

## 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 $\Omega$
- 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) .....  $7 \times 10^5$  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%	<b>SPS3-5-3R3</b>
4.5 - 9V	5V@0.60A		3.00W	50mVp-p	78%	<b>SPS3-5-5</b>
4.5 - 9V	12V@0.25A		3.00W	120mVp-p	80%	<b>SPS3-5-12</b>
4.5 - 9V	15V@0.20A		3.00W	150mVp-p	80%	<b>SPS3-5-15</b>
4.5 - 9V	+12V@0.13A	-12V@0.13A	3.12W	120/120mVp-p	81%	<b>SPD3-5-1212</b>
4.5 - 9V	+15V@0.10A	-15V@0.10A	3.00W	150/150mVp-p	81%	<b>SPD3-5-1515</b>
9 - 18V	3.3V@0.60A		1.98W	50mVp-p	74%	<b>SPS3-12-3R3</b>
9 - 18V	5V@0.60A		3.00W	50mVp-p	81%	<b>SPS3-12-5</b>
9 - 18V	12V@0.25A		3.00W	120mVp-p	83%	<b>SPS3-12-12</b>
9 - 18V	15V@0.20A		3.00W	150mVp-p	83%	<b>SPS3-12-15</b>
9 - 18V	+12V@0.13A	-12V@0.13A	3.12W	120/120mVp-p	83%	<b>SPD3-12-1212</b>
9 - 18V	+15V@0.10A	-15V@0.10A	3.00W	150/150mVp-p	83%	<b>SPD3-12-1515</b>
18 - 36V	3.3V@0.60A		1.98W	50mVp-p	73%	<b>SPS3-24-3R3</b>
18 - 36V	5V@0.60A		3.00W	50mVp-p	79%	<b>SPS3-24-5</b>
18 - 36V	12V@0.25A		3.00W	120mVp-p	82%	<b>SPS3-24-12</b>
18 - 36V	15V@0.20A		3.00W	150mVp-p	82%	<b>SPS3-24-15</b>
18 - 36V	+12V@0.13A	-12V@0.13A	3.12W	120/120mVp-p	83%	<b>SPD3-24-1212</b>
18 - 36V	+15V@0.10A	-15V@0.10A	3.00W	150/150mVp-p	83%	<b>SPD3-24-1515</b>
36 - 76V	3.3V@0.60A		1.98W	50mVp-p	73%	<b>SPS3-48-3R3</b>
36 - 76V	5V@0.60A		3.00W	50mVp-p	81%	<b>SPS3-48-5</b>
36 - 76V	12V@0.25A		3.00W	120mVp-p	83%	<b>SPS3-48-12</b>
36 - 76V	15V@0.20A		3.00W	150mVp-p	83%	<b>SPS3-48-15</b>
36 - 76V	+12V@0.13A	-12V@0.13A	3.12W	120/120mVp-p	83%	<b>SPD3-48-1212</b>
36 - 76V	+15V@0.10A	-15V@0.10A	3.00W	150/150mVp-p	83%	<b>SPD3-48-1515</b>

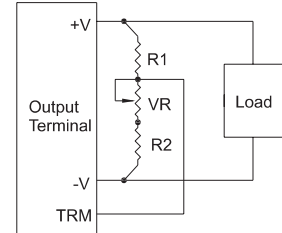
## PIN ASSIGNMENTS

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

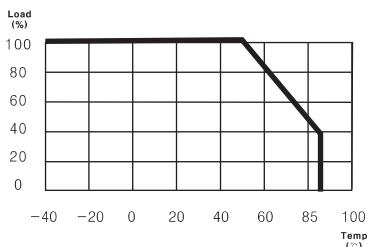
## EXTERNAL PARTS

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

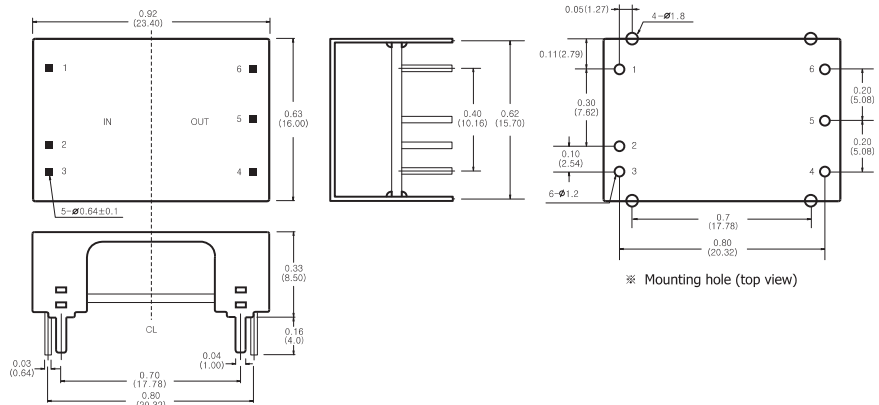
## TRIM METHOD



## DERATING CURVE



## DIMENSIONS



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