

# P14SG-xxxxE/Z(Hxx)LF



## PM5-SERIES

Rev.05-2015

- ✓ 3 Watt
- ✓ Regulated
- ✓ **DIP24 Plastic Case**
- ✓ **1 - 6 kV DC I/O Isolation**
- ✓ **Single and Dual Output**
- ✓ **Continuous Short Circuit Prot.**
- ✓ **Full SMD Technology**

The PM5 series P14SG-xxxxE/Z(Hxx)LF is a family of cost effective 3 W single and dual output DC/DC converters. These converters are encapsulated in an ultra miniature DIP24 case. High performance features: 1000VDC, optional up to 6000VDC input/output isolation, high efficiency operation, output voltage accuracy of  $\pm 2\%$  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	Pi Type
Input Reflected Ripple Current <sup>1</sup>	35 mA pk-pk

### Output Specifications

Voltage Accuracy	$\pm 2\%$
Short Circuit Protection	Indefinite (automatic recovery)
Line Regulation	$\pm 0.5\%$
Load Regulation (0% - 100%)	$\pm 1.0\%$ , max (Single) (3.3V <sub>out</sub> Models: $\pm 2\%$ ) $\pm 0.5\%$ , max (Dual – balanced load)
Ripple and Noise (20Mhz bandwidth)	75 mV pk-pk
Temperature Coefficient	$\pm 0.02\% / ^\circ\text{C}$

### General Specifications

Efficiency	See Table
I/O Isolation Voltage (3 sec.)	1000 VDC (up to 6000 VDC optional)*
I/O Isolation Capacity	60 pF, typ.
I/O Isolation Resistance	1000 M Ohm
Switching Frequency (typical)	40 kHz (Single out); 250 kHz (Dual out)
Humidity	95% rel H
Reliability Calculated MTBF (MIL-HDBK-217F)	> 1 Mhrs

### Physical Specifications

Case Material	Non Conductive Black Plastic (UL94V-0 rated)
Potting Material	Epoxy (UL94V-0 rated)
Weight	~ 12.5g, 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
RoHS Conform	Soldering 260 °C, max. (1.5mm 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)	Efficiency (%)	Capacitor Load (µF) <sup>2</sup>
<b>SINGLE OUTPUT</b>							
P14SG-053R3ELF	5	120	720	3.3	600	55	470
P14SG-0505ELF	5	120	923	5	600	65	470
P14SG-0509ELF	5	120	882	9	333	68	470
P14SG-0512ELF	5	120	845	12	250	71	470
P14SG-0515ELF	5	120	845	15	200	71	470
P14SG-0524ELF	5	120	937	24	125	64	470
P14SG-123R3ELF	12	50	284	3.3	600	58	470
P14SG-1205ELF	12	50	384	5	600	65	470
P14SG-1209ELF	12	50	357	9	333	70	470
P14SG-1212ELF	12	50	352	12	250	71	470
P14SG-1215ELF	12	50	342	15	200	73	470
P14SG-1224ELF	12	50	367	24	125	68	470
P14SG-243R3ELF	24	25	142	3.3	600	58	470
P14SG-2405ELF	24	25	192	5	600	65	470
P14SG-2406ELF	24	22	195	6	500	64	470
P14SG-2409ELF	24	25	181	9	333	69	470
P14SG-2412ELF	24	25	173	12	250	72	470
P14SG-2415ELF	24	25	173	15	200	72	470
P14SG-2424ELF	24	25	178	24	125	70	470
<b>DUAL OUTPUT</b>							
P14SG-053R3ZLF	5	30	825	± 3.3	± 400	64	± 1000
P14SG-0505ZLF	5	30	909	± 5	± 300	66	± 1000
P14SG-0509ZLF	5	40	882	± 9	± 167	68	± 470
P14SG-0512ZLF	5	40	857	± 12	± 125	70	± 470
P14SG-0515ZLF	5	40	857	± 15	± 100	70	± 470
P14SG-0524ZLF	5	60	869	± 24	± 63	69	± 220
P14SG-123R3ZLF	12	15	326	± 3.3	± 400	68	± 1000
P14SG-1205ZLF	12	15	333	± 5	± 300	75	± 1000
P14SG-1209ZLF	12	25	320	± 9	± 167	78	± 470
P14SG-1212ZLF	12	25	312	± 12	± 125	80	± 470
P14SG-1215ZLF	12	25	320	± 15	± 100	78	± 470
P14SG-1224ZLF	12	25	328	± 24	± 63	76	± 220
P14SG-243R3ZLF	24	15	157	± 3.3	± 400	70	± 1000
P14SG-2405ZLF	24	15	162	± 5	± 300	77	± 1000
P14SG-2409ZLF	24	15	160	± 9	± 167	78	± 470
P14SG-2412ZLF	24	15	156	± 12	± 125	80	± 470
P14SG-2415ZLF	24	15	160	± 15	± 100	78	± 470

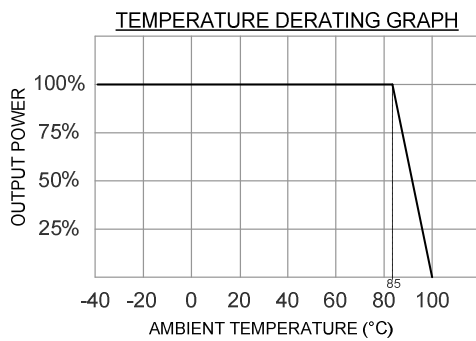
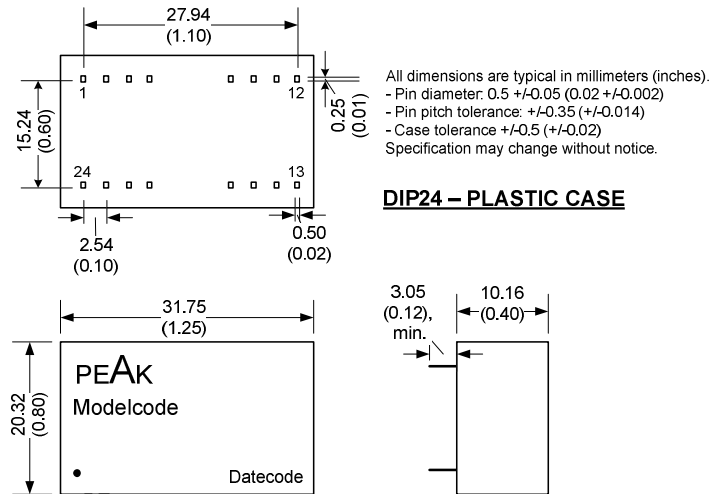
If you need other specifications, please enquire.

**\*OPTIONS:**

- H30 = 3000 VDC ISOLATION**
- H40 = 4000 VDC ISOLATION**
- H52 = 5200 VDC ISOLATION**
- H60 = 6000 VDC ISOLATION**

For other I/O Isolation please see table on the left hand side and add "Hxx" before LF (P14SG-2412EH60LF for 6KV)

# Package / Pinning / Derating



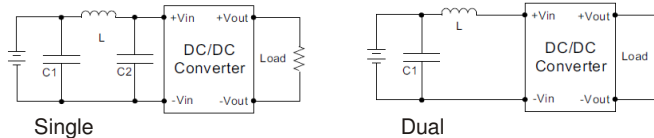
PIN CONNECTIONS				
#	SINGLE	DUAL	SINGLE ≥3KV	DUAL ≥3KV
1	+Vin	+Vin	+Vin	+Vin
2	N.C.	- Vout	+Vin	+Vin
3	N.C.	Common	Omitted	Omitted
10	- Vout	Common	Omitted	Common
11	+Vout	+Vout	Omitted	Common
12	- Vin	- Vin	- Vout	Omitted
13	- Vin	- Vin	+Vout	- Vout
14	+Vout	+Vout	Omitted	Omitted
15	- Vout	Common	Omitted	+ Vout
22	N.C.	Common	Omitted	Omitted
23	N.C.	- Vout	- Vin	- Vin
24	+Vin	+Vin	- Vin	- Vin

## 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.

### EMI Filter

Input Filter components (C1, C2 = 220uF, 100V and L (12uH)) are used to meet conducted emissions requirement for the converter. The components should be mounted as close as possible.



### EMC Specifications

Radiated Emissions	EN55022	Class A
Conducted Emissions	EN55022	Class A
ESD	IEC 61000-4-2	Perf. Criteria A
RS	IEC 61000-4-3	Perf. Criteria A
EFT	IEC 61000-4-4	Perf. Criteria A
Surge	IEC 61000-4-5	Perf. Criteria A
CS	IEC 61000-4-6	Perf. Criteria A
PFMF	IEC 61000-4-8	Perf. Criteria A