

P10CU-xxxxE/Z LF (1kV) P10LU-xxxxE/Z (Hxx)LF (3-6kV)

PM3-SERIES

Rev. 09-2015

- ✓ 2 Watt
- ✓ Unregulated
- ✓ **Single and Dual Output**
- ✓ **SIP7 Case**
- ✓ **1-6 kV DC I/O Isolation**
- ✓ Low Ripple and Noise

The PM3 series is a family of cost effective 2W single/dual output DC/DC converters. They are encapsulated in an ultra miniature SIP7 (P10CU/LU...) or DIP14 (P10DU/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.

All specifications typical at $T_a=25^\circ\text{C}$, nominal input voltage and full load unless otherwise specified

Input Specifications

Voltage Range	$\pm 10\%$
Current max.	52 – 797mA (See table)
Current No-Load	6 – 45mA (See table)
Filter	Capacitors
Reflected Ripple Current (@12uH)	20mA pk-pk

General Specifications

Efficiency	60% - 82% (See table)
	1000VDC (P10CU-xxxxELF)
Isolation I/O (60 sec)	3000VDC (P10LU-xxxxELF)
	4000-6000VDC (P10LU-xxxxEHxxLF)
Isolation I/O Capacitance	60 pF
Isolation I/O Resistance	1000 M Ω
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

EMC Specifications

Radiated Emissions	EN55022	Class B
Conducted Emissions*	EN55022	Class B
ESD	IEC-61000-4-2	Pref. Criteria A
RS	IEC-61000-4-3	Pref. Criteria A
EFT*	IEC-61000-4-4	Pref. Criteria A
Surge*	IEC-61000-4-5	Pref. Criteria A
CS	IEC-61000-4-6	Pref. Criteria A
PFMF	IEC-61000-4-8	Pref. Criteria A

*Input filter components are required to meet conducted emission class B (see App Note). An external filter capacitor (e.g. 470uF/100V) is required if the module has to meet IEC61000-4-4 and IEC61000-4-5.

Output Specifications

Voltage accuracy	$\pm 3\%$
Line regulation (per 1% V_{in} 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	$\pm 0.02\%/^\circ\text{C}$
	470uF (Single out)
Capacitor load (Test: min. V_{in} + const. load)	$\pm 220\text{uF}$ (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	2.3 g



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)
SINGLE OUTPUT							
P10CU/LU-3R33R3ELF	3.3	26	797	3.3	400	76	470
P10CU/LU-3R305ELF	3.3	30	797	5	400	76	470
P10CU/LU-3R37R2ELF	3.3	30	808	7.2	277.7	75	470
P10CU/LU-3R309ELF	3.3	30	758	9	222.2	80	470
P10CU/LU-3R312ELF	3.3	35	748	12	166.7	81	470
P10CU/LU-3R315ELF	3.3	40	777	15	133.3	78	470
P10CU/LU-3R318ELF	3.3	35	787	18	111.1	77	470
P10CU/LU-3R324ELF	3.3	35	767	24	83.3	79	470
P10CU/LU-053R3ELF	5	30	367	3.3	400	72	470
P10CU/LU-0505ELF	5	30	512	5	400	78	470
P10CU/LU-057R2ELF	5	30	500	7.2	277.7	80	470
P10CU/LU-0509ELF	5	30	500	9	222.2	80	470
P10CU/LU-0512ELF	5	30	487	12	166.7	82	470
P10CU/LU-0515ELF	5	30	487	15	133.3	82	470
P10CU/LU-0518ELF	5	30	487	18	111.1	82	470
P10CU/LU-0524ELF	5	30	487	24	83.3	82	470
P10CU/LU-123R3ELF	12	36	169	3.3	400	65	470
P10CU/LU-1205ELF	12	20	216	5	400	77	470
P10CU/LU-127R2ELF	12	20	208	7.2	277.7	80	470
P10CU/LU-1209ELF	12	20	208	9	222.2	80	470
P10CU/LU-1212ELF	12	20	203	12	166.7	82	470
P10CU/LU-1215ELF	12	20	203	15	133.3	82	470
P10CU/LU-1218ELF	12	20	208	18	111.1	80	470
P10CU/LU-1224ELF	12	20	208	24	83.3	80	470
P10CU/LU-243R3ELF	24	10	76	3.3	400	72	470
P10CU/LU-2405ELF	24	10	105	5	400	79	470
P10CU/LU-247R2ELF	24	10	104	7.2	277.7	80	470
P10CU/LU-2409ELF	24	10	104	9	222.2	80	470
P10CU/LU-2412ELF	24	10	102	12	166.7	80	470
P10CU/LU-2415ELF	24	10	101	15	133.3	82	470
P10CU/LU-2418ELF	24	10	101	18	111.1	82	470
P10CU/LU-2424ELF	24	10	104	24	83.3	80	470
P10CU/LU-483R3ELF	48	6	45	3.3	400	60	470
P10CU/LU-4805ELF	48	6	54	5	400	77	470
P10CU/LU-487R2ELF	48	6	54	7.2	277.7	77	470
P10CU/LU-4809ELF	48	6	54	9	222.2	77	470



P10CU/LU-2412ELF	24	10	102	12	166.7	80	470
P10CU/LU-2415ELF	24	10	101	15	133.3	82	470
P10CU/LU-2418ELF	24	10	101	18	111.1	82	470
P10CU/LU-2424ELF	24	10	104	24	83.3	80	470
P10CU/LU-483R3ELF	48	6	45	3.3	400	60	470
P10CU/LU-4805ELF	48	6	54	5	400	77	470
P10CU/LU-487R2ELF	48	6	54	7.2	277.7	77	470
P10CU/LU-4809ELF	48	6	54	9	222.2	77	470
P10CU/LU-4812ELF	48	6	53	12	166.7	78	470
P10CU/LU-4815ELF	48	6	53	15	133.3	78	470
P10CU/LU-4818ELF	48	6	53	18	111.1	78	470
P10CU/LU-4824ELF	48	6	55	24	83.3	75	470

DUAL OUTPUT

P10CU/LU-3R33R3ZLF	3.3	25	797	±3.3	±200	76	±220
P10CU/LU-3R305ZLF	3.3	40	777	±5	±200	78	±220
P10CU/LU-3R37R2ZLF	3.3	40	797	±7.2	±138.8	76	±220
P10CU/LU-3R309ZLF	3.3	40	797	±9	±111.1	76	±220
P10CU/LU-3R312ZLF	3.3	45	777	±12	±83.3	78	±220
P10CU/LU-3R315ZLF	3.3	45	777	±15	±66.67	78	±220
P10CU/LU-3R318ZLF	3.3	45	777	±18	±55.55	78	±220
P10CU/LU-3R324ZLF	3.3	45	767	±24	±41.67	79	±220
P10CU/LU-053R3ZLF	5	30	406	±3.3	±200	65	±220
P10CU/LU-0505ZLF	5	30	555	±5	±200	72	±220
P10CU/LU-057R2ZLF	5	30	555	±7.2	±138.8	72	±220
P10CU/LU-0509ZLF	5	30	519	±9	±111.1	77	±220
P10CU/LU-0512ZLF	5	30	512	±12	±83.3	78	±220
P10CU/LU-0515ZLF	5	30	500	±15	±66.67	80	±220
P10CU/LU-0518ZLF	5	30	500	±18	±55.55	80	±220
P10CU/LU-0524ZLF	5	30	500	±24	±41.67	80	±220
P10CU/LU-123R3ZLF	12	20	164	±3.3	±200	67	±220
P10CU/LU-1205ZLF	12	20	222	±5	±200	75	±220
P10CU/LU-127R2ZLF	12	20	219	±7.2	±138.8	76	±220
P10CU/LU-1209ZLF	12	20	216	±9	±111.1	77	±220
P10CU/LU-1212ZLF	12	20	203	±12	±83.3	82	±220
P10CU/LU-1215ZLF	12	20	203	±15	±66.67	82	±220
P10CU/LU-1218ZLF	12	20	203	±18	±55.55	82	±220
P10CU/LU-1224ZLF	12	20	203	±24	±41.67	82	±220



P10CU/LU-243R3ZLF	24	10	80	±3.3	±200	68	±220
P10CU/LU-2405ZLF	24	10	111	±5	±200	75	±220
P10CU/LU-247R2ZLF	24	10	111	±7.2	±138.8	75	±220
P10CU/LU-2409ZLF	24	10	104	±9	±111.1	80	±220
P10CU/LU-2412ZLF	24	10	101	±12	±83.3	82	±220
P10CU/LU-2415ZLF	24	10	101	±15	±66.67	82	±220
P10CU/LU-2418ZLF	24	10	101	±18	±55.55	82	±220
P10CU/LU-2424ZLF	24	10	101	±24	±41.67	82	±220
P10CU/LU-483R3ZLF	48	6	45	±3.3	±200	60	±220
P10CU/LU-4805ZLF	48	6	57	±5	±200	73	±220
P10CU/LU-487R2ZLF	48	6	54	±7.2	±138.8	77	±220
P10CU/LU-4809ZLF	48	6	54	±9	±111.1	77	±220
P10CU/LU-4812ZLF	48	6	52	±12	±83.3	80	±220
P10CU/LU-4815ZLF	48	6	52	±15	±66.67	80	±220
P10CU/LU-4818ZLF	48	6	52	±18	±55.55	80	±220
P10CU/LU-4824ZLF	48	6	52	±24	±41.67	80	±220

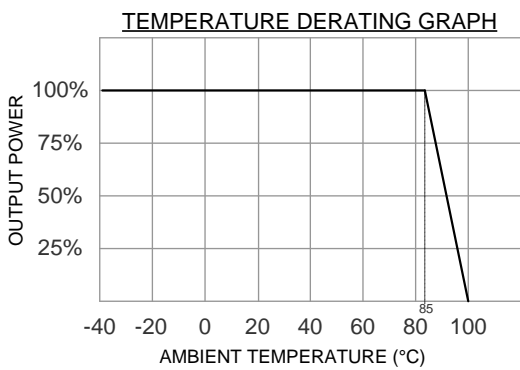
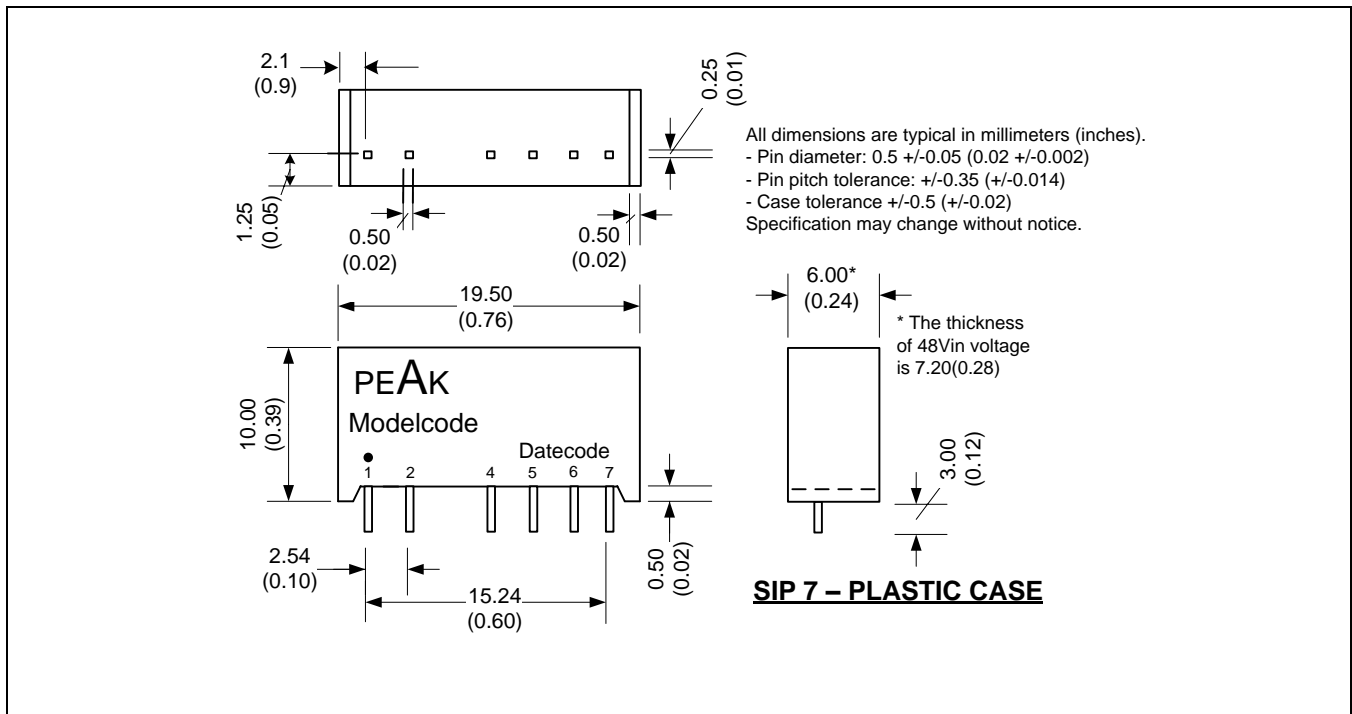
If you need other specifications, please enquire.

How to Order:

Standard 1 kV Isolation	P10 <u>C</u> U-xxxxELF or ZLF
Standard 3 kV Isolation	P10 <u>L</u> U-xxxxELF or ZLF
Optional 4 kV Isolation	P10 <u>L</u> U-xxxxE <u>H40</u> LF or ... <u>ZH40</u> LF
Optional 5.2 kV Isolation	P10 <u>L</u> U-xxxxE <u>H52</u> LF or ... <u>ZH52</u> LF
Optional 6 kV Isolation	P10 <u>L</u> U-xxxxE <u>H60</u> LF or ... <u>ZH60</u> LF



Package / Pinning / Derating

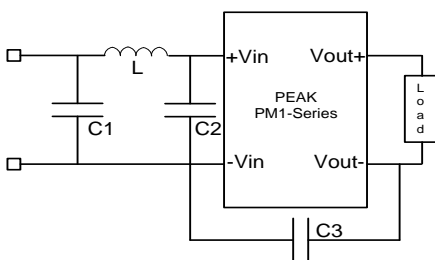


PIN CONNECTIONS				
Model	P10CU (1kV)		P10LU (3-6kV)	
#	SINGLE	DUAL	SINGLE	DUAL
1	+Vin	+Vin	+Vin	+Vin
2	-Vin	-Vin	-Vin	-Vin
4	-Vout	-Vout	no Pin	no Pin
5	no Pin	Common	-Vout	-Vout
6	+Vout	+Vout	N.P.	Common
7	no Pin	no Pin	+Vout	+Vout

App Notes:

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

EMC Typical Recommended Circuit (CLASS B)



Vin	C1	C2	C3	L
3.3	2.2uF/100V	-	-	18uH
5	2.2uF/100V	-	-	18uH
12	2.2uF/100V	-	-	18uH
15	2.2uF/100V	-	-	18uH
24	2.2uF/100V	2.2uF/100V	470pF/2kV	18uH
48	10uF/100V Electrolytic	2.2uF/100V	470pF/2kV	18uH

