P6LU-xxxxE/ZH60ENLF

Mainzer Straße 151–153
D-55299 Nackenheim
Tel. +49 6135 7026-0
Fax: +49 6135 931070
www.peak-electronics.de
peak@peak-electronics.de

PML-SERIES Rev.06-2009

- ✓ 1 Watt
- ✓ Unregulated
- ✓ **Single** and **Dual** Output
- ✓ **SIP7** Case
- ✓ **6 kV** DC I/O Isolation
- ✓ Low Coupling Capacity
- ✓ **Rated Voltage for 250 Vrms**

The PML series P6LU-xxxxE/ZH60ENLF is a family of cost effective 1 W single & dual output DC-DC converters. These converters are in an ultra miniature SIP7 case without compromising performance. The bigger case ensures the physical clearance of isolation barrier of 2.5mm which increases the reliability under high pot from 6kV DC. Devices are encapsulated. High performance features: 6kV input/output isolation, high efficiency, output voltage accuracy of ±3%, input range of ±10%, low output ripple and noise and long term short circuit protection.

All specifications typical at Ta=25°C, nominal input voltage and full load unless otherwise specified

Input Specifications	
Voltage Range	± 10%
Input Filter	Capacitor
Input Reflected Ripple Current[1]	20 mA pk-pk
Output Specifications	
Voltage Accuracy	± 3%
Short Circuit Protection	Indefinite (automatic recovery)
Line Regulation	± 1.2% / 1% Vin Change
Load Regulation (10% - 100%)	± 10%
Ripple and Noise (20Mhz bandwidth)	200 mV pk-pk
Temperature Coefficient	± 0.03% / °C
General Specifications	
Efficiency	See table
I/O Isolation Voltage (3 sec. flash test)	6000 VDC
I/O Isolation Capacity	10 pF, typ.
I/O Isolation Resistance	1000 M Ohm
Switching Frequency	20 - 50 kHz, typ.
Humidity	95% rel H
Reliability Calculated MTBF (MIL-HDBK-217F)	>2.39 Mhrs
Safety Standard (designed to meet)	IEC 60950-1:2001
Physical Specifications	
Clearance Distance (Input to Output)	2.5 mm
Case Material	Epoxy encapsulated (UL94V-0 rated)
Potting Material	Epoxy (UL94V-0 rated)
Weight	~ 4.2g, typ.
Environment Specifications	
Operating Temperature	-40 to +85 °C (ambient)
Maximum Case Temperature	100°C
Storage Temperature	-40 to +125°C
Cooling	Free Air Convection (10 mm distance required)
RoHS Conform	Soldering 260°C, max. (1.5 mm from case 10s.)

Selection Guide
Single Output

Order #	Input Voltage (VDC)	Output Voltage (VDC)	Output Current Full Load (mA)	Efficiency (%)	Capacitor Load (uF)[2]
SINGLE OUTPUT					
P6LU-053R3EH60ENLF	5	3.3	303	69 - 75	220
P6LU-0505EH60ENLF	5	5	200	70 - 77	220
P6LU-0509EH60ENLF	5	9	111.1	70 - 80	220
P6LU-0512EH60ENLF	5	12	83.3	70 - 80	220
P6LU-0515EH60ENLF	5	15	66.7	70 - 80	220
P6LU-093R3EH60ENLF	9	3.3	303	69 - 75	220
P6LU-0905EH60ENLF	9	5	200	70 - 77	220
P6LU-0909EH60ENLF	9	9	111.1	70 - 80	220
P6LU-0912EH60ENLF	9	12	83.3	70 - 80	220
P6LU-0915EH60ENLF	9	15	66.7	70 - 80	220
P6LU-123R3EH60ENLF	12	3.3	303	69 - 75	220
P6LU-1205EH60ENLF	12	5	200	70 - 77	220
P6LU-1209EH60ENLF	12	9	111.1	70 - 80	220
P6LU-1212EH60ENLF	12	12	83.3	70 - 80	220
P6LU-1215EH60ENLF	12	15	66.7	70 - 80	220
P6LU-153R3EH60ENLF	15	3.3	303	69 - 75	220
P6LU-1505EH60ENLF	15	5	200	70 - 77	220
P6LU-1509EH60ENLF	15	9	111.1	70 - 80	220
P6LU-1512EH60ENLF	15	12	83.3	70 - 80	220
P6LU-1515EH60ENLF	15	15	66.7	70 - 80	220
P6LU-243R3EH60ENLF	24	3.3	303	69 - 75	220
P6LU-2405EH60ENLF	24	5	200	70 - 77	220
P6LU-2409EH60ENLF	24	9	111.1	70 - 80	220
P6LU-2412EH60ENLF	24	12	83.3	70 - 80	220
P6LU-2415EH60ENLF	24	15	66.7	70 - 80	220

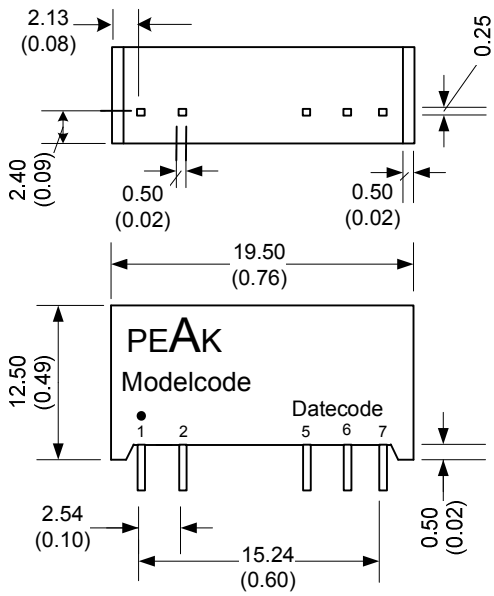
If you need other specifications, please enquire.

Selection Guide
Dual Output

Order #	Input Voltage (VDC)	Output Voltage (VDC)	Output Current Full Load (mA)	Efficiency (%)	Capacitor Load (uF)[2]
DUAL OUTPUT					
P6LU-053R3ZH60ENLF	5	± 3.3	± 151.5	68 - 75	± 100
P6LU-0505ZH60ENLF	5	± 5	± 100	70 - 78	± 100
P6LU-0509ZH60ENLF	5	± 9	± 55.6	70 - 81	± 100
P6LU-0512ZH60ENLF	5	± 12	± 41.7	72 - 81	± 100
P6LU-0515ZH60ENLF	5	± 15	± 33.3	70 - 81	± 100
P6LU-093R3ZH60ENLF	9	± 3.3	± 151.5	68 - 75	± 100
P6LU-0905ZH60ENLF	9	± 5	± 100	70 - 78	± 100
P6LU-0909ZH60ENLF	9	± 9	± 55.6	70 - 81	± 100
P6LU-0912ZH60ENLF	9	± 12	± 41.7	72 - 81	± 100
P6LU-0915ZH60ENLF	9	± 15	± 33.3	70 - 81	± 100
P6LU-123R3ZH60ENLF	12	± 3.3	± 151.5	68 - 75	± 100
P6LU-1205ZH60ENLF	12	± 5	± 100	70 - 78	± 100
P6LU-1209ZH60ENLF	12	± 9	± 55.6	70 - 81	± 100
P6LU-1212ZH60ENLF	12	± 12	± 41.7	72 - 81	± 100
P6LU-1215ZH60ENLF	12	± 15	± 33.3	70 - 81	± 100
P6LU-153R3ZH60ENLF	15	± 3.3	± 151.5	68 - 75	± 100
P6LU-1505ZH60ENLF	15	± 5	± 100	70 - 78	± 100
P6LU-1509ZH60ENLF	15	± 9	± 55.6	70 - 81	± 100
P6LU-1512ZH60ENLF	15	± 12	± 41.7	72 - 81	± 100
P6LU-1515ZH60ENLF	15	± 15	± 33.3	70 - 81	± 100
P6LU-243R3ZH60ENLF	24	± 3.3	± 151.5	68 - 75	± 100
P6LU-2405ZH60ENLF	24	± 5	± 100	70 - 78	± 100
P6LU-2409ZH60ENLF	24	± 9	± 55.6	70 - 81	± 100
P6LU-2412ZH60ENLF	24	± 12	± 41.7	72 - 81	± 100
P6LU-2415ZH60ENLF	24	± 15	± 33.3	70 - 81	± 100

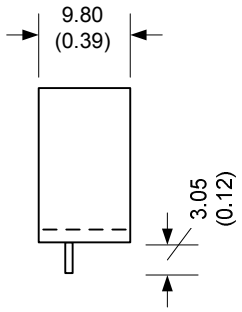
If you need other specifications, please enquire.

Package / Pinning / Derating

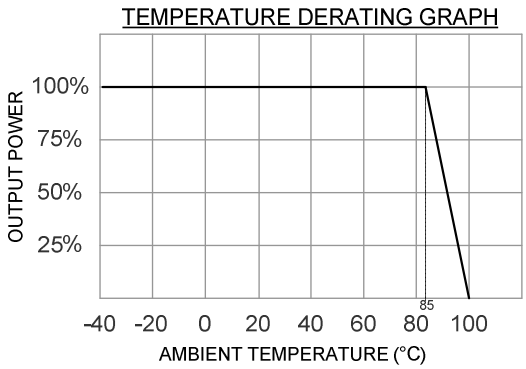


All dimensions are typical in millimeters (inches).
- Pin diameter: 0.5 +/-0.05 (0.02 +/-0.002)
- Pin pitch tolerance: +/-0.35 (+/-0.014)
- Case tolerance +/-0.5 (+/-0.02)

Specification may change without notice.



SIP7 – „ENLF“ PLASTIC CASE



PIN CONNECTIONS		
#	SINGLE	DUAL
1	+Vin	+Vin
2	- Vin	- Vin
5	- Vout	- Vout
6	Omitted	Common
7	+Vout	+Vout

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.

- For reduce converter's ripple & noise, it is recommended to add a 4.7µF~100µF(±4.7µF~±68µF for dual output) capacitor at the output. For EMI performance improvement, it is recommended to add a 12µH inductor and a 10µF~100µF capacitor at the input.