

# P10SG-xxxxE/Z(Hxx)LF



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## PM5-SERIES

Rev.11-2008

- ✓ 2 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 P10SG-xxxxE/Z(Hxx)LF is a family of cost effective 2 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%)	$\pm 0.5\%$ (3.3Vout Models: $\pm 1.5\%$ )
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); 300 kHz (Dual out)
Humidity	95% rel H
Reliability Calculated MTBF (MIL-HDBK-217F)	> 3.072 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 $^\circ\text{C}$ (ambient)
Maximum Case Temperature	100 $^\circ\text{C}$
Storage Temperature	-40 to +125 $^\circ\text{C}$
Cooling	Free Air Convection
RoHS Conform	Soldering 260 $^\circ\text{C}$ , 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><u>SINGLE OUTPUT</u></b>							
P10SG-053R3ELF	5	75	622	3.3	500	53	330
P10SG-0505ELF	5	75	615	5	400	65	330
P10SG-0509ELF	5	75	597	9	222	67	330
P10SG-0512ELF	5	75	571	12	166	70	330
P10SG-0515ELF	5	75	588	15	133	68	330
P10SG-0524ELF	5	75	615	24	83.3	65	330
P10SG-123R3ELF	12	70	245	3.3	500	56	330
P10SG-1205ELF	12	70	260	5	400	64	330
P10SG-1209ELF	12	70	245	9	222	68	330
P10SG-1212ELF	12	70	238	12	166	70	330
P10SG-1215ELF	12	70	252	15	133	66	330
P10SG-1224ELF	12	70	256	24	83.3	65	330
P10SG-243R3ELF	24	25	120	3.3	500	57	330
P10SG-2405ELF	24	25	132	5	400	63	330
P10SG-2409ELF	24	25	132	9	222	63	330
P10SG-2412ELF	24	25	122	12	166	68	330
P10SG-2415ELF	24	25	122	15	133	68	330
P10SG-2424ELF	24	25	122	24	83.3	68	330
<b><u>DUAL OUTPUT</u></b>							
P10SG-053R3ZLF	5	30	638	± 3.3	± 300	62	± 1000
P10SG-0505ZLF	5	30	588	± 5	± 200	68	± 1000
P10SG-0509ZLF	5	40	571	± 9	± 111	70	± 470
P10SG-0512ZLF	5	40	571	± 12	± 83	70	± 470
P10SG-0515ZLF	5	40	571	± 15	± 67	70	± 470
P10SG-0524ZLF	5	50	579	24	42	69	220
P10SG-123R3ZLF	12	20	250	± 3.3	± 300	66	± 1000
P10SG-1205ZLF	12	20	228	± 5	± 200	73	± 1000
P10SG-1209ZLF	12	20	222	± 9	± 111	75	± 470
P10SG-1212ZLF	12	20	213	± 12	± 83	78	± 470
P10SG-1215ZLF	12	35	216	± 15	± 67	77	± 470
P10SG-1224ZLF	12	35	219	± 24	± 42	76	± 220
P10SG-243R3ZLF	24	15	121	± 3.3	± 300	68	± 1000
P10SG-2405ZLF	24	15	114	± 5	± 200	73	± 1000
P10SG-2409ZLF	24	15	111	± 9	± 111	75	± 470
P10SG-2412ZLF	24	15	104	± 12	± 83	80	± 470
P10SG-2415ZLF	24	20	108	± 15	± 67	77	± 470
P10SG-2424ZLF	24	20	111	± 24	± 42	75	± 220

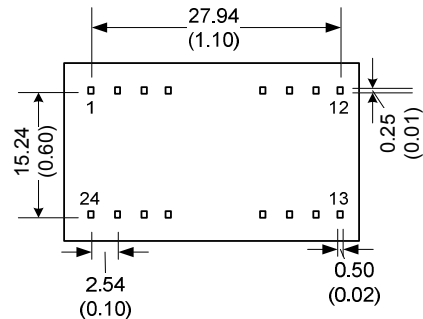
If you need other specifications, please enquire.

### **\*OPTIONS:**

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

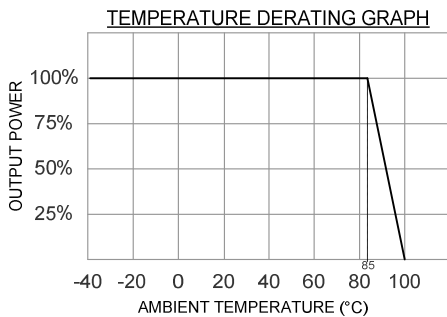
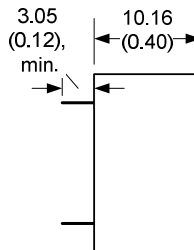
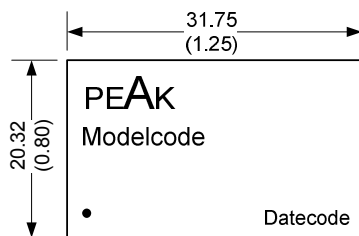
For other I/O Isolation please see table on the left hand side and add "Hxx" before LF  
(P10SG-2412EH60LF for 6KV)

# Package / Pinning / Derating



All dimensions are typical in millimeters (inches).  
 - Pin diameter: 0.5 +/-0.05 (0.02 +/-0.002)  
 - Pin pitch tolerance: +/-0.35 (+/-0.014)  
 - Case tolerance +/-0.5 (+/-0.02)  
 Specification may change without notice.

## DIP24 – PLASTIC CASE



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.