

# PEA1-xxxxE/Z (H30) LF



## PMM1-SERIES

Rev.07-2010

- ✓ 1 Watt
- ✓ Semi Regulated
- ✓ **Single** and **Dual** Output
- ✓ **SIP7** Case
- ✓ **1 - 3 kV** DC I/O Isolation
- ✓ Low Ripple and Noise
- ✓ **High Efficiency**

The PMM1 series PEA1-xxxxE/Z(H30)LF is a family of cost effective 1 W single & dual output DC-DC converters. These converters are in an ultra miniature SIP7 case. Devices are encapsulated. High performance features: 1000 – 3000 VDC input/output isolation, high efficiency operation, output voltage accuracy of  $\pm 3\%$  maximum, input range of  $\pm 10\%$  tolerance and low output ripple and noise.

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	Capacitor
Input Reflected Ripple Current <sup>1</sup>	20 mA (5, 12V) 30mA (15V) 40mA (24V) 50mA (48V) pk-pk

### Output Specifications

Voltage Accuracy	$\pm 3\%$
Short Circuit Protection	Short Term
Line Regulation	$\pm 1.2\% / 1\% V_{in}$ Change
Load Regulation (10% - 100%)	See table
Ripple and Noise (20Mhz bandwidth)	50 mV pk-pk
Temperature Coefficient	$\pm 0.02\% / ^\circ\text{C}$

### General Specifications

Efficiency	See Table
I/O Isolation Voltage (3 sec.)	1000 VDC (3000VDC optional)*
I/O Isolation Capacity	60 pF, typ.
I/O Isolation Resistance	1G Ohm
Switching Frequency	70 kHz (Variable)
Humidity	95% rel H
Reliability Calculated MTBF (MIL-HDBK-217F)	> 2 Mhrs

### Physical Specifications

Case Material	Non Conductive Black Plastic (UL94V-0 rated)
Potting Material	Epoxy (UL94V-0 rated)
Weight	~ 2.3g, typ.

### Environment Specifications

Operating Temperature	-40 to +85 $^\circ\text{C}$ (ambient)
Maximum Case Temperature	100 $^\circ\text{C}$
Storage Temperature	-40 to +125 $^\circ\text{C}$
Cooling	Free Air Convection (10 mm distance required)
RoHS Conform	Soldering 260 $^\circ\text{C}$ , max. (1.5 mm from case 10s.)

# Selection Guide

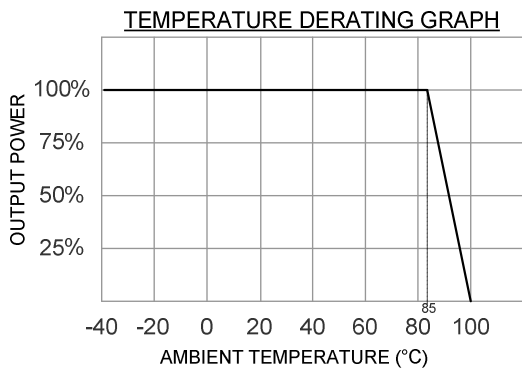
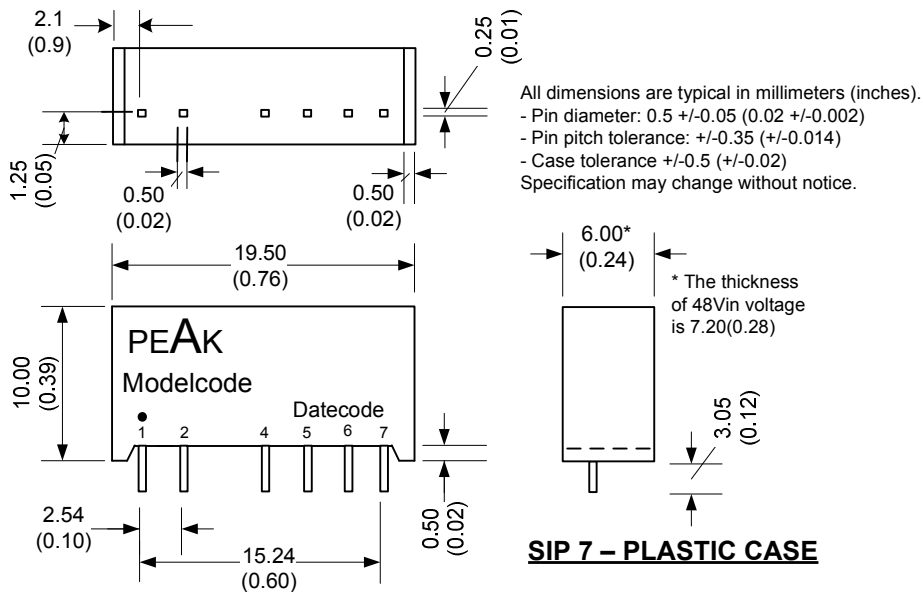
## Single / Dual Output

Order #	Input Voltage (VDC)		Input Current No Load (mA)		Input Current Full Load (mA)		Output Voltage (VDC)		Output Current Full Load (mA)		Load Regulation (%)	Efficiency (%)	Capacitor Load ( $\mu$ F <sup>2</sup> )
<b>SINGLE OUTPUT</b>													
PEA1-0505ELF	5	20	250	5	200	6	84	220					
PEA1-0509ELF	5	20	230	9	111.1	5.5	86	220					
PEA1-0512ELF	5	20	230	12	83.3	5.5	87	100					
PEA1-0515ELF	5	20	230	15	66.7	5	87	100					
PEA1-1205ELF	12	15	98	5	200	4	84	220					
PEA1-1209ELF	12	15	96	9	111.1	3.5	86	220					
PEA1-1212ELF	12	15	95	12	83.3	3.5	88	100					
PEA1-1215ELF	12	15	95	15	66.7	3	88	100					
PEA1-1505ELF	15	10	79	5	200	4	84	220					
PEA1-1509ELF	15	10	77	9	111.1	3.5	86	220					
PEA1-1512ELF	15	10	76	12	83.3	3.5	87	100					
PEA1-1515ELF	15	10	76	15	66.7	3	89	100					
PEA1-2405ELF	24	7	50	5	200	4	83	220					
PEA1-2409ELF	24	7	49	9	111.1	3.5	86	220					
PEA1-2412ELF	24	7	49	12	83.3	3.5	87	100					
PEA1-2415ELF	24	7	49	15	66.7	3	87	100					
PEA1-4805ELF	48	5	27	5	200	4	79	220					
PEA1-4809ELF	48	5	26	9	111.1	3.5	82	220					
PEA1-4812ELF	48	5	26	12	83.3	3	82	100					
PEA1-4815ELF	48	5	26	15	66.7	3	81	100					
<b>DUAL OUTPUT</b>													
PEA1-0505ZLF	5	20	250	± 5	± 100	6	84	± 100					
PEA1-0509ZLF	5	20	228	± 9	± 55.55	5.5	86	± 100					
PEA1-0512ZLF	5	20	228	± 12	± 41.67	5.5	87	± 47					
PEA1-0515ZLF	5	20	225	± 15	± 33.33	5	88	± 47					
PEA1-1205ZLF	12	15	98	± 5	± 100	4	85	± 100					
PEA1-1209ZLF	12	15	95	± 9	± 55.55	3.5	86	± 100					
PEA1-1212ZLF	12	15	94	± 12	± 41.67	3.5	89	± 47					
PEA1-1215ZLF	12	15	94	± 15	± 33.33	3	89	± 47					
PEA1-1505ZLF	15	10	78	± 5	± 100	3.5	85	± 100					
PEA1-1509ZLF	15	10	76	± 9	± 55.55	2.5	87	± 100					
PEA1-1512ZLF	15	10	76	± 12	± 41.67	2.5	87	± 47					
PEA1-1515ZLF	15	10	75	± 15	± 33.33	2.5	89	± 47					
PEA1-2405ZLF	24	7	50	± 5	± 100	3.5	84	± 100					
PEA1-2409ZLF	24	7	48	± 9	± 55.55	2.5	87	± 100					
PEA1-2412ZLF	24	7	48	± 12	± 41.67	2.5	87	± 47					
PEA1-2415ZLF	24	7	48	± 15	± 33.33	2.5	87	± 47					
PEA1-4805ZLF	48	5	27	± 5	± 100	3	80	± 100					
PEA1-4809ZLF	48	5	26	± 9	± 55.55	3	82	± 100					
PEA1-4812ZLF	48	5	26	± 12	± 41.67	3	82	± 47					
PEA1-4815ZLF	48	5	26	± 15	± 33.33	2	82	± 47					

\* For optional **3kV Isolation** please add “**H30**” between E/Z and LF!

Example: PEA1-2415EH30LF for 3kV isolation.

# Package / Pinning / Derating



PIN CONNECTIONS				
#	SINGLE	DUAL	SINGLE 3kV	DUAL 3kV
1	+Vin	+Vin	+Vin	+Vin
2	- Vin	- Vin	- Vin	- Vin
4	- Vout	- Vout	Omitted	Omitted
5	Omitted	Common	- Vout	- Vout
6	+Vout	+Vout	Omitted	Common
7	Omitted	Omitted	+Vout	+Vout

## App Notes:

- <sup>1</sup> = Measured Input reflected ripple current with a simulated source inductance of 12uH.
- <sup>2</sup> = Tested by minimal Vin and constant resistive load.
- Operation under no-load conditions will not damage these devices, but they will not observe the listed specifications.
- \* For optional 3kV Isolation please add "H30" between E/Z and LF! Example: PEA1-2415EH30LF for 3kV isolation.

EMC SPECIFICATIONS		
Radiated Emissions	EN 55022	CLASS A
ESD	IEC 61000-4-2	Perf. Criteria A
RS	IEC 61000-4-3	Perf. Criteria A

Input filter components (C1, C2, L) are used to help meet conducted emissions requirement for the module. These components should be mounted as close as possible to the module; all leads should be minimized to decrease radiated noise.

