

# P3DU-xxxxE/Z LF (1kV)

# P3MU-xxxxE/Z (Hxx)LF (3-6kV)

## PM1-SERIES

Rev. 09-2015

- ✓ 0.5 Watt
- ✓ Unregulated
- ✓ Single and Dual Output
- ✓ DIP14 Case
- ✓ 1-6 kV DC I/O Isolation
- ✓ Low Ripple and Noise

The PM1 series is a family of cost effective 0.5 – 1W single/dual output DC/DC converters. They are encapsulated in an ultra miniature SIP7 (PxCU/LU...) or DIP14 (PxDU/MU...) case. High performance features: 1000-6000Vdc input/output isolation, high efficiency operation, output voltage accuracy of  $\pm 3\%$  maximum, input range of  $\pm 10\%$  and low output ripple and noise. 1W converters are ready for UL.

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

### Input Specifications

Voltage Range	$\pm 10\%$
Current max.	13 – 166mA (See table)
Current No-Load	6 – 30mA (See table)
Filter	Capacitors
Reflected Ripple Current (@12uH)	20mA pk-pk

### General Specifications

Efficiency	60% - 80% (See table)
	1000VDC (P3DU-xxxxE/ZLF)
Isolation I/O (60 sec)	3000VDC (P3MU-xxxxE/ZLF)
	4000-6000VDC (P3MU-xxxxE/ZHxxLF)
Isolation I/O Capacitance	60 pF
Isolation I/O Resistance	1000 M $\Omega$
Switching Frequency	80 kHz (variable)
Humidity (rel.)	95%
MTBF (Calculated MIL-HDBK-217F)	>1.121 Mhrs
Safety Standard (designed to meet)	IEC/EN 60950-1

### Output Specifications

Voltage accuracy	$\pm 3\%$
Line regulation (per 1% Vin change)	$\pm 1.2\%$
	$\pm 10\%$
Load regulation (20% to 100%)	(for 3.3Vout) $\pm 20\%$
Ripple & noise (20 MHz bandwidth)	75 mV pk-pk
Temperature coefficient	$\pm 0.02\%/^{\circ}\text{C}$
	100uF (Single out)
Capacitor load (Test: min. Vin + const. load)	$\pm 100\text{uF}$ (Dual out)

### Environment / Physical Specifications

Operation Temp. (Derating)	-40°C to 85°C
Case max.	100°C
Storage	-40°C to 125°C
Cooling	Nature / Free Air
Case Material	Plastic (UL94V-0 rated)
Potting	Epoxy (UL94V-0 rated)
Pin Material	Alloy42 (Solder coated)
Weight	2.6 g

### How to Order:

Standard 1 kV Isolation	P3DU-xxxxELF or ZLF
Standard 3 kV Isolation	P3MU-xxxxELF or ZLF
Optional 4 kV Isolation	P3MU-xxxxEH40LF or ...ZH40LF
Optional 5.2 kV Isolation	P3MU-xxxxEH52LF or ...ZH52LF
Optional 6 kV Isolation	P3MU-xxxxEH60LF or ...ZH60LF



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)
<b>SINGLE OUTPUT</b>							
P3DU/MU-053R3ELF	5	30	142	3.3	151.5	70	100
P3DU/MU-0505ELF	5	30	135	5	100	74	100
P3DU/MU-057R2ELF	5	30	135	7.2	69.4	74	100
P3DU/MU-0509ELF	5	30	133	9	55.5	75	100
P3DU/MU-0512ELF	5	30	131	12	41.6	76	100
P3DU/MU-0515ELF	5	30	131	15	33.3	76	100
P3DU/MU-0518ELF	5	30	131	18	27.8	76	100
P3DU/MU-0524ELF	5	30	128	24	20.8	78	100
P3DU/MU-123R3ELF	12	20	59	3.3	151.5	70	100
P3DU/MU-1205ELF	12	20	57	5	100	73	100
P3DU/MU-127R2ELF	12	20	56	7.2	69.4	74	100
P3DU/MU-1209ELF	12	20	55	9	55.5	75	100
P3DU/MU-1212ELF	12	20	54	12	41.6	76	100
P3DU/MU-1215ELF	12	20	54	15	33.3	76	100
P3DU/MU-1218ELF	12	20	54	18	27.8	76	100
P3DU/MU-1224ELF	12	20	53	24	20.8	78	100
P3DU/MU-243R3ELF	24	10	29	3.3	151.5	70	100
P3DU/MU-2405ELF	24	10	28	5	100	73	100
P3DU/MU-247R2ELF	24	10	28	7.2	69.4	74	100
P3DU/MU-2409ELF	24	10	28	9	55.5	75	100
P3DU/MU-2412ELF	24	10	27	12	41.6	76	100
P3DU/MU-2415ELF	24	10	26	15	33.3	78	100
P3DU/MU-2418ELF	24	10	26	18	27.8	78	100
P3DU/MU-2424ELF	24	10	26	24	20.8	78	100
P3DU/MU-483R3ELF	48	6	14	3.3	151.5	70	100
P3DU/MU-4805ELF	48	6	14	5	100	72	100
P3DU/MU-487R2ELF	48	6	14	7.2	69.4	72	100
P3DU/MU-4809ELF	48	6	14	9	55.5	74	100
P3DU/MU-4812ELF	48	6	14	12	41.6	74	100
P3DU/MU-4815ELF	48	6	13	15	33.3	75	100
P3DU/MU-4818ELF	48	6	13	18	27.8	75	100
P3DU/MU-4824ELF	48	6	13	24	20.8	77	100

If you need other specifications, please enquire.

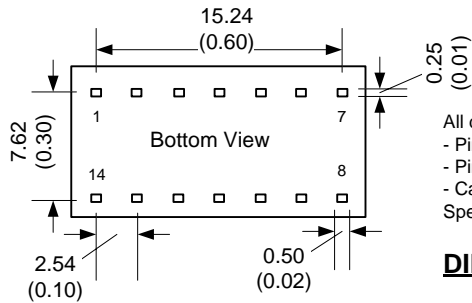


Order #	Input Voltage (VDC)	Input Current No Load (mA)	Input Current Full Load (mA)	Output Voltage (VDC)	Output Current Full Load (mA)	Efficiency (%)	Capacitor Load (uF)
<b>DUAL OUTPUT</b>							
P3DU/MU-053R3ZLF	5	30	166	±3.3	±75.7	60	±100
P3DU/MU-0505ZLF	5	30	135	±5	±50	74	±100
P3DU/MU-057R2ZLF	5	30	129	±7.2	±34.7	77	±100
P3DU/MU-0509ZLF	5	30	128	±9	±27.7	78	±100
P3DU/MU-0512ZLF	5	30	128	±12	±20.8	78	±100
P3DU/MU-0515ZLF	5	30	128	±15	±16.7	78	±100
P3DU/MU-0518ZLF	5	30	126	±18	±13.9	79	±100
P3DU/MU-0524ZLF	5	30	126	±24	±10.4	79	±100
P3DU/MU-123R3ZLF	12	20	69	±3.3	±75.7	60	±100
P3DU/MU-1205ZLF	12	20	56	±5	±50	74	±100
P3DU/MU-127R2ZLF	12	20	54	±7.2	±34.7	77	±100
P3DU/MU-1209ZLF	12	20	53	±9	±27.7	78	±100
P3DU/MU-1212ZLF	12	20	53	±12	±20.8	78	±100
P3DU/MU-1215ZLF	12	20	53	±15	±16.7	78	±100
P3DU/MU-1218ZLF	12	20	52	±18	±13.9	80	±100
P3DU/MU-1224ZLF	12	20	52	±24	±10.4	80	±100
P3DU/MU-243R3ZLF	24	10	35	±3.3	±75.7	60	±100
P3DU/MU-2405ZLF	24	10	28	±5	±50	74	±100
P3DU/MU-247R2ZLF	24	10	27	±7.2	±34.7	76	±100
P3DU/MU-2409ZLF	24	10	27	±9	±27.7	76	±100
P3DU/MU-2412ZLF	24	10	26	±12	±20.8	78	±100
P3DU/MU-2415ZLF	24	10	26	±15	±16.7	78	±100
P3DU/MU-2418ZLF	24	10	26	±18	±13.9	78	±100
P3DU/MU-2424ZLF	24	10	26	±24	±10.4	80	±100
P3DU/MU-483R3ZLF	48	6	17	±3.3	±75.7	60	±100
P3DU/MU-4805ZLF	48	6	14	±5	±50	74	±100
P3DU/MU-487R2ZLF	48	6	13	±7.2	±34.7	76	±100
P3DU/MU-4809ZLF	48	6	13	±9	±27.7	76	±100
P3DU/MU-4812ZLF	48	6	13	±12	±20.8	76	±100
P3DU/MU-4815ZLF	48	6	13	±15	±16.7	77	±100
P3DU/MU-4818ZLF	48	6	13	±18	±13.9	77	±100
P3DU/MU-4824ZLF	48	6	13	±24	±10.4	79	±100

If you need other specifications, please enquire.

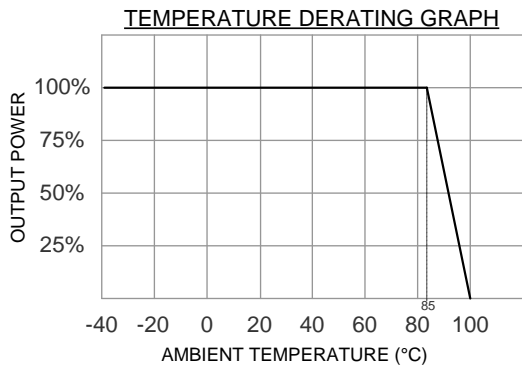
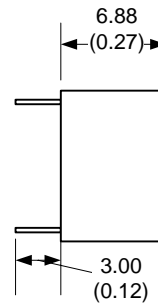
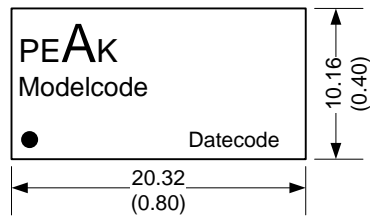


## Package / Pinning / Derating



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.

### DIP14 – PLASTIC CASE



PIN CONNECTIONS				
Model	P3DU (1kV)		P3MU (3-6kV)	
#	SINGLE	DUAL	SINGLE	DUAL
1	-Vin	-Vin	-Vin	-Vin
7	NC	NC	NC	NC
8	no Pin	Common	+Vout	+Vout
9	+Vout	+Vout	no Pin	Common
10	no Pin	no Pin	-Vout	-Vout
11	-Vout	-Vout	no Pin	no Pin
14	+Vin	+Vin	+Vin	+Vin
others	no Pin			

## App Notes:

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

