

P40XG-xxxxE/Z4:1LF



PMM40A-SERIES

Rev.02-2011

- ✓ 40 Watt
- ✓ 4:1 Wide Input
- ✓ 2" x 2" Case
- ✓ 1.6 kV DC I/O Isolation
- ✓ Regulated Output
- ✓ **Single and Dual Output**
- ✓ **Continuous SC / OV / OC Prot.**

The PMM40A series is a family of cost effective 40W single & dual output DC-DC converters. These converters combine nickle-coated copper package in a 2"x2" case with high performance features such as Active Clamp Technology, continuous short circuit protection with automatic restart and tight line / load regulation. Devices are encapsulated using flame retardant resin. Input voltages of 24 and 48 with output voltage of 3.3, 5, 12, 15, ± 12 , ± 15 Vdc. High performance features include high efficiency operation up to 92% and output voltage accuracy of $\pm 1\%$ maximum.

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

Input Specifications

Voltage Range	4:1 Wide Input (See Table)
Input Filter	Pi Type
Input Reflected Ripple Current ¹	20 mA pk-pk
Start up Time (Nom. V_{in} and constant resistive load)	25mS

Output Specifications

Voltage Accuracy / Adjustability (TRIM) ²	$\pm 1\%$ / $\pm 10\%$, max.
Short Circuit Protection	Indefinite (hiccup / Automatic Recovery)
Over Load Protection	130% of FL
Line Regulation	$\pm 0.5\%$, max.
Load Regulation (1% - 100%)	$\pm 0.5\%$, max.(Single out) $\pm 1\%$, max.(Dual out)
Cross Regulation ³ (Dual Out)	$\pm 5\%$
Ripple and Noise ⁴ (20Mhz bandwidth)	75mV(Single) 150 mV(Dual) pk-pk, max.
Temperature Coefficient	$\pm 0.02\%$ / $^\circ\text{C}$
Transient Recovery Time / Response Dev. ⁵	250 μs . / $\pm 3\%$, max.

General Specifications

I/O Isolation Voltage (3 sec.)	1600 VDC
I/O Isolation Capacitance	2500 pF, max.
I/O Isolation Resistance	1000 M Ohm, min.
Switching Frequency	270 kHz
Humidity	95% rel H
Reliability Calculated MTBF (MIL-HDBK-217F)	> 151 khrs
Safety Standart (Design to meet)	IEC/EN 60950-1

Physical Specifications

Case Material	Nickel Coated Copper
Potting Material	Epoxy (UL94V-0 rated)
Weight	~ 60g, typ.

Environment Specifications

Operating Temperature	-40 to +55 $^\circ\text{C}$ (ambient, for 100% load)
Maximum Case Temperature	105 $^\circ\text{C}$
Storage Temperature	-40 to +125 $^\circ\text{C}$
Cooling	Free Air Convection (10mm distance required)
RoHS Conform	Soldering 260 $^\circ\text{C}$, max. (1.5mm from case 10s.)

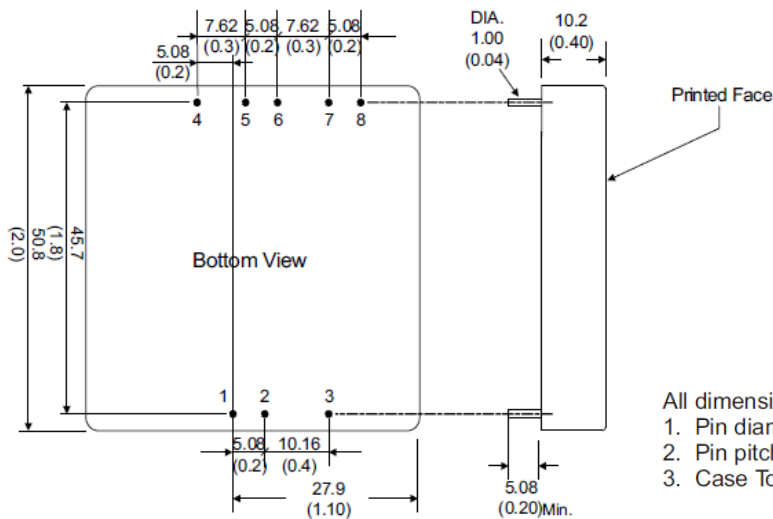
Selection Guide

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) 6
SINGLE OUTPUT								
P40XG-243R3E4:1LF	9-36	80	1598	3.3	0	10000	89	25000
P40XG-2405E4:1LF	9-36	100	1893	5	0	8000	91	13000
P40XG-2412E4:1LF	9-36	50	1925	12	0	3350	90	2300
P40XG-2415E4:1LF	9-36	50	1904	15	0	2650	90	1500
P40XG-483R3E4:1LF	18-75	60	799	3.3	0	10000	89	25000
P40XG-4805E4:1LF	18-75	60	936	5	0	8000	92	13000
P40XG-4812E4:1LF	18-75	30	963	12	0	3350	90	2300
P40XG-4815E4:1LF	18-75	30	941	15	0	2650	91	1500

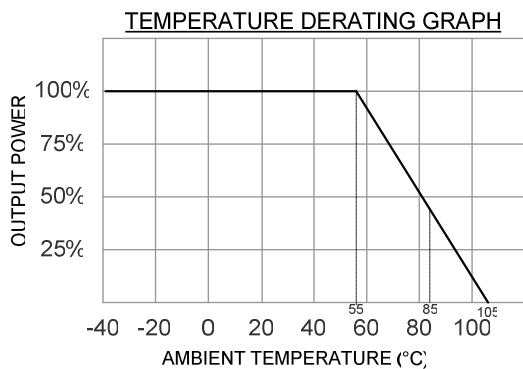
DUAL OUTPUT								
P40XG-2412Z4:1LF	9-36	60	1919	± 12	0	± 1650	89	± 1200
P40XG-2415Z4:1LF	9-36	60	1962	± 15	0	± 1350	89	± 750
P40XG-4812Z4:1LF	18-75	30	948	± 12	0	± 1650	90	± 1200
P40XG-4815Z4:1LF	18-75	30	970	± 15	0	± 1350	90	± 750

If you need other specifications, please enquire.

Package / Pinning / Derating



- All dimensions are typical in millimeters (inches)
- Pin diameter: 1.0 ±0.05 (0.04 ±0.002)
 - Pin pitch tolerance: ±0.35 (±0.014)
 - Case Tolerance: ±0.5 (±0.02)



PIN CONNECTIONS		
#	SINGLE	DUAL
1	+Vin	+Vin
2	- Vin	- Vin
3	CTRL	CTRL
4	- Sense	+Vout
5	+Sense	Common
6	+Vout	Common
7	- Vout	- Vout
8	TRIM	TRIM

App Notes

1. Measured Input reflected ripple current with a simulated source inductance of 12uH.
2. For the Single output: Maximum output deviation is 10% inclusive of remote sense and trim. If remote sense is not being used, the +sense should be connected to its corresponding +OUTPUT and likewise the -sense should be connected to its corresponding -OUTPUT.
3. One load is 25% to 100% load, the other load is 100% load, the output voltage variable rate is within $\pm 5\%$.
4. Measured with 20MHz bandwidth and 1.0uF ceramic capacitor.
5. Tested by normal Vin and 25% load step change (75%-50%-25% of Io).
6. Tested by minimal Vin and constant resistive load.
7. The PMM40A series can meet EN55022 Class A With an external filter in parallel with the input pins .
8. An external filter capacitor is required if the module has to meet EN61000-4-4 and EN61000-4-5.
The filter capacitor Peak suggest: Nippon chemi-con KY series, 220uF/100V
9. The remote on/off control pin is referenced to -Vin(pin2).

EMC SPECIFICATIONS		
Radiated Emissions	EN 55022	CLASS A
Conducted Emissions ⁷	EN 55022	CLASS A
ESD	IEC 61000-4-2	Perf. Criteria A
RS	IEC 61000-4-3	Perf. Criteria A
EFT ⁸	IEC 61000-4-4	Perf. Criteria A
Surge ⁸	IEC 61000-4-5	Perf. Criteria A
CS	IEC 61000-4-6	Perf. Criteria A
PFMF	IEC 61000-4-8	Perf. Criteria A

Over Voltage Protection (Zener Diode Clamp)	
3.3 Vout	3.9 V
5 Vout	6.2 V
12 Vout	15 V
15 Vout	18 V
± 12 Vout	± 15 V
± 15 Vout	± 18 V

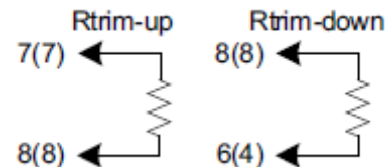
Under Input Voltage Lockout (typ.)	
24 Vin Models	Module ON/OFF 8.6V / 7.9V
48 Vin Models	Module ON/OFF 17.8V / 16V

Remote ON/OFF Control ⁹	
ON:	3 -12 VDC or open circuit
OFF:	0 – 1.2 VDC or short circuit PIN2 and PIN3
OFF idle current:	5mA, typ.

External Output Trimming

Output can be externally trimmed by using the method as below.

(..) = for Dual Output



Notes: