

# P6DU-xxxxE/Z LF



## PM1-SERIES

Rev.11-2008

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

The PM1 series P6DU-xxxxE/ZLF is a family of cost effective 1 W single & dual output DC-DC converters. These converters are in an ultra miniature DIP14 case. Devices are encapsulated. High performance features: 1000VDC 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	$\pm 1.2\% / 1\% V_{in}$ 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.)	1000 VDC
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>							
P6DU-053R3ELF	5	30	267	3.3	303	75	220
P6DU-0505ELF	5	30	256	5	200	78	220
P6DU-057R2ELF	5	30	267	7.2	138.9	75	220
P6DU-0509ELF	5	30	267	9	111.1	75	220
P6DU-0512ELF	5	30	263	12	83.3	76	220
P6DU-0515ELF	5	30	263	15	66.7	76	220
P6DU-0518ELF	5	30	267	18	55.6	75	220
P6DU-0524ELF	5	30	278	24	41.7	72	220
P6DU-123R3ELF	12	20	113	3.3	303	74	220
P6DU-1205ELF	12	20	113	5	200	74	220
P6DU-127R2ELF	12	20	113	7.2	138.9	74	220
P6DU-1209ELF	12	20	111	9	111.1	75	220
P6DU-1212ELF	12	20	108	12	83.3	77	220
P6DU-1215ELF	12	20	106	15	66.7	78	220
P6DU-1218ELF	12	20	106	18	55.6	78	220
P6DU-1224ELF	12	20	111	24	41.7	75	220
P6DU-243R3ELF	24	10	56	3.3	303	75	220
P6DU-2405ELF	24	10	54	5	200	77	220
P6DU-247R2ELF	24	10	56	7.2	138.9	75	220
P6DU-2409ELF	24	10	56	9	111.1	75	220
P6DU-2412ELF	24	10	53	12	83.3	78	220
P6DU-2415ELF	24	10	53	15	66.7	78	220
P6DU-2418ELF	24	10	53	18	55.6	78	220
P6DU-2424ELF	24	10	53	24	41.7	78	220

If you need other specifications, please enquire.

Notes:

# Selection Guide

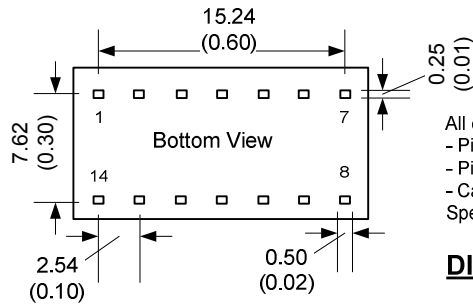
## Dual Output

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>							
P6DU-053R3ZLF	5	30	307	± 3.3	± 151.5	65	± 100
P6DU-0505ZLF	5	30	270	± 5	± 100	74	± 100
P6DU-057R2ZLF	5	30	259	± 7.2	± 69.44	77	± 100
P6DU-0509ZLF	5	30	256	± 9	± 55.55	78	± 100
P6DU-0512ZLF	5	30	256	± 12	± 41.67	78	± 100
P6DU-0515ZLF	5	30	250	± 15	± 33.33	80	± 100
P6DU-0518ZLF	5	30	256	± 18	± 27.77	78	± 100
P6DU-0524ZLF	5	30	266	± 24	± 20.83	75	± 100
P6DU-123R3ZLF	12	20	126	± 3.3	± 151.5	66	± 100
P6DU-1205ZLF	12	20	111	± 5	± 100	75	± 100
P6DU-127R2ZLF	12	20	115	± 7.2	± 69.44	72	± 100
P6DU-1209ZLF	12	20	111	± 9	± 55.55	75	± 100
P6DU-1212ZLF	12	20	106	± 12	± 41.67	78	± 100
P6DU-1215ZLF	12	20	106	± 15	± 33.33	78	± 100
P6DU-1218ZLF	12	20	111	± 18	± 27.77	75	± 100
P6DU-1224ZLF	12	20	111	± 24	± 20.83	75	± 100
P6DU-243R3ZLF	24	10	62	± 3.3	± 151.5	67	± 100
P6DU-2405ZLF	24	10	57	± 5	± 100	72	± 100
P6DU-247R2ZLF	24	10	59	± 7.2	± 69.44	70	± 100
P6DU-2409ZLF	24	10	55	± 9	± 55.55	75	± 100
P6DU-2412ZLF	24	10	53	± 12	± 41.67	78	± 100
P6DU-2415ZLF	24	10	55	± 15	± 33.33	75	± 100
P6DU-2418ZLF	24	10	57	± 18	± 27.77	72	± 100
P6DU-2424ZLF	24	10	59	± 24	± 20.83	70	± 100

If you need other specifications, please enquire.

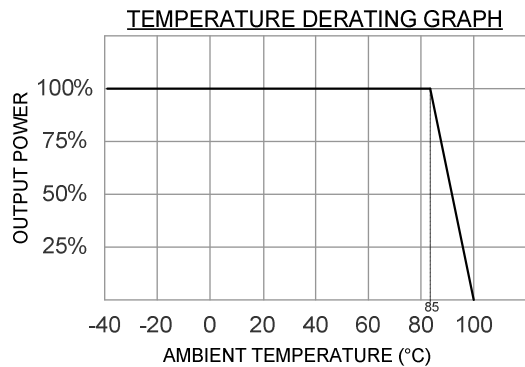
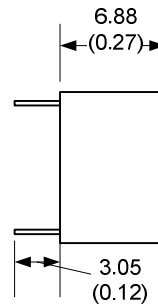
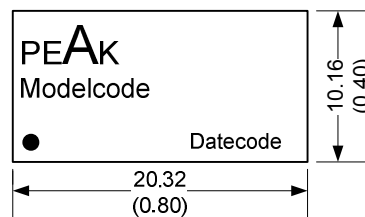
Notes:

# 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	DUAL
1	- Vin	- Vin
7	N.C.	N.C.
8	Omitted	Common
9	+Vout	+Vout
10	Omitted	Omitted
11	- Vout	- Vout
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~100µF(±4.7µF~±68µF 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.

