

PEN4-xxxxE/Z4:1LF



PEN-SERIES

Rev.09-2009

- ✓ 3-4 Watt
- ✓ 4:1 Ultra Wide Input
- ✓ Reg. **Single** and **Dual** Output
- ✓ **DIP24 Metal Case**
- ✓ **1.5 kV DC I/O Isolation**
- ✓ **Continuous Short Circuit Prot.**

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

Input Specifications

Voltage Range	4:1 Ultra Wide Input
Input Filter	Pi Type
Input Reflected Ripple Current ¹	35 mA pk-pk

Output Specifications

Voltage Accuracy	± 1%
Short Circuit Protection	Indefinite (automatic recovery)
Line Regulation	± 0.5%
Load Regulation	± 0.5% / ± 1.5% (only 3.3 / ±3.3 Vout Models)
Ripple and Noise (20Mhz bandwidth)	60 mV pk-pk
Temperature Coefficient	± 0.02% / °C

General Specifications

Efficiency	See Table
I/O Isolation Voltage (3 sec.)	1500 VDC
I/O Isolation Capacity	500 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 °C (ambient)
Maximum Case Temperature	100 °C
Storage Temperature	-40 to +125 °C
Cooling	Free Air Convection (10mm distance required)
RoHS Conform	Soldering 260 °C, max. (1.5mm from case 10s.)

Selection Guide

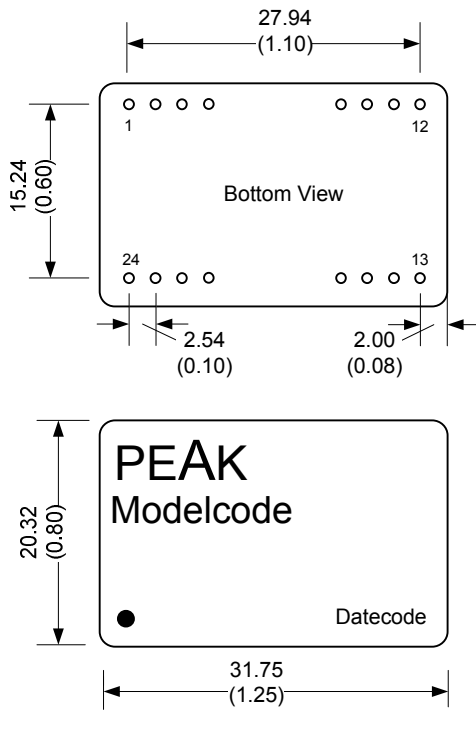
Single/Dual Output

Order #	Watt	Input Voltage (VDC)	Output Voltage (VDC)	Output Current Full Load (mA)	Efficiency (%)	Capacitor Load (μ F) ²
SINGLE OUTPUT						
PEN4-243R3E4:1LF	3	9 - 36	3.3	900	77	680
PEN4-2405E4:1LF	3.3	9 - 36	5	660	81	100
PEN4-247R2E4:1LF	4	9 - 36	7.2	555	79	100
PEN4-2412E4:1LF	4	9 - 36	12	330	83	100
PEN4-2415E4:1LF	4	9 - 36	15	265	83	220
PEN4-483R3E4:1LF	3	18 - 72	3.3	900	78	680
PEN4-4805E4:1LF	3.3	18 - 72	5	660	82	1000
PEN4-487R2E4:1LF	4	18 - 72	7.2	555	82	470
PEN4-4812E4:1LF	4	18 - 72	12	330	85	1000
PEN4-4815E4:1LF	4	18 - 72	15	265	85	47

DUAL OUTPUT						
PEN4-243R3Z4:1LF	4	9 - 36	± 3.3	± 606	75	± 470
PEN4-2405Z4:1LF	3	9 - 36	± 5	± 300	80	± 220
PEN4-247R2Z4:1LF	4	9 - 36	± 7.2	± 277	79	± 47
PEN4-2412Z4:1LF	4	9 - 36	± 12	± 165	83	± 47
PEN4-2415Z4:1LF	4	9 - 36	± 15	± 130	83	± 10
PEN4-483R3Z4:1LF	4	18 - 72	± 3.3	± 606	78	± 680
PEN4-4805Z4:1LF	3	18 - 72	± 5	± 300	82	± 220
PEN4-487R2Z4:1LF	4	18 - 72	± 7.2	± 277	79	± 47
PEN4-4812Z4:1LF	4	18 - 72	± 12	± 165	85	± 100
PEN4-4815Z4:1LF	4	18 - 72	± 15	± 130	85	± 100

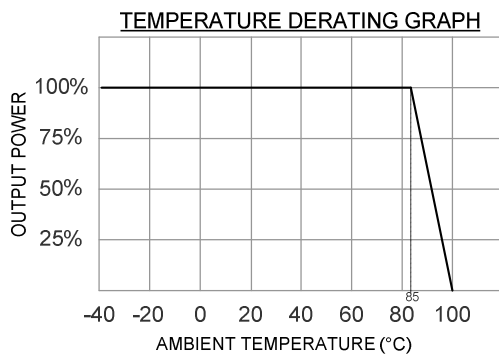
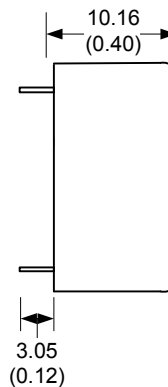
If you need other specifications, please enquire.

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

DIP24 – METAL CASE



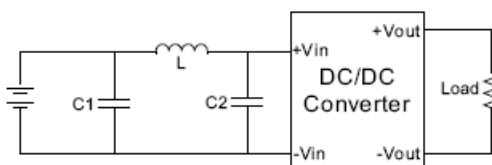
PIN CONNECTIONS		
#	SINGLE	DUAL
2	- Vin	- Vin
3	- Vin	- Vin
9	Omitted	Common
11	N.C.	- Vout
14	+Vout	+Vout
16	- Vout	Common
22	+Vin	+Vin
23	+Vin	+Vin
others	Omitted	Omitted

App Notes:

¹ = Measured Input reflected ripple current with a simulated source inductance of 12uH.

² = Test by nominal input voltage and constant resistor load.

³ = It's recommended to add C1(68mF), C2(33mF), L(12mH) in input end to achieve EN55022 conducted Class A.



EMC SPECIFICATIONS		
Radiated Emissions	EN 55022	CLASS A
Conducted Emissions ³	EN 55022	CLASS A
ESD	IEC 61000-4-2	Perf. Criteria B
RS	IEC 61000-4-3	Perf. Criteria A
EFT	IEC 61000-4-4	Perf. Criteria B
CS	IEC 61000-4-6	Perf. Criteria A
PFMF	IEC 61000-4-8	Perf. Criteria A

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Specification can change without a notice – We accept no liability for any inaccuracy or printing errors.