

# P10TG-xxxxE/Z2:1(H35)MLF



## PM6-SERIES

Rev.09-2009

- ✓ 2 Watt
- ✓ 2:1 Wide Input
- ✓ Regulated
- ✓ **DIP24 Metal Case**
- ✓ **1.5 or 3.5 KV DC I/O Isolation**
- ✓ **SINGLE and DUAL Output**
- ✓ **Continuous Short Circuit Prot.**

The PM6 series P10TG-xxxxE/Z2:1(H30)MLF is a family of cost effective 2W single & dual output DC-DC converters with a wide input Voltage of 2:1. These converters are encapsulated in an ultra miniature DIP24 plastic or metal case. High performance features: 1500VDC up to 3500VDC input/output isolation, high efficiency operation, output voltage accuracy of  $\pm 1\%$  maximum, wide input range 2:1 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	2:1 Wide Input
Input Filter	Pi Type
Input Reflected Ripple Current <sup>1</sup>	35 mA pk-pk

### Output Specifications

Voltage Accuracy	$\pm 1\%$
Short Circuit Protection	Indefinite (automatic recovery)
Line Regulation	$\pm 0.5\%$
Load Regulation	$\pm 0.5\%$ / $\pm 1.5\%$ (only 3.3 / $\pm 3.3$ Vout Models)
Ripple and Noise (20Mhz bandwidth)	60 mV pk-pk
Temperature Coefficient	$\pm 0.02\%$ / $^\circ\text{C}$

### General Specifications

Efficiency	See Table
I/O Isolation Voltage (3 sec.)	1500 VDC (3500 VDC optional)*
I/O Isolation Capacity	470 pF, typ.
I/O Isolation Resistance	1000 MOhm
Switching Frequency (typical)	266 kHz, typ.
Humidity	95% rel H
Reliability Calculated MTBF (MIL-HDBK-217F)	> 1.121 Mhrs

### Physical Specifications

Case Material	Nickel Coated Copper
Potting Material	Epoxy (UL94V-0 rated)
Weight	~ 17g, 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/Dual Output

Order #	Input Voltage (VDC)	Input Current No Load (mA)	Input Current Full Load (mA)	Output Voltage (VDC)	Output Current Min. Load (mA)	Output Current Full Load (mA)	Efficiency (%)	Capacitor Load (µF) <sup>2</sup>
<b>SINGLE OUTPUT</b>								
P10TG-123R3E2:1MLF	9-18	30	223	3.3	0	600	74	680
P10TG-1205E2:1MLF	9-18	30	222	5	0	400	75	680
P10TG-1209E2:1MLF	9-18	30	219	9	0	222	76	330
P10TG-1212E2:1MLF	9-18	30	219	12	0	167	76	220
P10TG-1215E2:1MLF	9-18	30	219	15	0	133	76	100
P10TG-1224E2:1MLF	9-18	30	219	24	0	83	76	33
P10TG-243R3E2:1MLF	18-36	20	109	3.3	0	600	76	680
P10TG-2405E2:1MLF	18-36	20	107	5	0	400	78	680
P10TG-2409E2:1MLF	18-36	20	107	9	0	222	78	330
P10TG-2412E2:1MLF	18-36	20	107	12	0	167	78	220
P10TG-2415E2:1MLF	18-36	20	107	15	0	133	78	100
P10TG-2424E2:1MLF	18-36	20	107	24	0	83	78	33
P10TG-483R3E2:1MLF	36-72	12	56	3.3	0	600	74	680
P10TG-4805E2:1MLF	36-72	12	56	5	0	400	75	680
P10TG-4809E2:1MLF	36-72	12	56	9	0	222	75	330
P10TG-4812E2:1MLF	36-72	12	56	12	0	167	75	220
P10TG-4815E2:1MLF	36-72	12	56	15	0	133	75	100
P10TG-4824E2:1MLF	36-72	12	56	24	0	83	75	33

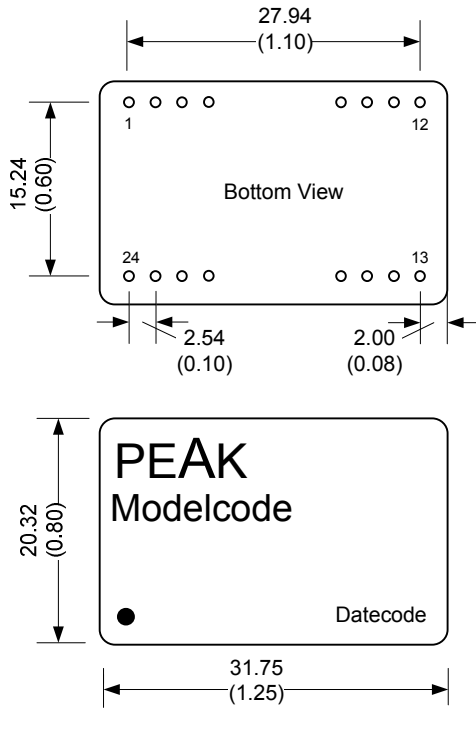
<b>DUAL OUTPUT</b>								
P10TG-123R3Z2:1MLF	9-18	30	229	± 3.3	0	± 300	72	± 330
P10TG-1205Z2:1MLF	9-18	30	219	± 5	0	± 200	75	± 330
P10TG-1209Z2:1MLF	9-18	30	219	± 9	0	± 111	76	± 100
P10TG-1212Z2:1MLF	9-18	30	219	± 12	0	± 83	76	± 47
P10TG-1215Z2:1MLF	9-18	30	219	± 15	0	± 67	76	± 33
P10TG-1224Z2:1MLF	9-18	30	219	± 24	0	± 42	76	± 22
P10TG-243R3Z2:1MLF	18-36	20	112	± 3.3	0	± 300	74	± 330
P10TG-2405Z2:1MLF	18-36	20	109	± 5	0	± 200	76	± 330
P10TG-2409Z2:1MLF	18-36	20	107	± 9	0	± 111	78	± 100
P10TG-2412Z2:1MLF	18-36	20	107	± 12	0	± 83	78	± 47
P10TG-2415Z2:1MLF	18-36	20	107	± 15	0	± 67	78	± 33
P10TG-2424Z2:1MLF	18-36	20	107	± 24	0	± 42	78	± 22
P10TG-483R3Z2:1MLF	36-72	12	56	± 3.3	0	± 300	74	± 330
P10TG-4805Z2:1MLF	36-72	12	56	± 5	0	± 200	75	± 330
P10TG-4809Z2:1MLF	36-72	12	56	± 9	0	± 111	75	± 100
P10TG-4812Z2:1MLF	36-72	12	56	± 12	0	± 83	75	± 47
P10TG-4815Z2:1MLF	36-72	12	56	± 15	0	± 67	75	± 33
P10TG-4824Z2:1MLF	36-72	12	56	± 24	0	± 42	75	± 22

If you need other specifications, please enquire.

**\* For optional 3.5kV DC I/O Isolation, please add “H35” before MLF!**

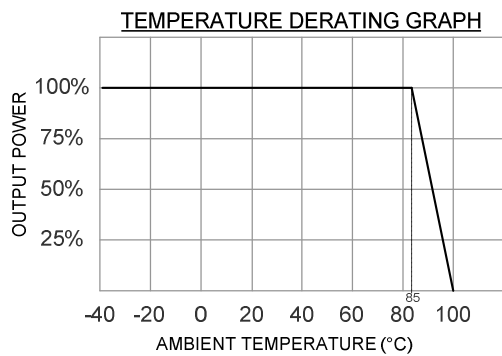
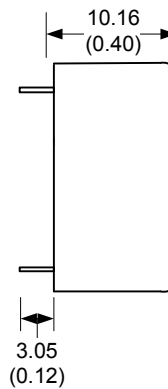
→ Example: P10TG-1205Z2:1H35MLF for 3.5kV

# 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)  
 Standard Drawing  
 For exact pinning please see connection table!  
 Specification may change without notice.

## DIP24 – METAL CASE



PIN CONNECTIONS				
#	SINGLE	DUAL	SINGLE 3.5KV	DUAL 3.5KV
1	+Vin	+Vin	Omitted	Omitted
2	N.C.	- Vout	- Vin	- Vin
3	N.C.	Common	- Vin	- Vin
9	Omitted	Omitted	Omitted	Common
10	- Vout	Common	Omitted	Omitted
11	+Vout	+Vout	N.C.	- Vout
12	- Vin	- Vin	Omitted	Omitted
13	- Vin	- Vin	Omitted	Omitted
14	+Vout	+Vout	+Vout	+Vout
15	- Vout	Common	Omitted	Omitted
16	Omitted	Omitted	- Vout	Common
22	N.C.	Common	+Vin	+Vin
23	N.C.	- Vout	+Vin	+Vin
24	+Vin	+Vin	Omitted	Omitted
others	Omitted			

### App Notes:

- <sup>1</sup> = Measured Input reflected ripple current with a simulated source inductance of 12uH.
- <sup>2</sup> = Tested by nominal Vin and constant resistive load.