PEV3-xxxxELF

PEAK electronics
The world of DC/DC converters

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PSD-SERIES   Rev.04-2009
✓ 1 Watt
✓ Unregulated
✓ **Single** Output
✓ **SMD** Case
✓ **3 kV** DC I/O Isolation
✓ Low Ripple and Noise

The PSD - PEV3-xxxxELF series is a family of cost effective 1 W single output DC/DC converters. These converters are in an ultra miniature SMD case. Devices are encapsulated. High performance features: 3000VDC input/output isolation, industrial standard pinout, high power density, no heat sink required

All specifications typical at Ta=25°C, nominal input voltage and full load unless otherwise specified

Input Specifications

Voltage Range	± 10%
Input Filter	Capacitors

Output Specifications

Voltage Accuracy		± 3%, typ.
Short Circuit Protection		Short Term
Line Regulation	3.3 Vout	± 1.5%, max. (For Vin Change of 1%)
	Others	± 1.2%, max. (For Vin Change of 1%)
Load Regulation (10% - 100%)	3.3 Vout	20%, max.
	5 Vout	15%, max.
	9, 12, 15 Vout	10%, max.
Ripple and Noise (20Mhz bandwidth)		100 mV pk-pk, max.
Temperature Coefficient		± 0.03% / °C

General Specifications

Efficiency	See Table
I/O Isolation Voltage (3 sec.)	3000 VDC
I/O Isolation Resistance (Tested at 500 VDC)	1000 M Ohm
Switching Frequency	100 kHz, typ
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	~ 1.7g, typ.

Environment Specifications

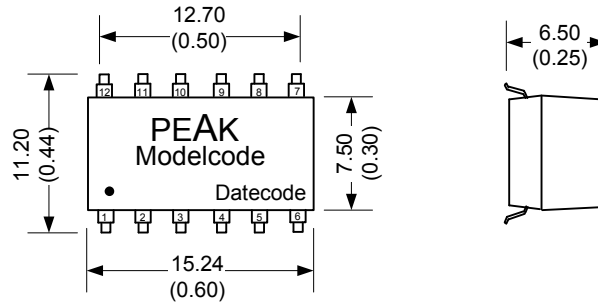|	
Operating Temperature	-40 to +85°C (ambient)
Storage Temperature	-55 to +125°C
Cooling	Free Air Convection (10mm distance required)
Solderng	Not usable for heat steam soldering
RoHS Conform	

Selection Guide
Single Output

Order #	Input Voltage (VDC)	Output Voltage (VDC)	Output Current max. (mA)	Output Current min. (mA)	Efficiency (%)
SINGLE OUTPUT					
PEV3-3R33R3ELF	3.3	3.3	304	30	73
PEV3-3R305ELF	3.3	5	200	20	75
PEV3-0505ELF	5	5	200	20	70
PEV3-0509ELF	5	9	110	11	76
PEV3-0512ELF	5	12	84	9	78
PEV3-0515ELF	5	15	66	7	79
PEV3-1205ELF	12	5	200	20	69
PEV3-1209ELF	12	9	110	11	73
PEV3-1212ELF	12	12	84	9	73
PEV3-1215ELF	12	15	66	7	74

If you need other specifications, please enquire.

Notes:

Package / Pinning / Derating

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12.70 (0.50)

11.20 (0.44)

PEAK
Modelcode

Datecode

7.50 (0.30)

15.24 (0.60)

6.50 (0.25)
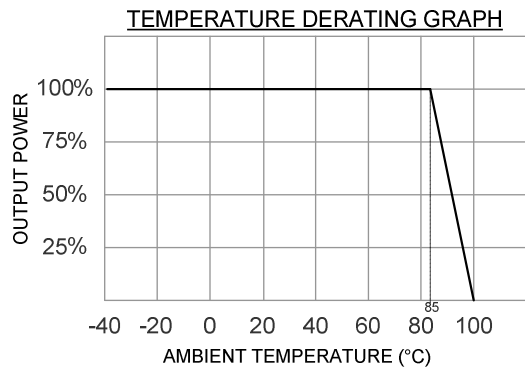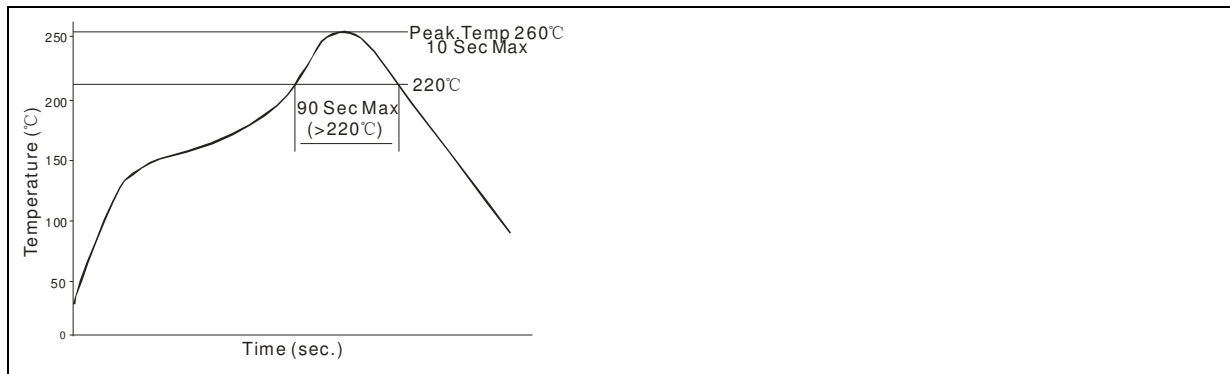
All dimensions are typical in millimeters (inches).
- Pin pitch tolerance: +/-0.35 (+/-0.014)
- Case tolerance +/-0.5 (+/-0.02)
Specification may change without notice.

PSD-Series 3kV

TEMPERATURE DERATING GRAPH

OUTPUT POWER

100%
75%
50%
25%

-40 -20   0   20   40   60   80   100

85

AMBIENT TEMPERATURE (°C)

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

Reflow:

250

200

150

Temperature (°C)

100

50

0

Peak Temp 260℃
10 Sec Max

220℃

90 Sec Max
(>220℃)

Time (sec.)

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.
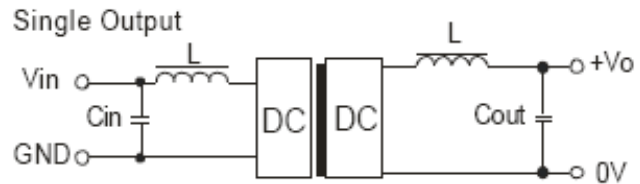
It should also be noted that the inductance and the frequency of the "LC" filtering network should be staggered with the DC/DC frequency to avoid mutual interference. However, the capacitance of the output filter capacitor must be proper. If the capacitance is too big, a start-up problem might arise. 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	5	10
12	2.2	9	4.7
--	--	12	2.2
--	--	15	1
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.
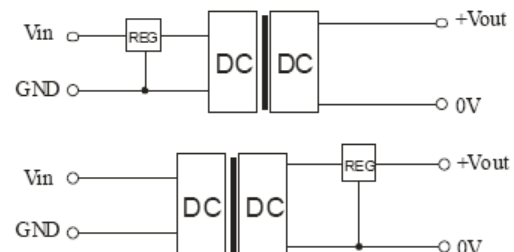
No parallel connection or plug and play.