Connector	Single
CN 1	1. AC(N)
	2. AC(L)
	3. FG
	4. - V
	5. - V
	6. +V
	7. +V

DIMENSION

DERATING CURVE



NOTE

- 1 All dimensions are in mm
- 2 Weight : 1,000g or less (single)
Mounting holes(5) for M3 screw,
which should not enter the supply
surface by more than 3.5mm.

[illegible]

This image shows a blank sheet of lined paper, likely from a notebook or binder. The paper has horizontal ruling lines spaced evenly down its length. On the left side, there is a vertical strip of dark blue material, possibly a cover or a tab, which features the word "memo" written vertically in white, lowercase, sans-serif font. The overall design is clean and minimalist.

분야별 연락처

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