

P(C)10NG-xxxxE/Z2:1(H30)(M)LF

PMB-SERIES

Rev.02-2011

- ✓ 2 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 2Watt series is a family of cost effective 2W single and dual output DC/DC converters with an optional control Pin (SIP). 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 ¹	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)	> 1.61 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) ²
SINGLE OUTPUT								
P10NG-053R3E2:1LF	4.5-9	15	492	3.3	125	500	67	3300
P10NG-0505E2:1LF	4.5-9	15	571	5	100	400	70	3300
P10NG-0509E2:1LF	4.5-9	30	555	9	56	222	72	470
P10NG-0512E2:1LF	4.5-9	30	555	12	42	167	72	470
P10NG-0515E2:1LF	4.5-9	30	547	15	33	133	73	470
P10NG-0524E2:1LF	4.5-9	60	533	24	21	83	75	220
P10NG-123R3E2:1LF	9-18	15	205	3.3	125	500	67	3300
P10NG-1205E2:1LF	9-18	15	216	5	100	400	77	3300
P10NG-1209E2:1LF	9-18	15	213	9	56	222	78	470
P10NG-1212E2:1LF	9-18	15	208	12	42	167	80	470
P10NG-1215E2:1LF	9-18	15	213	15	33	133	78	470
P10NG-1224E2:1LF	9-18	15	208	24	21	83	80	220
P10NG-243R3E2:1LF	18-36	8	98	3.3	125	500	70	3300
P10NG-2405E2:1LF	18-36	8	108	5	100	400	77	3300
P10NG-2409E2:1LF	18-36	8	104	9	56	222	80	470
P10NG-2412E2:1LF	18-36	8	104	12	42	167	80	470
P10NG-2415E2:1LF	18-36	8	104	15	33	133	80	470
P10NG-2424E2:1LF	18-36	8	104	24	21	83	80	220
P10NG-483R3E2:1LF	36-72	6	48	3.3	125	500	71	3300
P10NG-4805E2:1LF	36-72	6	56	5	100	400	74	3300
P10NG-4809E2:1LF	36-72	6	53	9	56	222	78	470
P10NG-4812E2:1LF	36-72	6	53	12	42	167	78	470
P10NG-4815E2:1LF	36-72	6	53	15	33	133	78	470
P10NG-4824E2:1LF	36-72	6	52	24	21	83	80	220

If you need other specifications, please enquire.

*OPTIONS:

Control On/Off	For Optional control Pin please add "C" between P and 10 (for example: PC 10NG-2424E2:1LF)
3 kV I/O Isolation	For optional 3kV DC I/O Isolation, please add "H30" before LF! (P10NG-2424E2:1 H30 LF for 3kV)
Metal Case	For optional Metal Case, please add "M" before LF! (P10NG-2424E2:1 M LF for Metal Case)

Selection Guide

Dual Output

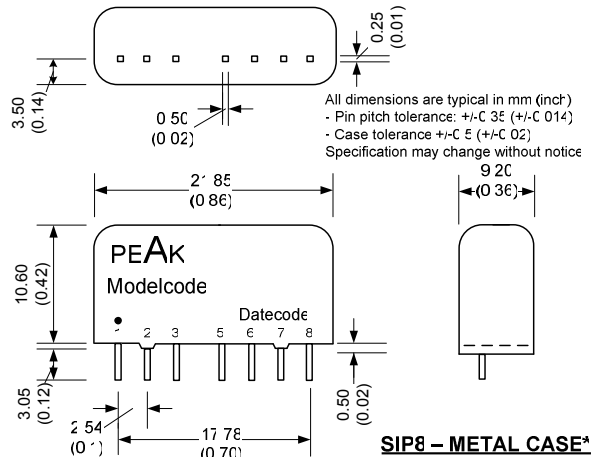
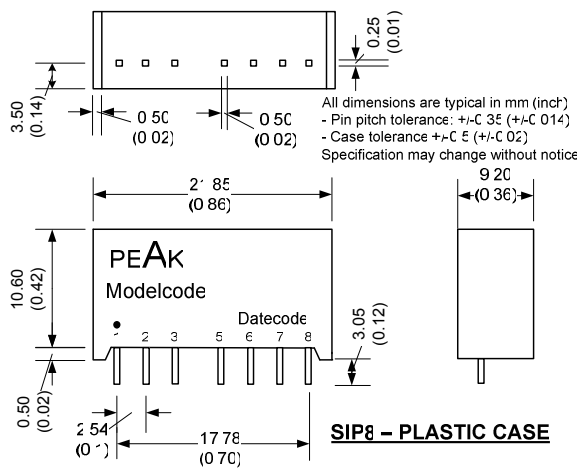
Order #	Input Voltage (VDC)	Input Current No Load (mA)	Input Current Full Load (mA)	Output Voltage (VDC)	Output Current Min. Load (mA)	Output Current Full Load (mA)	Efficiency (%)	Capacitor Load (uF) ²
DUAL OUTPUT								
P10NG-053R3Z2:1LF	4.5-9	20	471	± 3.3	± 63	± 250	70	± 1000
P10NG-0505Z2:1LF	4.5-9	20	571	± 5.0	± 50	± 200	70	± 1000
P10NG-0509Z2:1LF	4.5-9	20	540	± 9.0	± 28	± 111	74	± 220
P10NG-0512Z2:1LF	4.5-9	25	533	± 12.0	± 21	± 83	75	± 220
P10NG-0515Z2:1LF	4.5-9	25	533	± 15.0	± 17	± 67	75	± 220
P10NG-0524Z2:1LF	4.5-9	60	563	± 24.0	± 10	± 42	71	± 100
P10NG-123R3Z2:1LF	9-18	15	188	± 3.3	± 63	± 250	73	± 1000
P10NG-1205Z2:1LF	9-18	15	222	± 5.0	± 50	± 200	75	± 1000
P10NG-1209Z2:1LF	9-18	15	210	± 9.0	± 28	± 111	79	± 220
P10NG-1212Z2:1LF	9-18	15	208	± 12.0	± 21	± 83	80	± 220
P10NG-1215Z2:1LF	9-18	15	210	± 15.0	± 17	± 67	79	± 220
P10NG-1224Z2:1LF	9-18	30	219	± 24.0	± 10	± 42	76	± 100
P10NG-243R3Z2:1LF	18-36	8	94	± 3.3	± 63	± 250	73	± 1000
P10NG-2405Z2:1LF	18-36	8	106	± 5.0	± 50	± 200	78	± 1000
P10NG-2409Z2:1LF	18-36	8	105	± 9.0	± 28	± 111	79	± 220
P10NG-2412Z2:1LF	18-36	8	104	± 12.0	± 21	± 83	80	± 220
P10NG-2415Z2:1LF	18-36	8	104	± 15.0	± 17	± 67	80	± 220
P10NG-2424Z2:1LF	18-36	20	106	± 24.0	± 10	± 42	78	± 100
P10NG-483R3Z2:1LF	36-72	6	47	± 3.3	± 63	± 250	73	± 1000
P10NG-4805Z2:1LF	36-72	6	56	± 5.0	± 50	± 200	74	± 1000
P10NG-4809Z2:1LF	36-72	6	53	± 9.0	± 28	± 111	79	± 220
P10NG-4812Z2:1LF	36-72	6	53	± 12.0	± 21	± 83	79	± 220
P10NG-4815Z2:1LF	36-72	6	52	± 15.0	± 17	± 67	80	± 220
P10NG-4824Z2:1LF	36-72	12	55	± 24.0	± 10	± 42	75	± 100

If you need other specifications, please enquire.

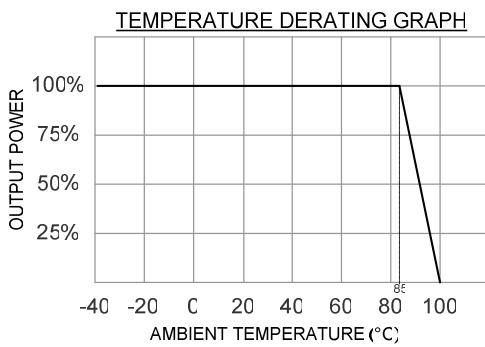
*OPTIONS:

Control On/Off	For Optional control Pin please add "C" between P and 10 (for example: PC 10NG-2424Z2:1LF)
3 kV I/O Isolation	For optional 3kV DC I/O Isolation, please add "H30" before LF! (P10NG-2424Z2:1 H30 LF for 3kV)
Metal Case	For optional Metal Case, please add "M" before LF! (P10NG-2424Z2:1 M LF for Metal Case)

Package / Pinning / Derating



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



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

(Same pinning for 3kV I/O isolation)

App Notes:

¹ = Measured Input reflected ripple current with a simulated source inductance of 12uH

² = Tested by nominal Vin and constant resistive load.

Remote ON/OFF Control (Only for optional Ctrl Version -> PC10NG...)



MCU (Master Control Unit)

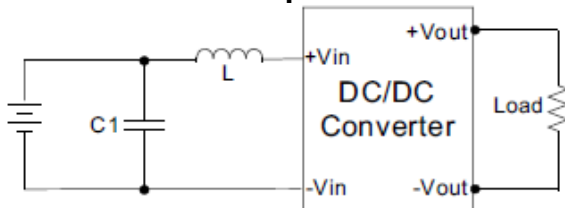
The MCU Pin Voltage is referenced to -Vin (Pin1)

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

OFF: 4.5 to 15 VDC, max. (or 3.5mA to 15mA, max.)

OFF idle current: 5mA, typ.

EMI Filter / EMC Specifications



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

C1: 100uF / 100V L: 12uH

EMC SPECIFICATIONS		
Radiated Emissions	EN 55022	CLASS A
Conducted Emissions	EN 55022	CLASS A
ESD	IEC 61000-4-2	Perf. Criteria B
RS	IEC 61000-4-3	Perf. Criteria A
EFT	IEC 61000-4-4	Perf. Criteria B
Surge	IEC 61000-4-5	Perf. Criteria B
CS	IEC 61000-4-6	Perf. Criteria A
PFMF	IEC 61000-4-8	Perf. Criteria A
An external filter capacitor is required if the module has to meet EN61000-4-4 and EN61000-4-5. (e.g. 220uF/100V)		