

# P10MU-xxxxE/Z(Hxx)LF



## PM3-SERIES

Rev.11-2008

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

The PM3 series P10MU-xxxxE/Z(Hxx)LF is a family of cost effective 2 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%)	$\pm 10\%$ (3.3 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 (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 (uF) <sup>2</sup>
<b>SINGLE OUTPUT</b>							
P10MU-053R3ELF	5	30	367	3.3	400	72	470
P10MU-0505ELF	5	30	512	5	400	78	470
P10MU-057R2ELF	5	30	500	7.2	277.7	80	470
P10MU-0509ELF	5	30	500	9	222.2	80	470
P10MU-0512ELF	5	30	487	12	166.7	82	470
P10MU-0515ELF	5	30	487	15	133.3	82	470
P10MU-0518ELF	5	30	487	18	111.1	82	470
P10MU-0524ELF	5	30	487	24	83.3	82	470
P10MU-123R3ELF	12	20	152	3.3	400	72	470
P10MU-1205ELF	12	20	216	5	400	77	470
P10MU-127R2ELF	12	20	208	7.2	277.7	80	470
P10MU-1209ELF	12	20	208	9	222.2	80	470
P10MU-1212ELF	12	20	208	12	166.7	80	470
P10MU-1215ELF	12	20	208	15	133.3	80	470
P10MU-1218ELF	12	20	208	18	111.1	80	470
P10MU-1224ELF	12	20	208	24	83.3	80	470
P10MU-243R3ELF	24	10	76	3.3	400	72	470
P10MU-2405ELF	24	10	105	5	400	79	470
P10MU-247R2ELF	24	10	115	7.2	277.7	72	470
P10MU-2409ELF	24	10	104	9	222.2	80	470
P10MU-2412ELF	24	10	104	12	166.7	80	470
P10MU-2415ELF	24	10	104	15	133.3	80	470
P10MU-2418ELF	24	10	104	18	111.1	80	470
P10MU-2424ELF	24	10	104	24	83.3	80	470

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  
 (P10MU-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 (µF) <sup>2</sup>
<b>DUAL OUTPUT</b>							
P10MU-053R3ZLF	5	30	406	± 3.3	± 200	65	± 220
P10MU-0505ZLF	5	30	555	± 5	± 200	72	± 220
P10MU-057R2ZLF	5	30	555	± 7.2	± 138.8	72	± 220
P10MU-0509ZLF	5	30	519	± 9	± 111.1	77	± 220
P10MU-0512ZLF	5	30	512	± 12	± 83.3	78	± 220
P10MU-0515ZLF	5	30	500	± 15	± 66.67	80	± 220
P10MU-0518ZLF	5	30	500	± 18	± 55.55	80	± 220
P10MU-0524ZLF	5	30	500	± 24	± 41.67	80	± 220
P10MU-123R3ZLF	12	20	164	± 3.3	± 200	67	± 220
P10MU-1205ZLF	12	20	222	± 5	± 200	75	± 220
P10MU-127R2ZLF	12	20	219	± 7.2	± 138.8	76	± 220
P10MU-1209ZLF	12	20	216	± 9	± 111.1	77	± 220
P10MU-1212ZLF	12	20	203	± 12	± 83.3	82	± 220
P10MU-1215ZLF	12	20	203	± 15	± 66.67	82	± 220
P10MU-1218ZLF	12	20	203	± 18	± 55.55	82	± 220
P10MU-1224ZLF	12	20	203	± 24	± 41.67	82	± 220
P10MU-243R3ZLF	24	10	80	± 3.3	± 200	68	± 220
P10MU-2405ZLF	24	10	111	± 5	± 200	75	± 220
P10MU-247R2ZLF	24	10	111	± 7.2	± 138.8	75	± 220
P10MU-2409ZLF	24	10	104	± 9	± 111.1	80	± 220
P10MU-2412ZLF	24	10	101	± 12	± 83.3	82	± 220
P10MU-2415ZLF	24	10	101	± 15	± 66.67	82	± 220
P10MU-2418ZLF	24	10	101	± 18	± 55.55	82	± 220
P10MU-2424ZLF	24	10	101	± 24	± 41.67	82	± 220

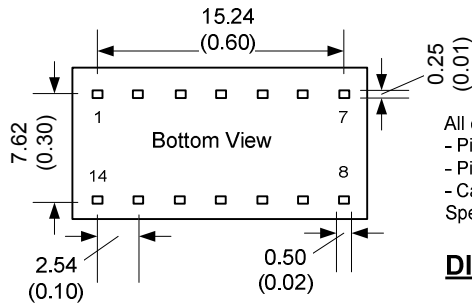
If you need other specifications, please enquire.

### **\*OPTIONS:**

**H40 = 4000 VDC ISOLATION**  
**H52 = 5200 VDC ISOLATION**  
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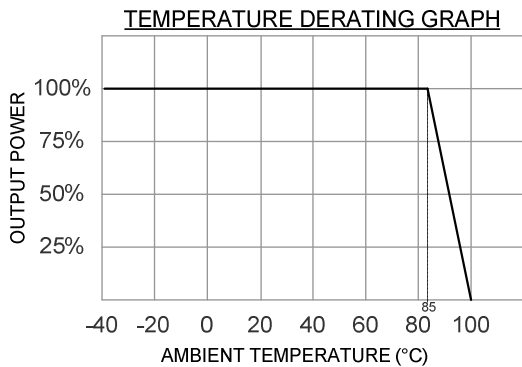
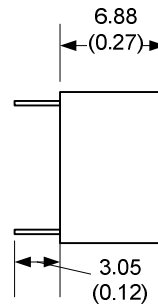
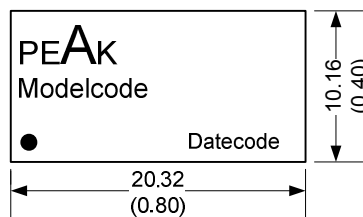
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 (P10MU-2412ZH60LF for 6KV)

# 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.

- For reduce converter's ripple & noise, it is recommended to add a 4.7µF~220µF(±4.7µF~±100µF for dual output) capacitor in output end. For EMI performance improvement, it is recommended to add a 12µH inductor and a 10µF~100µF capacitor in input end.

