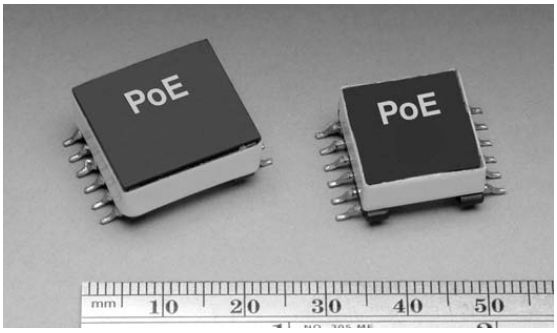
Power Over Ethernet (PoE)/PD

Configurable flyback transformer



Product features

- Versatile design allows multiple output variations
- Flyback topology, 250 kHz switching frequency
- Input range from 29.5 V- 60.0 V
- 1500 Vac isolation between primary and secondary
- Three power levels: 4, 7 and 13 watts
- Low leakage inductance
- 11.0 V @ 0.10 A feedback winding
- Ferrite core material

Applications

- For IEEE 802.3af-compliant Power-over-Ethernet applications
- UPS, VoiP phone, Wireless LAN access point, Bluetooth access point, Network camera, Building access systems
- Retail point-of-information systems
- Vending and gaming machines

Environmental data

- Storage temperature range (component): -40 °C to +125 °C
- Operating temperature range: -40 °C to +125 °C (ambient plus self-temperature rise)
- Solder reflow temperature: J-STD-020 (latest revision) compliant

RoHS

Powering Business Worldwide

Product specifications

Part Number	Watts	Inductance (µH)	Output	DCR/ PRI (Ω)	DCR/ SEC (Ω)	Leakage Inductance (µH) typ.	Pri Current Pk (Adc)	Turn Ratio Schematic 1: Pins pri(1-3):fb(5-6):v1(12-7):v2(11-8):v3(10-9) Schematic 2: Pins pri(1-3):fb(5-6):v1(12-10):v2(11-9)	Schematic	Dimensions
PoE4W3x3.3-R	4	200	(3)x3.3V@0.45A	0.500	0.07	2.75	0.65	1 : 0.52 : 0.16 : 0.16 : 0.16 ±1%	1	Size 1
PoE4W3x5.0-R	4	200	(3)x5.0V@0.30A	0.500	0.27	2.50	0.65	1 : 0.52 : 0.26 : 0.26 : 0.26 ±1%	1	Size 1
PoE4W2x12-R	4	200	(2)x12.0V@0.20A	0.500	0.740	1.40	0.65	1 : 0.52 : 0.60 : 0.60 ±1%	2	Size 1
PoE7W3x3.3-R	7	100	(3)x3.3V@0.75A	0.275	0.03	1.00	1.00	1 : 0.529 : 0.176 : 0.176 : 0.176 ±1%	1	Size 1
PoE7W3x5.0-R	7	100	(3)x5.0V@0.50A	0.275	0.095	1.00	1.00	1 : 0.529 : 0.265 : 0.265 : 0.265 ±1%	1	Size 1
PoE7W2x12-R	7	100	(2)x12.0V@0.30A	0.275	0.250	1.00	1.00	1 : 0.529 : 0.588 : 0.588 ±1%	2	Size 1
PoE13W3x3.3-R	13	100	(3)x3.3V@1.35A	0.250	0.032	1.50	1.60	1 : 0.529 : 0.176 : 0.176 : 0.176 ±3%	1	Size 2
PoE13W3x5.0-R	13	100	(3)x5.0V@0.90A	0.250	0.075	1.20	1.60	1 : 0.529 : 0.265 : 0.265 : 0.265 ±3%	1	Size 2
PoE13W2x12-R	13	100	(2)x12.0V@0.60A	0.250	0.280	1.00	1.70	1 : 0.529 : 0.647 : 0.647 ±3%	2	Size 2
Part Number	**Watts**	**Inductance (µH)**	**Output**	**DCR/ PRI (Ω)**	**DCR/ SEC (Ω) V1/V2/V3**	**Leakage Inductance (µH) typ.**	**Pri Current Pk (Adc)**	**Turn Ratio Schematic 2: Pins pri(1-3):fb(5-6):v1(12-10):v2(11-9) Schematic 3: Pins pri(1-3):fb(5-6):v1(12-11):v2(10-9):v3(8-7)**	**Schematic**	**Dimensions**
PoE13W3VERS-R	13	100	V1:7.0V@1.1A, V2:(1)x3.3V@1.1A, V3:1.8V@1.1A	0.250	0.085 0.042 0.025	1.00	1.70	1 : 0.529 : 0.350 : 0.176 : 0.088 ±3%	3	Size 2
PoE13W2VERS-R	13	100	V1:5.0V@1.6A, V2:3.3V@1.6A	0.250	0.038/ 0.027/na	1.20	1.70	1 : 0.529 : 0.265 : 0.176 ±3%	2	Size 2

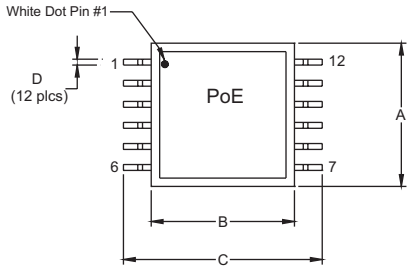
1) Test Parameters: 100 kHz, 0.100 V_{rms}, 0.0 Adc
2) DCR limits maximum @ +20 °C
3) Leakage Inductance 200 kHz, 0.01 V_{rms}, 0.0 Adc
4) Feedback DCR 1.0 Ω maximum @ +20 °C

Dimensions- mm

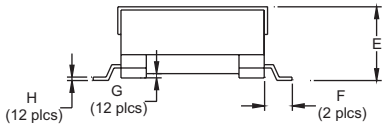
	A max.	B ref.	C max.	D ref.	E max.	F ref.	G ref.	H ref.	I ref.	J mm	K mm	L ref.	M max.	N	O
Size 1	17.1	16.0	22.3	0.7	8.4	3.0	0.1	0.4	14.49	1.79	3.43	16.88	23.74	2.54	0.75
Size 2	18.0	18.0	24.6	0.7	10.0	3.3	0.1	0.4	14.25	1.75	3.43	19.14	26.0	2.5	0.75

1) Tolerances A - H are ± 0.25 mm unless specified otherwise.
2) Tolerances I - O are ± 0.10 mm unless specified otherwise.
3) All soldering surfaces are coplaner to within ± 0.102 mm.

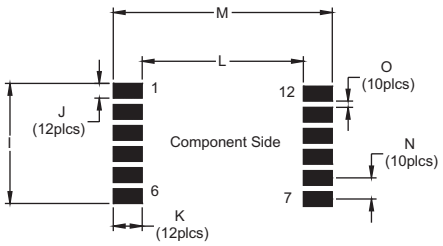
Top View



Front View

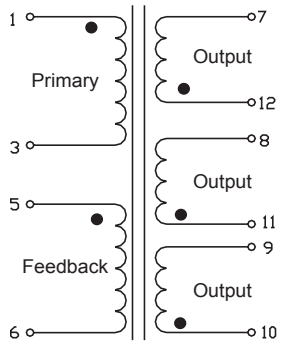


Recommended Pad Layout

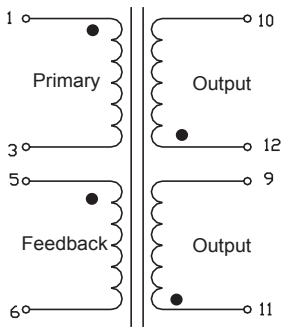


Do not route traces or vias underneath the transformer

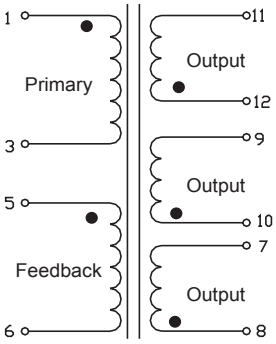
Schematic 1



Schematic 2



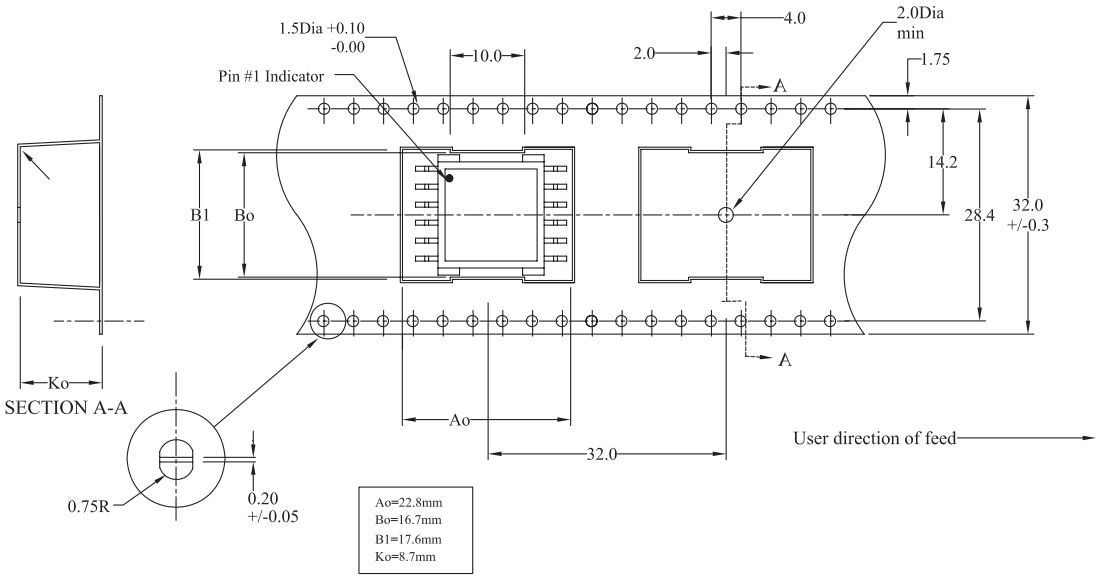
Schematic 3



Packaging information- mm

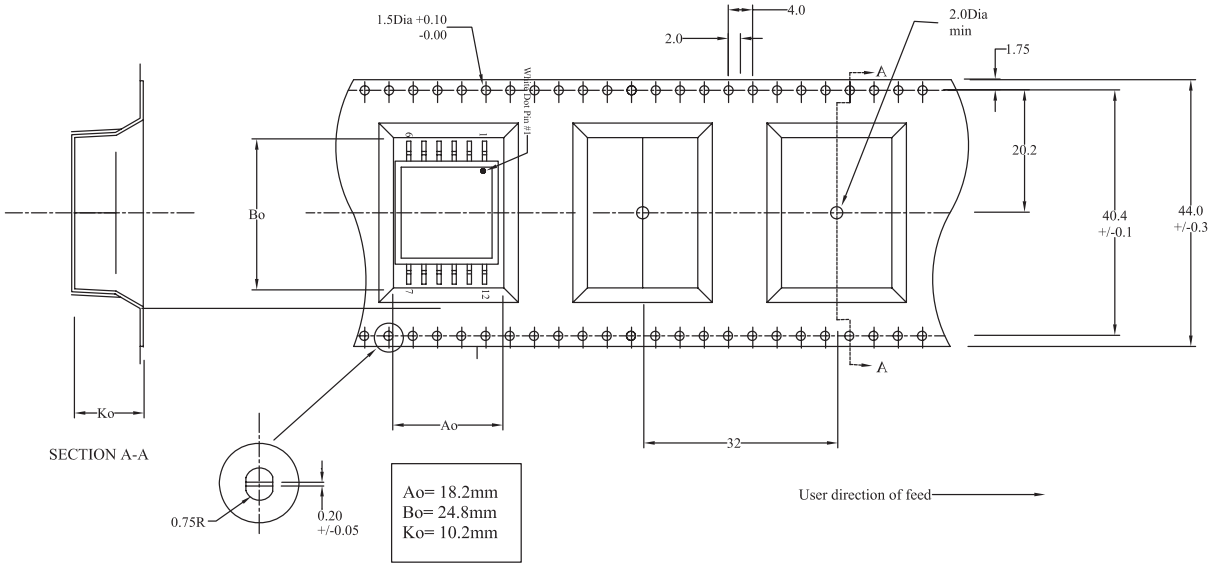
PoE 4 and 7 Watt

Parts packaged on 13" Diameter reel, 200 parts per reel.



PoE 13 Watt

Parts packaged on 13" Diameter reel, 140 parts per reel.



Solder Reflow Profile

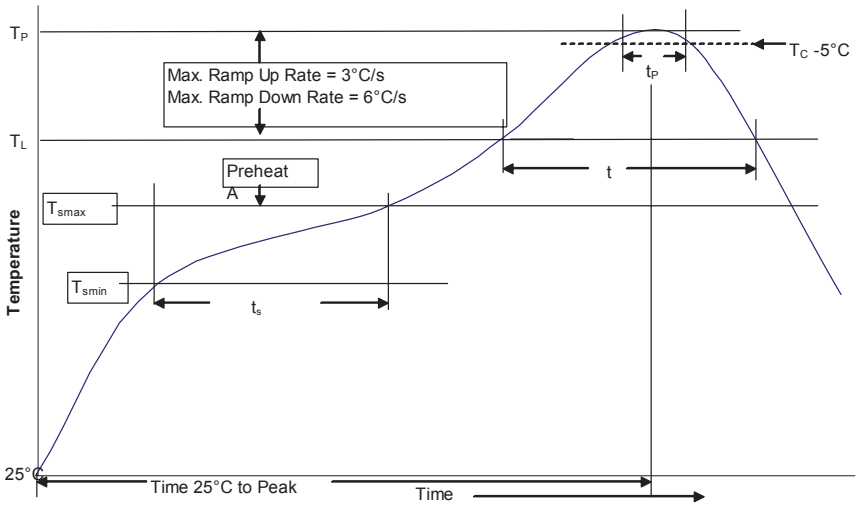


Table 1 - Standard SnPb Solder (T_C)

Package Thickness	Volume mm³ <350	Volume mm³ ≥350
<2.5mm	235°C	220°C
≥2.5mm	220°C	220°C

Table 2 - Lead (Pb) Free Solder (T_C)

Package Thickness	Volume mm³ <350	Volume mm³ 350 - 2000	Volume mm³ >2000
<1.6mm	260°C	260°C	260°C
1.6 – 2.5mm	260°C	250°C	245°C
>2.5mm	250°C	245°C	245°C

Reference JDEC J-STD-020

Profile Feature		Standard SnPb Solder	Lead (Pb) Free Solder
Preheat and Soak	• Temperature min. (T_{smin})	100°C	150°C
	• Temperature max. (T_{smax})	150°C	200°C
	• Time (T_{smin} to T_{smax}) (t_s)	60-120 Seconds	60-120 Seconds
Average ramp up rate T_{smax} to T_p		3°C/ Second Max.	3°C/ Second Max.
Liquidous temperature (T_L) Time at liquidous (t_L)		183°C 60-150 Seconds	217°C 60-150 Seconds
Peak package body temperature (T_P)*		Table 1	Table 2
Time (t_p)** within 5 °C of the specified classification temperature (T_C)		20 Seconds**	30 Seconds**
Average ramp-down rate (T_p to T_{smax})		6°C/ Second Max.	6°C/ Second Max.
Time 25°C to Peak Temperature		6 Minutes Max.	8 Minutes Max.

* Tolerance for peak profile temperature (T_p) is defined as a supplier minimum and a user maximum.

** Tolerance for time at peak profile temperature (t_p) is defined as a supplier minimum and a user maximum.

Eaton
Electronics Division
1000 Eaton Boulevard
Cleveland, OH 44122
United States
www.eaton.com/electronics

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