

# PSD1-A-xxxxE



## PSD-SERIES

Rev.01-2016

- ✓ 1 Watt
- ✓ Unregulated ***Ready for UL\****
- ✓ **Single Output**
- ✓ **SMD Case**
- ✓ **1.5 kV - 3 kV DC I/O Isolation**
- ✓ **Continuous Short Circuit Prot.**
- ✓ **2 Years Warranty (Date Code)**

The PSD1-A 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: 1500VDC and 3000VDC (for the most types) input/output isolation, industrial standard pinout, high power density. No heatsink required.

\*most 1.5kV devices are ready for UL. Please ask for MOQ if you need Certification.

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

### Input Specifications

Voltage Range	±10%
Current max.	52 – 404mA (See table)
Current No-Load	7 – 25mA (See table)
Filter	Capacitors
Reflected Ripple Current (@12uH)	15mA pk-pk

### General Specifications

Efficiency	Up to 80% (See table)
Isolation I/O (60 sec)	1500VDC (standard) 3000VDC (add "H30")
Isolation I/O Capacitance	20 pF
Isolation I/O Resistance	1000 MΩ, min.
Switching Frequency	100 kHz
Humidity (rel.)	95%
MTBF (Calculated MIL-HDBK-217F)	>3500 Khrs
Pin Welding Temperature	300°C, max.
Reflow Soldering	245°C, peak (217°C ≤60s)

### EMC Specifications

Radiated Emissions*	CISPR22/EN55022	Class B
Conducted Emissions*	CISPR22/EN55022	Class B
ESD (contact ±8KV)	IEC-61000-4-2	Pref. Criteria B

\*Input filter components are required to meet (see App Note)

### Output Specifications

Voltage accuracy	See App Note
Line regulation (per 1% Vin change)	±1.2% (1.5% for 3.3Vout)
Load regulation (10% to 100%)	See Table
Ripple & noise (20 MHz bandwidth)	60 mV pk-pk
Temperature coefficient	±0.03%/°C
Capacitor load (Test: min. Vin + const. load)	220uF
Short Circuit Protection	Continuous (exceptions see Table)

### Environment / Physical Specifications

Operation Temp.	-40°C to 105°C
Case Temp. Rise (nominal Input and full load)	25°C
Storage	-55°C to 125°C
Cooling	Nature / Free Air
Case Material	Plastic (UL94V-0 rated)
Potting	Epoxy (UL94V-0 rated)
Weight	~1.6 g

# Selection Guide

## Single Output

Order #	Input Voltage (VDC)	Output Voltage (VDC)	Output Current max. (mA)	Output Current min. (mA)	Input Current Full Load typ. (mA)	Input Current no Load typ. (mA)	Load Regulation (%)	Efficiency (%)
<b>SINGLE OUTPUT</b>								
PSD1-A-3R33R3E	3.3	3.3	303	30	404	25	18	69
PSD1-A-3R305E	3.3	5	200	20	404	25	12	74
PSD1-A-3R312E	3.3	12	84	9	404	25	7	80
PSD1-A-3R315E	3.3	15	67	7	404	25	6	80
PSD1-A-3R324E	3.3	24	42	4	404	25	5	80
PSD1-A-053R3E	5	3.3	303	30	250	20	18	72
PSD1-A-0505E	5	5	200	20	250	20	12	80
PSD1-A-0506E	5	6	167	17	250	20	10	80
PSD1-A-0509E	5	9	111	12	250	20	8	80
PSD1-A-0512E	5	12	84	9	250	20	7	80
PSD1-A-0515E	5	15	67	7	250	20	6	80
PSD1-A-0524E*	5	24	42	4	250	20	5	80
PSD1-A-123R3E	12	3.3	303	30	104	15	18	72
PSD1-A-1205E	12	5	200	20	104	15	12	80
PSD1-A-1209E	12	9	111	12	104	15	8	80
PSD1-A-1212E	12	12	84	9	104	15	7	80
PSD1-A-1215E	12	15	67	7	104	15	6	80
PSD1-A-1224E	12	24	42	4	104	15	5	80
PSD1-A-1505E	15	5	200	20	82	10	12	80
PSD1-A-1515E	15	15	67	7	82	10	6	80
PSD1-A-2405E*	24	5	200	20	52	7	12	80
PSD1-A-2409E*	24	9	111	12	52	7	8	80
PSD1-A-2412E*	24	12	84	9	52	7	7	80
PSD1-A-2415E*	24	15	67	7	52	7	6	80
PSD1-A-2424E*	24	24	42	4	52	7	5	80

\* Converters marked with a star: Short circuit Protection ist only 1s, max

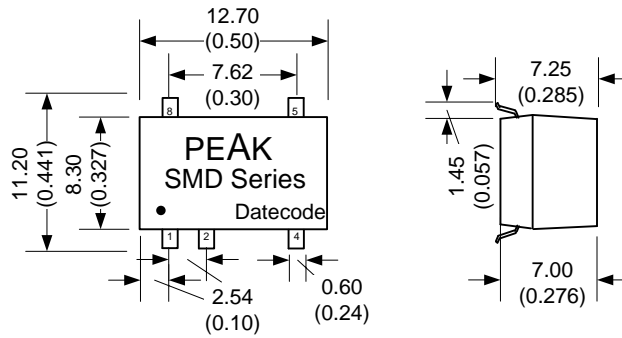
\* Supply voltage must be discontinued at the end of short circuit.

If you need other specifications, please enquire.

**For optional 3000V isolation, please add “H30”**  
**For example: PSD1-A-1205EH30**

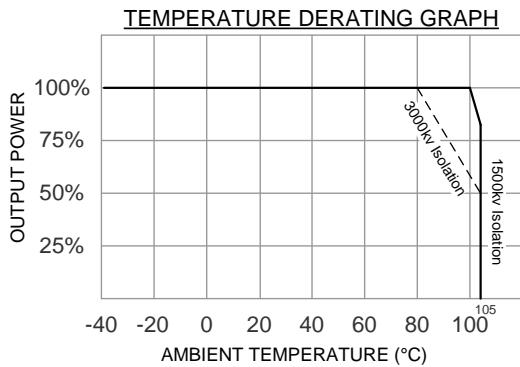
Notes:

# Package / Pinning / Derating



All dimensions are typical in millimeters (inches).  
 - Pin pitch tolerance:  $\pm 0.35$  ( $\pm 0.014$ )  
 - Case tolerance  $\pm 0.7$  ( $\pm 0.028$ )  
 Specification may change without notice.

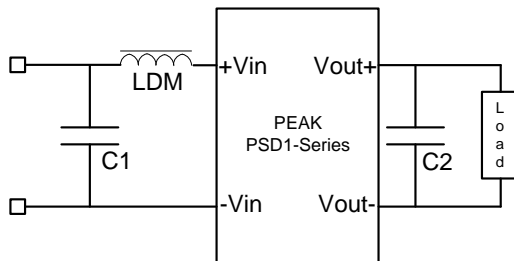
## **PSD1-Series** **Single output**



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

# App Notes

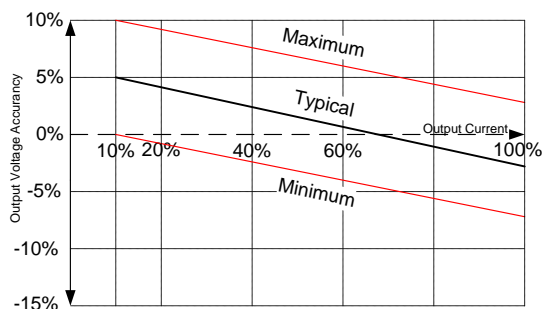
## EMC Typical Recommended Circuit (CLASS B)



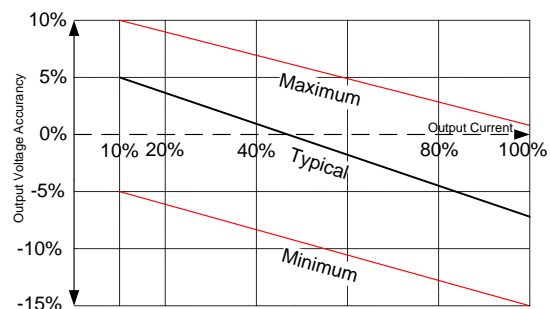
Vout	C1	C2	LDM
3.3	4.7uF/50V	10 uF	6.8uH
5 / 6	4.7uF/50V	10 uF	6.8uH
9	4.7uF/50V	4.7 uF	6.8uH
12	4.7uF/50V	2.2 uF	6.8uH
15	4.7uF/50V	1 uF	6.8uH
24	4.7uF/50V	0.47 uF	6.8uH

## Tolerance Envelope Curve

5, 6, 9, 12, 15, 24 Vout:



3.3 Vout:



### Requirement on output load

This module can operate efficiently and reliably if the minimum output load is **not less than 10%** of the full 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.

**It is recommended to connect ceramic capacitor or electrolytic capacitor at the input and output of the DCDC converter.**

**It is not recommended to increase the output power capability by connecting two or more converters in parallel. The product is not hot-swappable.**

**No parallel connection or plug and play.**