



## 1S6W\_1.5RP series

1Watt - Wide-input - Regulated Single output

## DC-DC Converter

1 Watt

- ⊕ Lead free
- ⊕ 1500VDC isolation
- ⊕ Single in line package
- ⊕ No external components required
- ⊕ Internal filtering
- ⊕ 100% burn in
- ⊕ High efficiency & input UVLO
- ⊕ UL 94V-0 package material
- ⊕ Custom solutions available
- ⊕ RoHS compliant
- ⊕ 3 years warranty

The 1S6W\_1.5RP series is a family of cost effective 1W single & dual output DC-DC converters. These converters are consisted with Non-conductive Black Plastic with high performance features such as 1500VDC input/output isolation voltage, continuous short circuit protection with automatic restart and tight line / load regulation. Devices are encapsulated using flame retardant resin. Input voltages of 5, 12, 24 and 48 with output voltage of 3.3, 5, 12 and 15VDC. High performance features include high efficiency operation up to 79% and output voltage accuracy of  $\pm 2\%$  maximum.



### Common specifications

Item	Test condition	Min	Typ	Max	Units
Short circuit protection:	Continuous, automatic recovery				
Cooling:	Free-Air Convection				
Operating Temperature	See Derating Curve	+40		+85	°C
Max. Case Temperature				100	°C
Storage Temperature		-55		+105	°C
Humidity				95	%RH
Radiated Emissions	EN55032 Class B				
MTBF	MIL-HDBK-217F@25°C, Ground Benign.			500	khrs
Case Material	Non-Conductive Plastic				
Potting Material	Epoxy(UL94V-0)				
Weight			3.0		g
Case Material	Non-conductive Black Plastic (UL94V-0 rated)				
Dimensions	17.4mm x 7.75mm x 11.1 mm				

### Input specifications

Item	Test condition	Min	Typ	Max	Units
Input voltage range		2:1 Input Range			
Input filter	Capacitor				
Protection	Fuse Recommended				

\* Measured with a simulated source inductance of 12 $\mu$ H.

### Isolation specifications

Item	Test condition	Min	Typ	Max	Units
Isolation voltage	Tested for 1 minute	1500			VDC
Isolation capacitance				80	pF
Isolation resistance		1000			M $\Omega$

### Output specifications

Item	Test condition	Min	Typ	Max	Units
Output voltage accuracy				$\pm 2$	%
Line regulation				$\pm 0.5$	%
Load regulation				$\pm 0.5$	%
Minimum Load	10% of Full Load				
Cross regulation	Dual Output			$\pm 5$	%
Temperature Coefficient				$\pm 0.05$	%/°C
Ripple & noise	20MHz Bandwidth			100	mVpk-pk
Switching frequency		150		550	KHz
Over Load Protection			150		%

### Example:

#### 1S6W\_1205S1.5

1 = 1Watt; S6 = SIP6; W= Wide input; 12Vin; 5Vout; S = Single Output; 1.5 = 1.5kVDC; R = Regulated Output

### Note:

1. One load is 25% to 100% load, the other load is 100% load, the output voltage variable rate is within  $\pm 5\%$ .
2. Ripple/Noise measured with a 1 $\mu$ F ceramic capacitor.
3. Tested by minimal Vin and constant resistive load.
4. Tested by normal Vin and 25% load step change (75%-50%-25% of Io).
5. Measured Input reflected ripple current with a simulated source inductance of 12 $\mu$ H.
6. Exceeding the absolute ratings of the unit could cause damage. It is not allowed for continuous operating.

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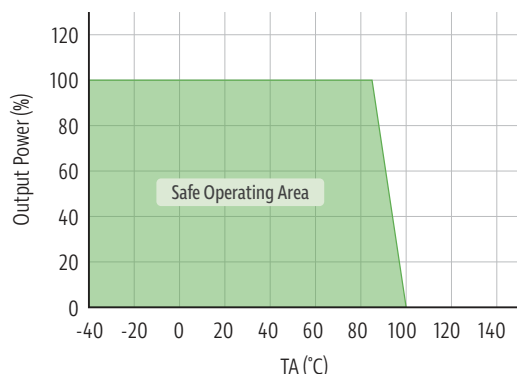
### Product Selection Guide

Part Number	Input Voltage [VDC]		Output Voltage [VDC]	Input Current [mA]		Output Current [mA]	Capacitive load [ $\mu$ F]	Efficiency [% Min./Typ.]
	Nominal	Range		Full Load	No Load			
1S6W_0505S1.5RP	5	4.5-9	5	267	20	200	1500	75
1S6W_1203S1.5RP	12	9-18	3.3	110	20	300	1500	75
1S6W_1205S1.5RP	12	9-18	5	108	20	200	1500	77
1S6W_1212S1.5RP	12	9-18	12	106	20	83	1500	78
1S6W_1215S1.5RP	12	9-18	15	106	20	67	1500	79
1S6W_2403S1.5RP	24	18-36	3.3	55	10	300	1500	75
1S6W_2405S1.5RP	24	18-36	5	54	10	200	1500	77
1S6W_2412S1.5RP	24	18-36	12	53	10	83	1500	78
1S6W_2415S1.5RP	24	18-36	15	53	10	67	1500	79
1S6W_4803S1.5RP	48	36-75	3.3	28	7	300	1500	75
1S6W_4805S1.5RP	48	36-75	5	27	7	200	1500	77
1S6W_4812S1.5RP	48	36-75	12	27	7	83	1500	78

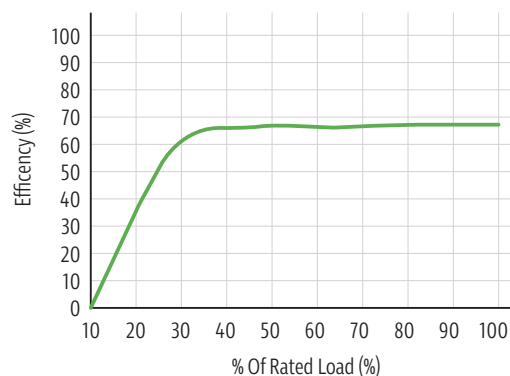
### Typical characteristics

Specifications typical at TA = 25 °C, nominal input voltage, rated output current unless otherwise specified.

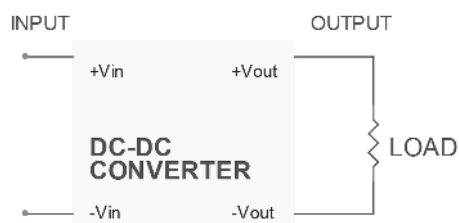
Temperature Derating



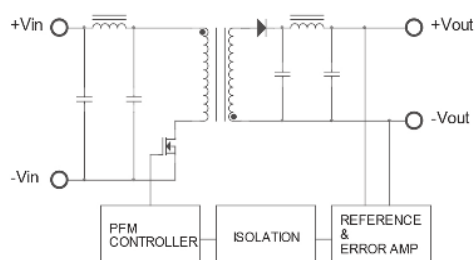
Output Load Vs Efficiency



### Typical applications



### Simplified schematic



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### Input fuse selection guide

9V-18V INPUT VOLTAGE(VDC)	18V-36V INPUT VOLTAGE(VDC)	36V-75V INPUT VOLTAGE(VDC)
400mA Slow-Blow Type	200mA Slow-Blow Type	100mA Slow-Blow Type

Note: Certain applications may require the installation of external fuse in front of the input.

### Application notes:

#### External capacitance requirements:

No external capacitance is required for operation of this series.

To meet the reflected ripple requirements of the converter, an input impedance of less than 0.5 ohm from DC to 100KHz is required.

External output capacitance is not required for operation, however it is recommended that 10uF tantalum and 0.1uF ceramic capacitance be selected for reduced system noise.

Additional output capacitance may be added for increased filtering, but should not exceed 220uF.

We can offer EMC-filter according to EN55032 Class B.

#### Negative Outputs:

A negative output voltage may be obtained by connecting the +OUT to circuit ground and connecting -OUT as the negative output.

### Mechanical dimensions & recommended footprint details

