

P5MU-xxxxE/Z(Hxx)LF



PM1-SERIES

Rev.11-2008

- ✓ 0.75 Watt
- ✓ Unregulated
- ✓ **Single** and **Dual** Output
- ✓ **DIP14** Case
- ✓ **3 - 6 kV** DC I/O Isolation*
- ✓ Low Ripple and Noise

The PM1 series P5MU-xxxxE/Z(Hxx)LF is a family of cost effective 0.75 W single & dual output DC-DC converters. These converters are in an ultra miniature DIP14 case. Devices are encapsulated. High performance features: 3000VDC up to 6000VDC input/output isolation, high efficiency operation, output voltage accuracy of $\pm 3\%$ 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	Capacitor
Input Reflected Ripple Current ¹	20 mA pk-pk

Output Specifications

Voltage Accuracy	$\pm 3\%$
Short Circuit Protection	Short Term
Line Regulation	$\pm 1.2\% / 1\% V_{in}$ Change
Load Regulation (20% - 100%)	$\pm 10\%$ (3.3 Vout Models: $\pm 20\%$)
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.)	3000 VDC (up to 6000 VDC optional)*
I/O Isolation Capacity	60 pF, typ.
I/O Isolation Resistance	1000 M Ohm
Switching Frequency	80 kHz (Variable)
Humidity	95% rel H
Reliability Calculated MTBF (MIL-HDBK-217F)	> 1.121 Mhrs

Physical Specifications

Case Material	Non Conductive Black Plastic
Potting Material	Epoxy (UL94V-0 rated)
Weight	~ 2.6g, 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 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 (uF) ²
SINGLE OUTPUT							
P5MU-053R3ELF	5	30	205	3.3	227.3	73	220
P5MU-0505ELF	5	30	200	5	150	75	220
P5MU-057R2ELF	5	30	202	7.2	104.2	74	220
P5MU-0509ELF	5	30	200	9	83.3	75	220
P5MU-0512ELF	5	30	197	12	62.5	76	220
P5MU-0515ELF	5	30	197	15	50	76	220
P5MU-0518ELF	5	30	197	18	41.7	76	220
P5MU-0524ELF	5	30	194	24	31.2	77	220
P5MU-123R3ELF	12	20	85	3.3	227.3	73	220
P5MU-1205ELF	12	20	84	5	150	74	220
P5MU-127R2ELF	12	20	84	7.2	104.2	74	220
P5MU-1209ELF	12	20	83	9	83.3	75	220
P5MU-1212ELF	12	20	81	12	62.5	77	220
P5MU-1215ELF	12	20	80	15	50	78	220
P5MU-1218ELF	12	20	80	18	41.7	78	220
P5MU-1224ELF	12	20	80	24	31.2	78	220
P5MU-243R3ELF	24	10	42	3.3	227.3	74	220
P5MU-2405ELF	24	10	42	5	150	74	220
P5MU-247R2ELF	24	10	41	7.2	104.2	75	220
P5MU-2409ELF	24	10	41	9	83.3	75	220
P5MU-2412ELF	24	10	40	12	62.5	78	220
P5MU-2415ELF	24	10	40	15	50	78	220
P5MU-2418ELF	24	10	40	18	41.7	78	220
P5MU-2424ELF	24	10	39	24	31.2	80	220

If you need other specifications, please enquire.

*OPTIONS:

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
 (P5MU-2412EH60LF for 6KV)

Selection Guide

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 (uF) ²
DUAL OUTPUT							
P5MU-053R3ZLF	5	30	230	± 3.3	± 113.6	65	± 100
P5MU-0505ZLF	5	30	211	± 5	± 75	71	± 100
P5MU-057R2ZLF	5	30	202	± 7.2	± 52	74	± 100
P5MU-0509ZLF	5	30	202	± 9	± 41.6	74	± 100
P5MU-0512ZLF	5	30	197	± 12	± 31.2	76	± 100
P5MU-0515ZLF	5	30	197	± 15	± 25	76	± 100
P5MU-0518ZLF	5	30	189	± 18	± 20.8	79	± 100
P5MU-0524ZLF	5	30	189	± 24	± 15.6	79	± 100
P5MU-123R3ZLF	12	20	126	± 3.3	± 113.6	65	± 100
P5MU-1205ZLF	12	20	85	± 5	± 75	73	± 100
P5MU-127R2ZLF	12	20	84	± 7.2	± 52	74	± 100
P5MU-1209ZLF	12	20	84	± 9	± 41.6	74	± 100
P5MU-1212ZLF	12	20	80	± 12	± 31.2	78	± 100
P5MU-1215ZLF	12	20	78	± 15	± 25	80	± 100
P5MU-1218ZLF	12	20	78	± 18	± 20.8	80	± 100
P5MU-1224ZLF	12	20	80	± 24	± 15.6	78	± 100
P5MU-243R3ZLF	24	10	46	± 3.3	± 113.6	67	± 100
P5MU-2405ZLF	24	10	42	± 5	± 75	74	± 100
P5MU-247R2ZLF	24	10	41	± 7.2	± 52	76	± 100
P5MU-2409ZLF	24	10	41	± 9	± 41.6	76	± 100
P5MU-2412ZLF	24	10	40	± 12	± 31.2	78	± 100
P5MU-2415ZLF	24	10	40	± 15	± 25	78	± 100
P5MU-2418ZLF	24	10	40	± 18	± 20.8	78	± 100
P5MU-2424ZLF	24	10	40	± 24	± 15.6	78	± 100

If you need other specifications, please enquire.

*OPTIONS:

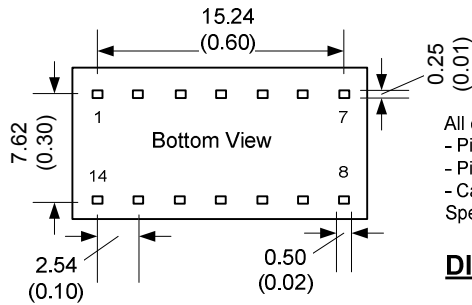
H40 = 4000 VDC ISOLATION

H52 = 5200 VDC ISOLATION

H60 = 6000 VDC ISOLATION

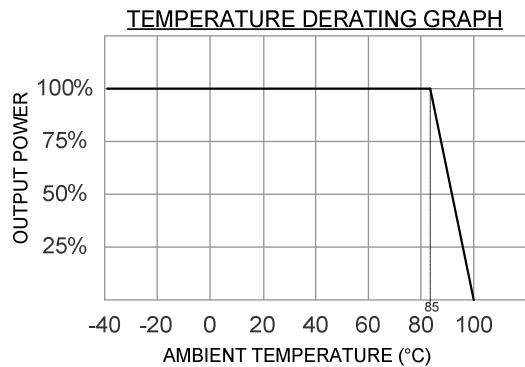
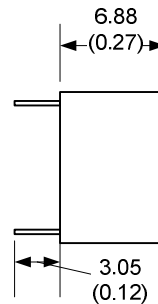
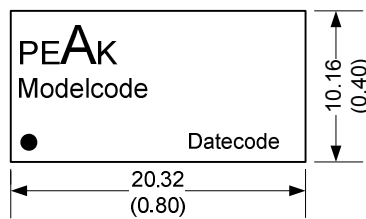
For other I/O Isolation please see table on the left hand side and add "Hxx" before LF
(P5MU-2412ZH40LF for 4KV)

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)
 Specification may change without notice.

DIP14 – PLASTIC CASE



PIN CONNECTIONS		
#	SINGLE ≥3KV	DUAL ≥3KV
1	- Vin	- Vin
7	N.C.	N.C.
8	+Vout	+Vout
9	Omitted	Common
10	- Vout	- Vout
11	Omitted	Omitted
14	+Vin	+Vin

App Notes:

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

² = Tested by minimal Vin and constant resistive load.

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