

PSD-xxxxELF



PSD-SERIES

Rev.04-2009

- ✓ 1 Watt
- ✓ Unregulated
- ✓ **Single** Output
- ✓ **SMD** Case
- ✓ **1 kV** DC I/O Isolation
- ✓ Low Ripple and Noise

The PSD series is a family of cost effective 1 W single output DC/DC converters. These converters are in an ultra miniature SMD 5-pin case. Devices are encapsulated. High performance features: 1000VDC input/output isolation, industrial standard pinout, high power density, no heatsink required

All specifications typical at $T_a=25^\circ\text{C}$, nominal input voltage and full load unless otherwise specified

Input Specifications

Voltage Range	$\pm 10\%$
Input Filter	Capacitors

Output Specifications

Voltage Accuracy	$\pm 3\%$, typ.
Short Circuit Protection	Short Term
Line Regulation	<i>3.3 Vout</i> $\pm 1.5\%$, max. (For V_{in} Change of 1%) <i>Others</i> $\pm 1.2\%$, max. (For V_{in} Change of 1%)
Load Regulation (10% - 100%)	<i>3.3 Vout</i> 20%, max. <i>5 Vout</i> 15%, max. <i>9, 12, 15, 24 Vout</i> 10%, max.
Ripple and Noise (20Mhz bandwidth)	75 mV pk-pk, max.
Temperature Coefficient	$\pm 0.03\%$ / $^\circ\text{C}$

General Specifications

Efficiency	See Table
I/O Isolation Voltage (3 sec.)	1000 VDC
I/O Isolation Resistance (Tested at 500 VDC)	1000 M Ohm
Switching Frequency	100 kHz, typ (5, 12 V_{in}); 500 kHz (24 V_{in})
Humidity	95% rel H
Reliability Calculated MTBF (MIL-HDBK-217F)	> 3500 khrs

Physical Specifications

Case Material	Non Conductive Black Plastic (UL94V-0 rated)
Potting Material	Epoxy (UL94V-0 rated)
Weight	~ 1.4g, max.

Environment Specifications

Operating Temperature	-40 to +85 $^\circ\text{C}$ (ambient)
Storage Temperature	-55 to +125 $^\circ\text{C}$
Cooling	Free Air Convection (10mm distance required)
Soldering	Not usable for heat steam soldering
RoHS Conform	

Selection Guide

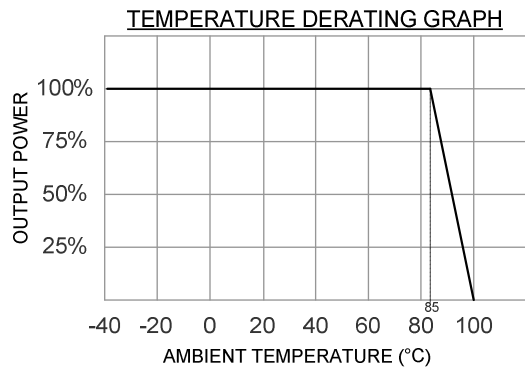
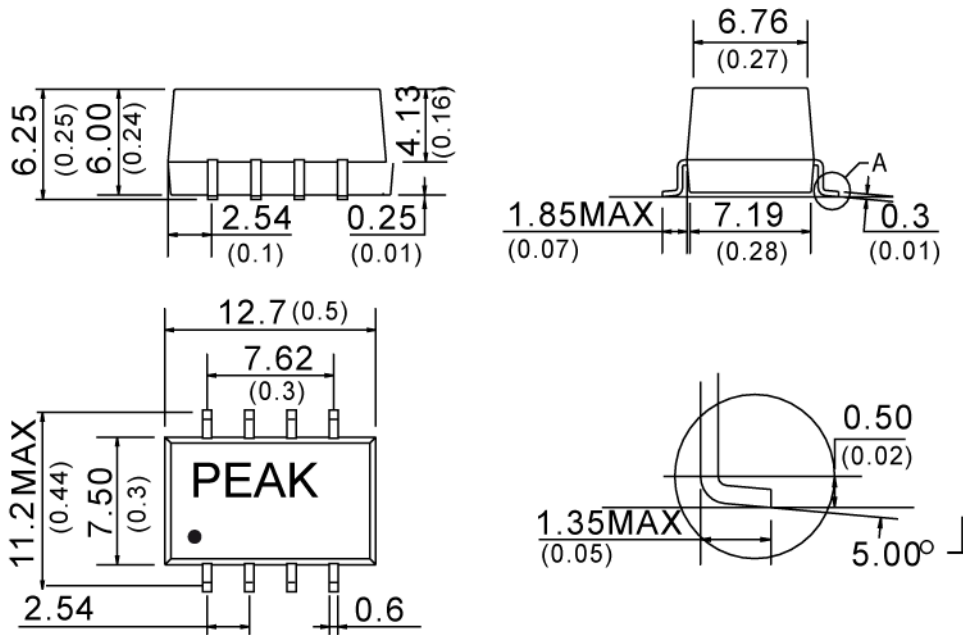
Single Output

Order #	Input Voltage (VDC)	Output Voltage (VDC)	Output Current max. (mA)	Output Current min. (mA)	Efficiency (%)
<u>SINGLE OUTPUT</u>					
PSD-3R33R3ELF	3.3	3.3	303	30	73
PSD-3R305ELF	3.3	5	200	20	74
PSD-053R3ELF	5	3.3	303	30	72
PSD-0505ELF	5	5	200	20	77
PSD-0509ELF	5	9	111	12	76
PSD-0512ELF	5	12	84	9	79
PSD-0515ELF	5	15	67	7	78
PSD-1205ELF	12	5	200	20	69
PSD-1209ELF	12	9	111	12	73
PSD-1212ELF	12	12	84	9	73
PSD-1215ELF	12	15	67	7	74
PSD-243R3ELF	24	3.3	300	30	69
PSD-2405ELF	24	5	200	20	70
PSD-2409ELF	24	9	110	11	72
PSD-2412ELF	24	12	83	8	75
PSD-2415ELF	24	15	67	7	76
PSD-2424ELF	24	24	42	4	77

If you need other specifications, please enquire.

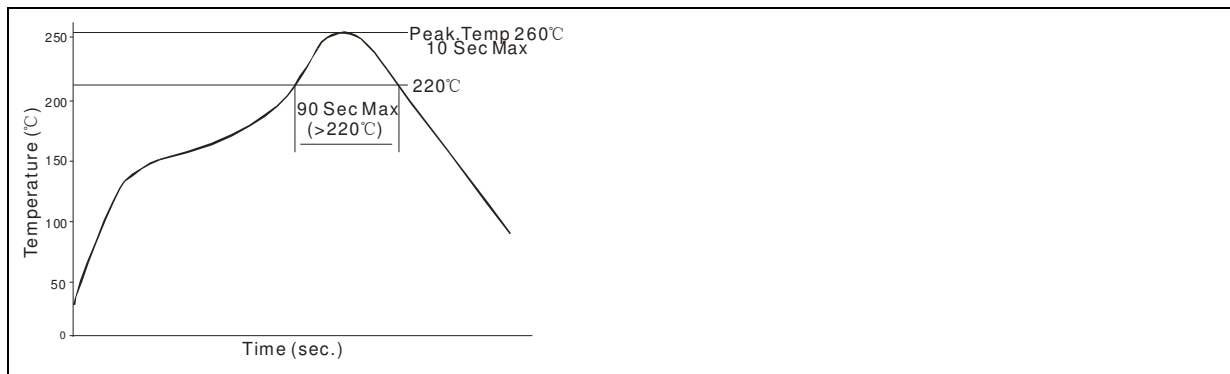
Notes:

Package / Pinning / Derating



PIN CONNECTIONS	
#	SINGLE
1	- Vin
2	+Vin
4	- Vout
5	+Vout
8	N.C.
Others	Omitted

Reflow:



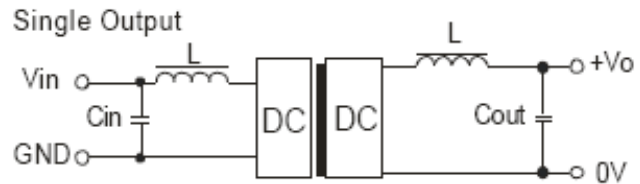
App Notes

Requirement on output load

To ensure this module can operate efficiently and reliably, during operation, the minimum output load is **not less than 10%** of the full load, and that **this product should never be operated under no-load!** If the actual output power is very small, please connect a resistor with proper resistance at the output end in parallel to increase the load.

Recommended testing circuit

If you want to further decrease the input/output ripple, an “LC” filtering network may be connected to the input and output ends if the DC/DC converter, see Figure on the right hand side.



It should also be noted that the inductance and the frequency of the “LC” filtering network should be staggered with the DC/DC frequency to avoid mutual interference. However, the capacitance of the output filter capacitor must be proper. If the capacitance is too big, a start-up problem might arise. For every channel of output, provided the safe and reliable operation is ensured, the greatest capacitance of its filter capacitor sees (see Table).

Output Voltage Regulation and Over-voltage Protection Circuit

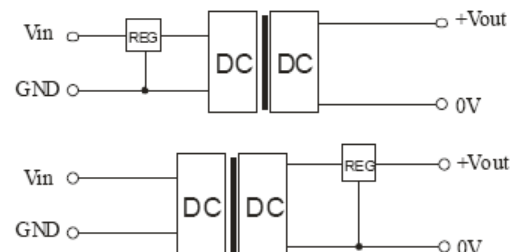
The simplest device for output voltage regulation, over-voltage and over-current protection is a linear voltage regulator with overheat protection that is connected to the input or output end in series.

EXTERNAL CAPACITOR TABLE			
Vin (VDC)	Cin (uF)	Vout (VDC)	Cout (uF)
3.3 / 5	4.7	3.3 / 5	10
12	2.2	9	4.7
24	0.47	12	2.2
--	--	15	1
--	--	24	0.47

It's not recommend to connect any external capacitor in the application field with less than 0.5 watt output.

Overload Protection

Under normal operating conditions, the output circuit of these products has no protection against over-current and short-circuits. The simplest method is to connect a self-recovery fuse in series at the input end or add a circuit breaker to the circuit.



No parallel connection or plug and play.