

# P(C)6NG-xxxxE/Z2:1(H30)(M)LF



## PMB-SERIES

Rev.05-2011

- ✓ 1 Watt
- ✓ 2:1 Wide Input
- ✓ Reg. Single and Dual Output
- ✓ 1 - 3 kV DC I/O Isolation
- ✓ SIP8 Plastic or Metal\* case
- ✓ On/Off Control (optional)
- ✓ Contin. Short Circuit Protection

The PMB 1 Watt series is a family of cost effective 1 W single and dual output DC/DC converters with an optional control Pin. These converters are encapsulated in an ultra miniature SIP8 or DIP16 plastic or metal case. High performance features: continuous / long time short circuit protection with automatic restart and tight line / load regulation, high efficiency operation and output voltage accuracy of  $\pm 2\%$  maximum.

All specifications typical at  $T_a=25^\circ\text{C}$ , nominal input voltage and full load unless otherwise specified

### Input Specifications

Voltage Range	2:1 Wide Input (see table)
Input Filter	Capacitor
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	$\pm 0.5\%$ , max.
Load Regulation (25% - 100%)	$\pm 1\%$ , max.
Cross Regulation (for dual output only)	$\pm 5\%$
Ripple and Noise (20Mhz bandwidth)	80 mV pk-pk, max.
Temperature Coefficient	$\pm 0.02\% / ^\circ\text{C}$

### General Specifications

I/O Isolation Voltage (3 sec.)	1000 VDC (3000 VDC optional)*
I/O Isolation Capacity	60 pF, max
I/O Isolation Resistance	1000 M Ohm, min.
Switching Frequency	100 - 650 kHz
Humidity	95% rel H
Reliability Calculated MTBF (MIL-HDBK-217F)	> 1.66 Mhrs
Safety Standard (designed to meet)	IEC/EN 60950-1

### Physical Specifications

Case Material	Non Conductive Black Plastic (UL94V-0 rated) Nickel Coated Copper* (optional)
Potting Material	Epoxy (UL94V-0 rated)
Weight	~ 4.5g, typ. (~ 6.5g, for Metal Case)

### Environment Specifications

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

# Selection Guide

## Single Output

Order #	Input Voltage (VDC)	Input Current No Load (mA)	Input Current Full Load (mA)	Output Voltage (VDC)	Output Current Min. Load (mA)	Output Current Full Load (mA)	Efficiency (%)	Capacitor Load (uF) <sup>2</sup>
<b>SINGLE OUTPUT</b>								
P6NG-053R3E2:1LF	4.5-9	15	298	3.3	76	303	67	3300
P6NG-0505E2:1LF	4.5-9	15	298	5	50	200	67	3300
P6NG-0509E2:1LF	4.5-9	40	285	9	28	111	70	470
P6NG-0512E2:1LF	4.5-9	55	285	12	21	83	70	470
P6NG-0515E2:1LF	4.5-9	55	285	15	17	67	70	470
P6NG-0524E2:1LF	4.5-9	70	294	24	10	42	68	220
P6NG-123R3E2:1LF	9-18	15	119	3.3	76	303	70	3300
P6NG-1205E2:1LF	9-18	15	115	5	50	200	72	3300
P6NG-1209E2:1LF	9-18	15	108	9	28	111	77	470
P6NG-1212E2:1LF	9-18	15	108	12	21	83	77	470
P6NG-1215E2:1LF	9-18	15	108	15	17	67	77	470
P6NG-1224E2:1LF	9-18	15	114	24	10	42	73	220
P6NG-243R3E2:1LF	18-36	8	59	3.3	76	303	70	3300
P6NG-2405E2:1LF	18-36	8	57	5	50	200	72	3300
P6NG-2409E2:1LF	18-36	8	55	9	28	111	75	470
P6NG-2412E2:1LF	18-36	8	55	12	21	83	75	470
P6NG-2415E2:1LF	18-36	8	55	15	17	67	75	470
P6NG-2424E2:1LF	18-36	8	55	24	10	42	75	220
P6NG-483R3E2:1LF	36-72	6	31	3.3	76	303	66	3300
P6NG-4805E2:1LF	36-72	6	30	5	50	200	68	3300
P6NG-4809E2:1LF	36-72	6	29	9	28	111	70	470
P6NG-4812E2:1LF	36-72	6	29	12	21	83	70	470
P6NG-4815E2:1LF	36-72	6	29	15	17	67	70	470
P6NG-4824E2:1LF	36-72	6	30	24	10	42	68	220

If you need other specifications, please enquire.

### \*OPTIONS:

<b>Control On/Off</b>	For Optional control Pin please add "C" between P and 6 (for example: <b>PC</b> 6NG-2424E2:1LF)
<b>3 kV I/O Isolation</b>	For optional 3kV DC I/O Isolation, please add "H30" before LF! (P6NG-2424E2:1 <b>H30</b> LF for 3kV)
<b>Metal Case</b>	For optional Metal Case, please add "M" before LF! (P6NG-2424Z2:1 <b>M</b> LF for Metal Case)

# Selection Guide

## Dual Output

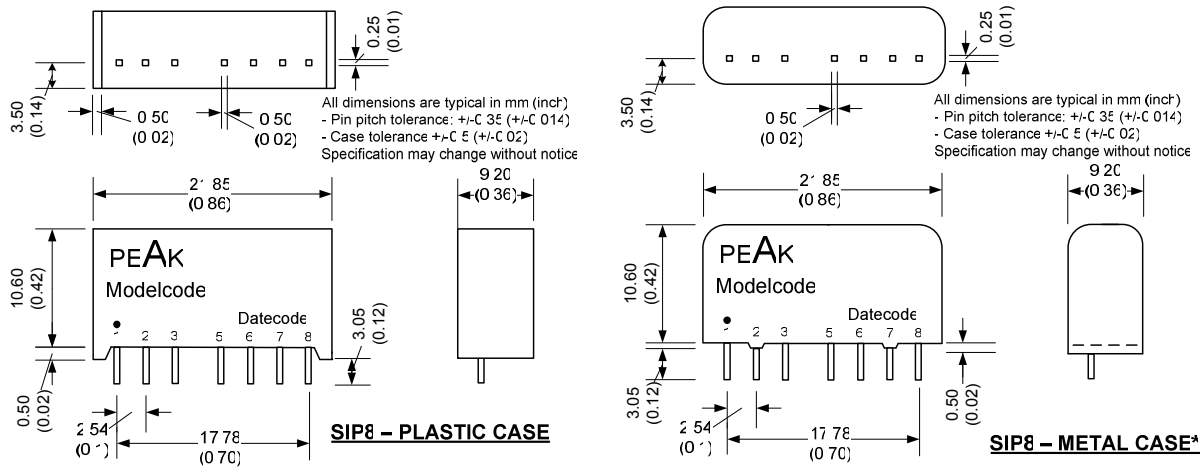
Order #	Input Voltage (VDC)	Input Current No Load (mA)	Input Current Full Load (mA)	Output Voltage (VDC)	Output Current Min. Load (mA)	Output Current Full Load (mA)	Efficiency (%)	Capacitor Load (µF) <sup>2</sup>
<b>DUAL OUTPUT</b>								
P6NG-053R3Z2:1LF	4.5-9	15	285	± 3.3	± 38	± 152	70	± 1000
P6NG-0505Z2:1LF	4.5-9	15	270	± 5.0	± 25	± 100	74	± 1000
P6NG-0509Z2:1LF	4.5-9	20	270	± 9.0	± 14	± 56	74	± 220
P6NG-0512Z2:1LF	4.5-9	20	266	± 12.0	± 10	± 42	75	± 220
P6NG-0515Z2:1LF	4.5-9	40	285	± 15.0	± 8	± 33	70	± 220
P6NG-0524Z2:1LF	4.5-9	70	298	± 24.0	± 5	± 21	67	± 100
P6NG-123R3Z2:1LF	9-18	15	119	± 3.3	± 38	± 152	70	± 1000
P6NG-1205Z2:1LF	9-18	15	115	± 5.0	± 25	± 100	72	± 1000
P6NG-1209Z2:1LF	9-18	15	109	± 9.0	± 14	± 56	76	± 220
P6NG-1212Z2:1LF	9-18	15	109	± 12.0	± 10	± 42	76	± 220
P6NG-1215Z2:1LF	9-18	15	112	± 15.0	± 8	± 33	74	± 220
P6NG-1224Z2:1LF	9-18	40	124	± 24.0	± 5	± 21	67	± 100
P6NG-243R3Z2:1LF	18-36	8	59	± 3.3	± 38	± 152	70	± 1000
P6NG-2405Z2:1LF	18-36	8	59	± 5.0	± 25	± 100	70	± 1000
P6NG-2409Z2:1LF	18-36	8	54	± 9.0	± 14	± 56	76	± 220
P6NG-2412Z2:1LF	18-36	8	54	± 12.0	± 10	± 42	77	± 220
P6NG-2415Z2:1LF	18-36	8	55	± 15.0	± 8	± 33	75	± 220
P6NG-2424Z2:1LF	18-36	20	59	± 24.0	± 5	± 21	70	± 100
P6NG-483R3Z2:1LF	36-72	6	30	± 3.3	± 38	± 152	70	± 1000
P6NG-4805Z2:1LF	36-72	6	30	± 5.0	± 25	± 100	70	± 1000
P6NG-4809Z2:1LF	36-72	6	28	± 9.0	± 14	± 56	74	± 220
P6NG-4812Z2:1LF	36-72	6	27	± 12.0	± 10	± 42	76	± 220
P6NG-4815Z2:1LF	36-72	6	29	± 15.0	± 8	± 33	72	± 220
P6NG-4824Z2:1LF	36-72	12	30	± 24.0	± 5	± 21	70	± 100

If you need other specifications, please enquire.

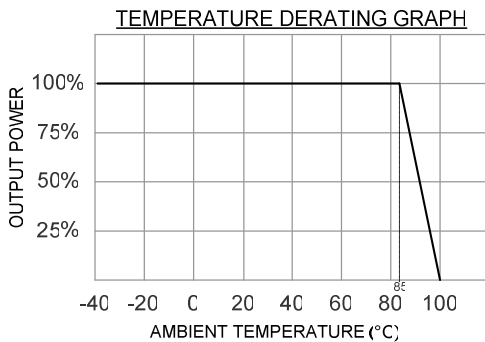
### \*OPTIONS:

<b>Control On/Off</b>	For Optional control Pin please add "C" between P and 6 (for example: <b>PC</b> 6NG-2424Z2:1LF)
<b>3 kV I/O Isolation</b>	For optional 3kV DC I/O Isolation, please add "H30" before (M)LF! (P6NG-2424Z2:1 <b>H30</b> LF for 3kV)
<b>Metal Case</b>	For optional Metal Case, please add "M" before LF! (P6NG-2424Z2:1 <b>M</b> LF for Metal Case)

# Package / Pinning / Derating



FOR METAL CASE PLEASE ADD „M“ BEFORE „LF“  
 E.G.: PC6NG-0505EH30MLF



PIN CONNECTIONS				
#	SINGLE	DUAL	SINGLE "C"	DUAL "C"
1	- Vin	- Vin	- Vin	- Vin
2	+Vin	+Vin	+Vin	+Vin
3	Omitted	N.C.	Ctrl.	Ctrl.
5	Omitted	N.C.	N.C.	N.C.
6	+Vout	+Vout	+Vout	+Vout
7	- Vout	- Vout	- Vout	- Vout
8	N.C.	Common	N.C.	Common

(Same pinning for 3kV I/O isolation)

## App Notes:

<sup>1</sup> = Measured Input reflected ripple current with a simulated source inductance of 12uH

<sup>2</sup> = Tested by nominal Vin and constant resistive load.

- Operation under no-load conditions will not damage these devices, but they will not observe the listed specifications.

## Remote ON/OFF Control (Only for optional Ctrl Verion -> PC6NG...)



MCU (Master Control Unit)

The MCU Pin Voltage is referenced to -Vin (Pin1)

ON: 0 – 0.8 VDC / open or short circuit Pin1 and Pin3

OFF: 4.5 to 15 VDC, max.

OFF idle current: 3.5mA to 15mA, max. (5mA, typ.)