

# P3MU-xxxxE/Z(Hxx)LF



## PM1-SERIES

Rev.11-2008

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

The PM1 series P3MU-xxxxE/Z(H30)LF is a family of cost effective 0.5 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 <sup>1</sup>	20 mA pk-pk

### Output Specifications

Voltage Accuracy	$\pm 3\%$
Short Circuit Protection	Short Term
Line Regulation	$\pm 1.2\% / 1\%$ Vin Change
Load Regulation (20% - 100%)	$\pm 10\%$ (3.3Vout 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 MOhm
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 (UL94V-0 rated)
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 (µF) <sup>2</sup>
<b>SINGLE OUTPUT</b>							
P3MU-053R3ELF	5	30	142	3.3	151.5	70	220
P3MU-0505ELF	5	30	135	5	100	74	220
P3MU-057R2ELF	5	30	135	7.2	69.4	74	220
P3MU-0509ELF	5	30	133	9	55.5	75	220
P3MU-0512ELF	5	30	131	12	41.6	76	220
P3MU-0515ELF	5	30	131	15	33.3	76	220
P3MU-0518ELF	5	30	131	18	27.8	76	220
P3MU-0524ELF	5	30	128	24	20.8	78	220
P3MU-123R3ELF	12	20	59	3.3	151.5	70	220
P3MU-1205ELF	12	20	57	5	100	73	220
P3MU-127R2ELF	12	20	111	7.2	69.4	74	220
P3MU-1209ELF	12	20	55	9	55.5	75	220
P3MU-1212ELF	12	20	54	12	41.6	76	220
P3MU-1215ELF	12	20	54	15	33.3	76	220
P3MU-1218ELF	12	20	54	18	27.8	76	220
P3MU-1224ELF	12	20	53	24	20.8	78	220
P3MU-243R3ELF	24	10	29	3.3	151.5	70	220
P3MU-2405ELF	24	10	28	5	100	73	220
P3MU-247R2ELF	24	10	28	7.2	69.4	74	220
P3MU-2409ELF	24	10	28	9	55.5	75	220
P3MU-2412ELF	24	10	27	12	41.6	76	220
P3MU-2415ELF	24	10	26	15	33.3	78	220
P3MU-2418ELF	24	10	26	18	27.8	78	220
P3MU-2424ELF	24	10	26	24	20.8	78	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 (P3MU-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) <sup>2</sup>
<b>DUAL OUTPUT</b>												
P3MU-053R3ZLF	5	30	166	± 3.3	± 75.7	60	± 100					
P3MU-0505ZLF	5	30	135	± 5	± 50	74	± 100					
P3MU-057R2ZLF	5	30	129	± 7.2	± 34.7	77	± 100					
P3MU-0509ZLF	5	30	128	± 9	± 27.7	78	± 100					
P3MU-0512ZLF	5	30	128	± 12	± 20.8	78	± 100					
P3MU-0515ZLF	5	30	128	± 15	± 16.7	78	± 100					
P3MU-0518ZLF	5	30	126	± 18	± 13.9	79	± 100					
P3MU-0524ZLF	5	30	126	± 24	± 10.4	79	± 100					
P3MU-123R3ZLF	12	20	69	± 3.3	± 75.7	60	± 100					
P3MU-1205ZLF	12	20	56	± 5	± 50	74	± 100					
P3MU-127R2ZLF	12	20	54	± 7.2	± 34.7	77	± 100					
P3MU-1209ZLF	12	20	53	± 9	± 27.7	78	± 100					
P3MU-1212ZLF	12	20	53	± 12	± 20.8	78	± 100					
P3MU-1215ZLF	12	20	53	± 15	± 16.7	78	± 100					
P3MU-1218ZLF	12	20	52	± 18	± 13.9	80	± 100					
P3MU-1224ZLF	12	20	52	± 24	± 10.4	80	± 100					
P3MU-243R3ZLF	24	10	35	± 3.3	± 75.7	60	± 100					
P3MU-2405ZLF	24	10	28	± 5	± 50	74	± 100					
P3MU-247R2ZLF	24	10	27	± 7.2	± 34.7	76	± 100					
P3MU-2409ZLF	24	10	27	± 9	± 27.7	76	± 100					
P3MU-2412ZLF	24	10	26	± 12	± 20.8	78	± 100					
P3MU-2415ZLF	24	10	26	± 15	± 16.7	78	± 100					
P3MU-2418ZLF	24	10	26	± 18	± 13.9	78	± 100					
P3MU-2424ZLF	24	10	26	± 24	± 10.4	80	± 100					

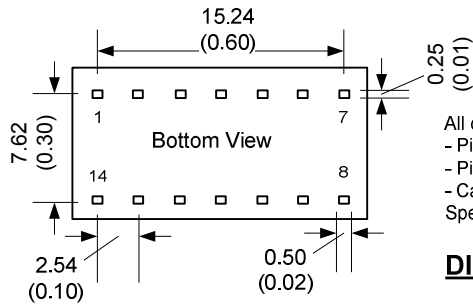
If you need other specifications, please enquire.

### \*OPTIONS:

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

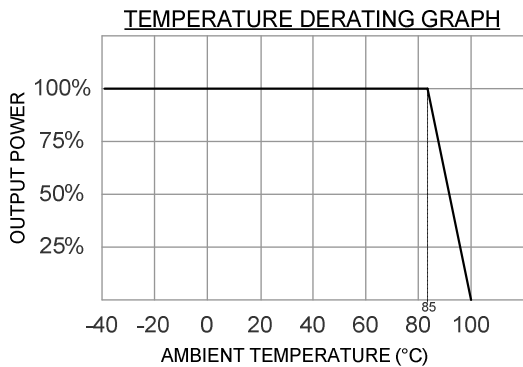
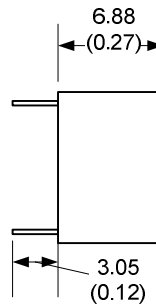
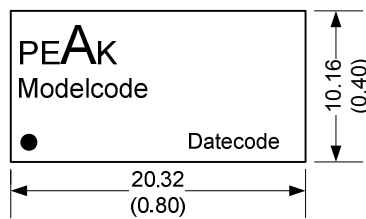
For other I/O Isolation please see table on the left hand side and add "Hxx" before LF  
(P3MU-2412ZH40LF for 4KV)

# 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:

<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.

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