

# PEA2-xxxxE/Z (H30) LF



## PMM1-SERIES

Rev.05-2011

- ✓ 2 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 PEA2-xxxxE/Z(H30)LF is a family of cost effective 2 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>	25 mA (5, 12V) 30mA (15V) 40mA (24V) p-p

### Output Specifications

Voltage Accuracy	+2% ~ -4%
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)	> 1.9 Mhrs

### Physical Specifications

Case Material	Non Conductive Black Plastic (UL94V-0 rated)
Potting Material	Epoxy (UL94V-0 rated)
Weight	~ 2.8g, typ.

### Environment Specifications

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

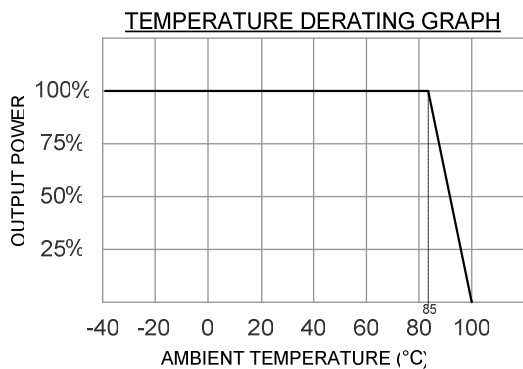
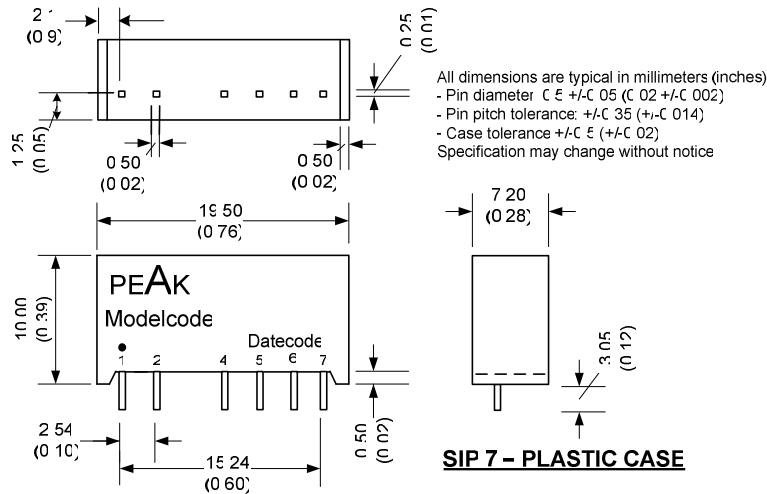
# Selection Guide

## 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 (uF) <sup>2</sup>
<b><u>SINGLE OUTPUT</u></b>								
PEA2-0505ELF	5	50	494	5	400	6	81	220
PEA2-0509ELF	5	50	471	9	222	4.2	85	220
PEA2-0512ELF	5	50	471	12	166	3.8	85	100
PEA2-0515ELF	5	50	465	15	133	4.5	86	100
PEA2-1205ELF	12	40	198	5	400	4.2	84	220
PEA2-1209ELF	12	40	194	9	222	2.8	86	220
PEA2-1212ELF	12	40	189	12	166	2.4	88	100
PEA2-1215ELF	12	40	189	15	133	2.2	88	100
PEA2-1505ELF	15	30	157	5	400	4	85	220
PEA2-1509ELF	15	30	153	9	222	2.6	87	220
PEA2-1512ELF	15	30	153	12	166	2.4	87	100
PEA2-1515ELF	15	30	152	15	133	2	88	100
PEA2-2405ELF	24	20	102	5	400	4.5	82	220
PEA2-2409ELF	24	20	99	9	222	3.5	84	220
PEA2-2412ELF	24	20	97	12	166	3	86	100
PEA2-2415ELF	24	20	96	15	133	2.8	87	100
<b><u>DUAL OUTPUT</u></b>								
PEA2-0505ZLF	5	50	488	± 5	± 200	5	82	± 100
PEA2-0509ZLF	5	50	471	± 9	± 111	3.9	85	± 100
PEA2-0512ZLF	5	50	465	± 12	± 41.67	3.7	86	± 47
PEA2-0515ZLF	5	50	460	± 15	± 66	4	87	± 47
PEA2-1205ZLF	12	40	200	± 5	± 200	3.4	84	± 100
PEA2-1209ZLF	12	40	189	± 9	± 111	2.4	88	± 100
PEA2-1212ZLF	12	40	187	± 12	± 41.67	2.2	89	± 47
PEA2-1215ZLF	12	40	187	± 15	± 66	1.9	89	± 47
PEA2-1505ZLF	15	30	157	± 5	± 200	3.4	85	± 100
PEA2-1509ZLF	15	30	152	± 9	± 111	2.4	88	± 100
PEA2-1512ZLF	15	30	152	± 12	± 41.67	2.2	88	± 47
PEA2-1515ZLF	15	30	152	± 15	± 66	1.9	88	± 47
PEA2-2405ZLF	24	20	102	± 5	± 200	3.5	82	± 100
PEA2-2409ZLF	24	20	98	± 9	± 111	2.4	85	± 100
PEA2-2412ZLF	24	20	97	± 12	± 41.67	2.2	86	± 47
PEA2-2415ZLF	24	20	96	± 15	± 66	1.9	87	± 47

\* For optional **3kV Isolation** please add “**H30**” between E/Z and LF!  
Example: PEA2-2415EH30LF 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

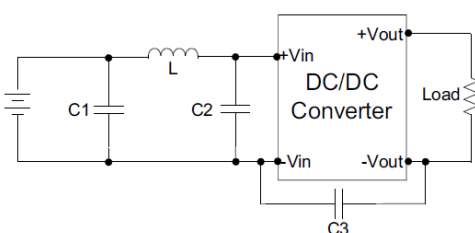
## App Notes:

- <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: PEA2-2415EH30LF for 3kV isolation.

EMC SPECIFICATIONS		
Radiated Emissions	EN 55022	CLASS B
Conducted Emissions **	EN55022	CLASS B
ESD	EN 61000-4-2	Perf. Criteria A
RS	EN 61000-4-3	Perf. Criteria A
EFT***	EN 61000-4-4	Perf. Criteria A
CS	EN 61000-4-6	Perf. Criteria A
PFMF	EN 61000-4-8	Perf. Criteria A

\*\* Input filter components (C1, C2, C3, 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.

\*\*\* An external filter capacitor is required if the module has to meet EN61000-4-4. (e.g. Nippon chemi-con KY series, 220uF/100V)



	C1	L	C2	C3
PEA2-05xxXLF	1210, 2.2uF/100V	18 uH		
PEA2-12xxXLF	1210, 2.2uF/100V	18 uH		
PEA2-15xxXLF	1210, 2.2uF/100V	18 uH		
PEA2-24xxXLF	1210, 2.2uF/100V	18 uH	1210, 2.2uF/100V	1206, 470pF/2kV