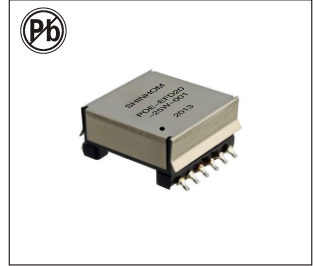


POE DC/DC TRANSFORMERS POE-EFD SERIES



Features

- Surface mount
- Power from 25 to 60 W
- Output voltage from 5 to 12 V
- Operating temperature: -40°C up to +105°C
- RoHS compliant

Applications

- VoIP phones
- WLAN APs
- Security IP cameras
- Routers
- Gateways

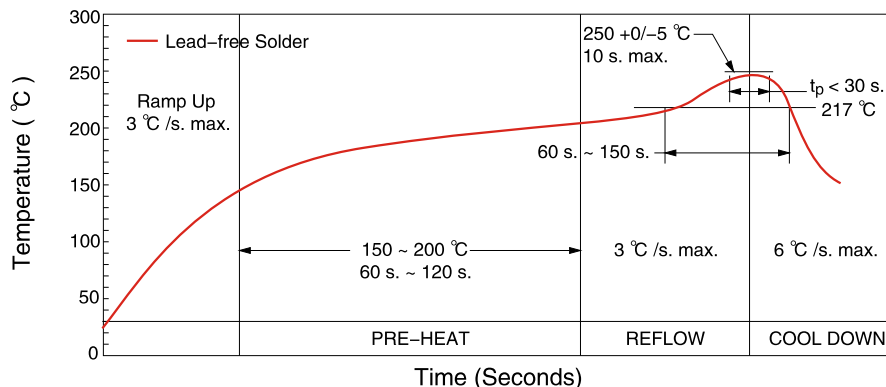
ELECTRICAL CHARACTERISTICS:@25°C

Part Number	Primary Inductance		Leakage Inductance		DCR		Turns ratio		Input Voltage Switching Frequency	Main Output
POE-EFD20-25W-001	(1,2-3,4) w/ (1,2 & 3,4 shorted) @ 250 kHz / 0.5 V	70uH ± 10%	(1,2-3,4) w/ (1,2 & 3,4 & 5,6 & 7,8,9,10,11,12 shorted) @ 250 kHz / 0.5 V	0.62uH max.	(1,2-3,4) w/ (1,2 & 3,4 shorted)	75mΩ max	(1,2-3,4 : 5-6) w/ (1,2 & 3,4 shorted)	2.44 ± 3%:1	36 V – 57 V 250 kHz	5.0 V 5.0 A
					(5-6)	250mΩ max				
					(7,8,9-10,11,12) w/ (10,11,12 & 7,8,9 shorted)	5mΩ max	(1,2-3,4 : 7,8,9-10,11,12) w/ (1,2 & 3,4 & 10,11,12 & 7,8,9 shorted)	5.5 ± 3%:1		
POE-EFD20-19W-001	(1-2) @ 250 kHz / 0.1 V	75uH ± 10%	(1-2) w/ (7,8,9,10,11,12 shorted) @ 250 kHz / 0.1 V	3uH max.	(1-2)	100mΩ max	(1-2 : 5-6) (1-2 : 7-12) (1-2 : 8-12) (1-2 : 10-12)	3.33 ± 3%:1 3.33 ± 3%:1 6.67 ± 3%:1 10 ± 3%:1	40 V – 57 V 250 kHz	5.0 V 3.8 A
					(5-6)	120mΩ max				
					(7-8)	55mΩ max				
					(8-10) w/ (9,10 shorted)	5mΩ max				
					(12-10) w/ (12,11 & 10,9 shorted)	5mΩ max				
POE-EFD20-60W-001	(1,2-3,4) w/ (1,2 & 3,4 shorted) @ 100 kHz / 0.1 V	100uH ± 10%	(1,2-3,4) w/ (1,2 & 3,4 & 5,6 & 7,8,9,10,11,12 shorted) @ 100 kHz / 0.1 V	0.35uH max.	(1,2-3,4) w/ (1,2 & 3,4 shorted)	39mΩ max	(1,2-3,4 : 5-6) w/ (1,2 & 3,4 shorted)	1.71 ± 3%:1	36 V – 72 V 250 kHz	12.0 V 5.0 A
					(5-6)	90mΩ max				
					(7,8,9-10,11,12) w/ (12, 11, 10 & 9,8,7 shorted)	12mΩ max	(1,2-3,4 : 7,8,9-10,11,12) w/ (1,2 & 3,4 & 12,11,10 & 9,8,7 shorted)	1.71 ± 3%:1		
POE-EFD25-50W-001	(1-3) @ 100 kHz / 0.1 V	65uH ± 10%	(1-3) w/ (7,8,9,10,11,12 shorted) @ 100 kHz / 0.1 V	750nH max.	(1-3)	75mΩ max	(1-3 : 5-6)	2.5 ± 3%:1	42.5 V – 57 V 250 kHz	12.0 V 4.2 A
					(5-6)	280mΩ max	(1-3 : 7,8,9-10,11,12)	2.5 ± 3%:1		
					(7,8,9-10,11,12) w/ (10,11,12 & 7,8,9 shorted)	20mΩ max	(1-2 : 6-7) w/ (10,11,12 & 7,8,9 shorted)	4.5 ± 3%:1		

Hi-Pot for PRI-SEC is 1500 Vac (60 Hz / 2 sec / 1 mA);
POE20-60W-001 Hi-Pot for PRI-SEC: 1875 Vac (60 Hz / 2 sec / 1 mA)

SOLDERING PROFILE:

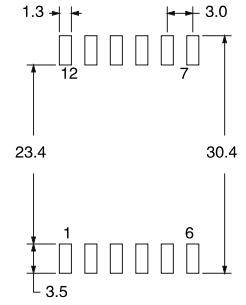
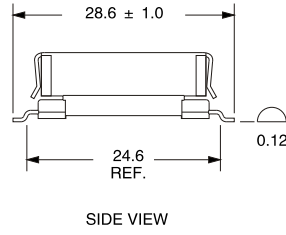
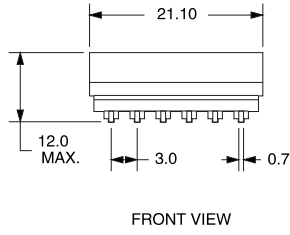
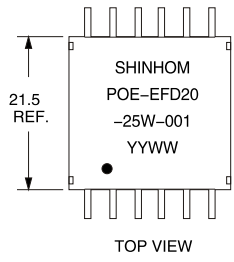
The duration from room temperature (25 °C) to peak temperature is 8 minutes maximum.



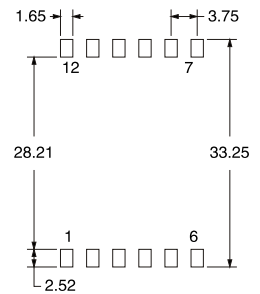
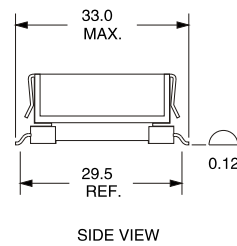
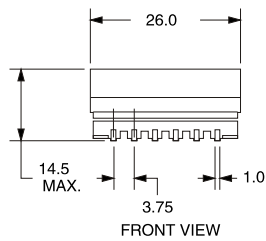
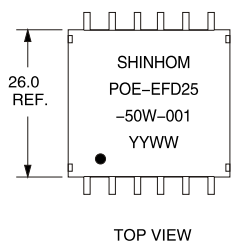
PHYSICAL CHARACTERISTICS:(mm)

LAYOUT:

POE-EFD20

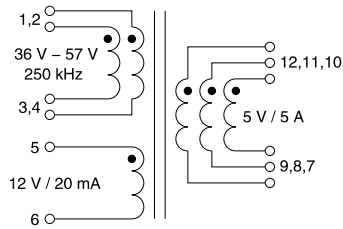


POE-EFD25



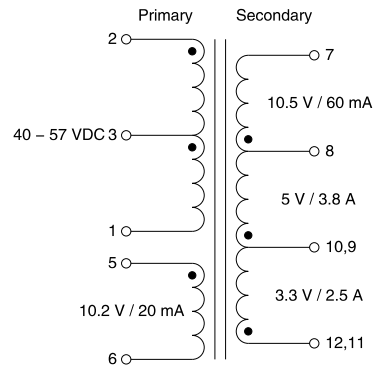
ELECTRICAL SCHEMATIC:

POE-EFD20-25W-001

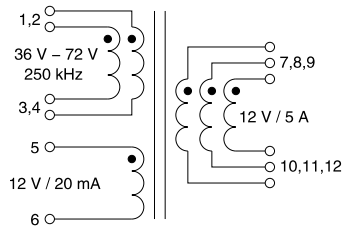


Primary windings and secondary windings to be connected in parallel on PC board.

POE-EFD20-19W-001

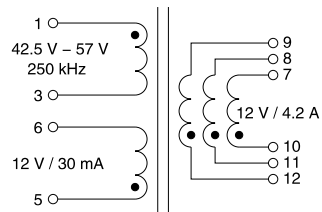


POE-EFD20-60W-001



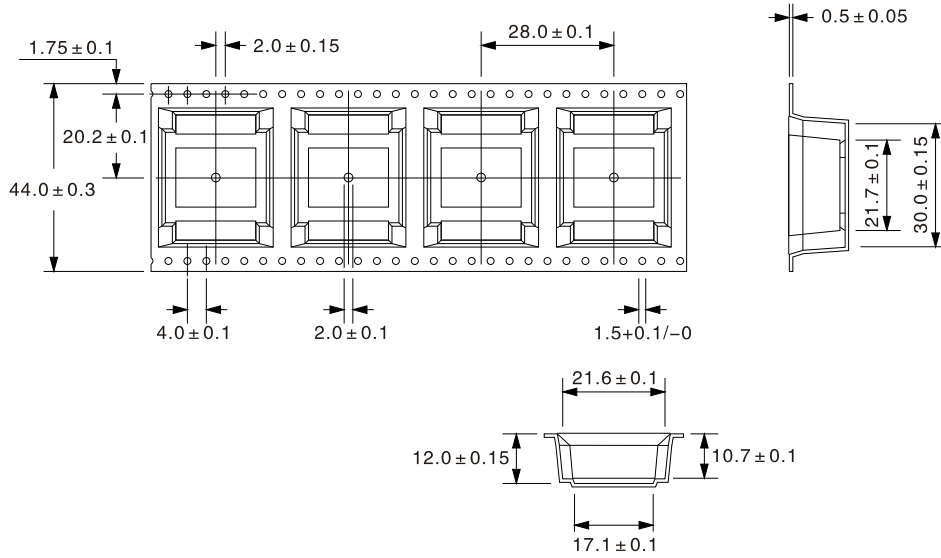
Primary windings and secondary windings to be connected in parallel on PC board.

POE-EFD25-50W-001

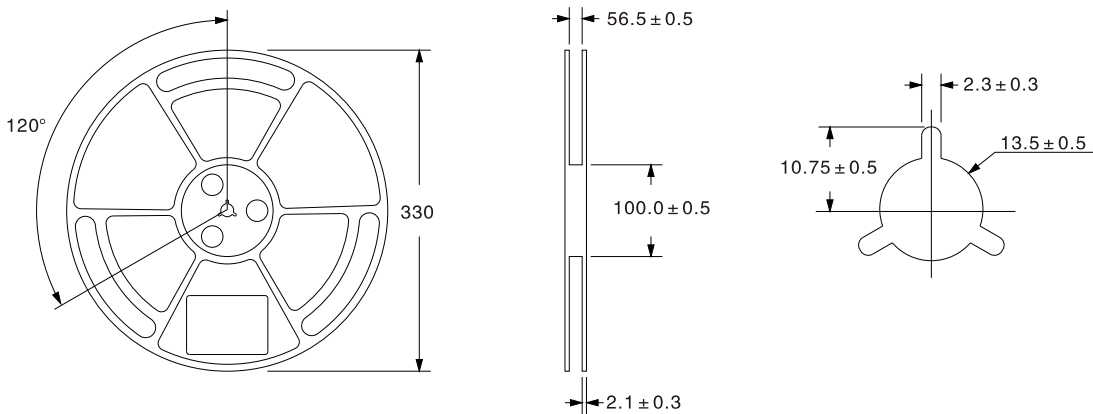
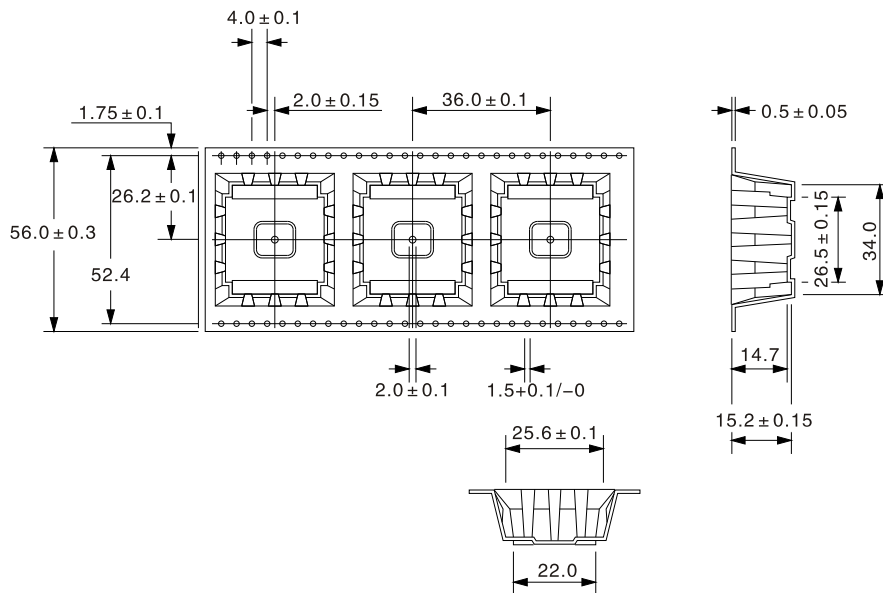


PACKAGING SPECIFICATIONS:(mm)

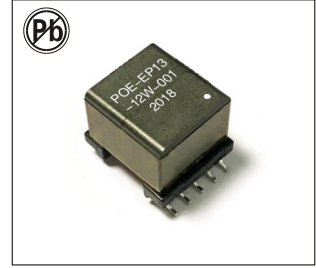
POE-EFD20 150 pcs/reel, 2 reels/carton, 300 purchase.



POE-EFD25 100 pcs/reel, 2 reels/carton, 200 purchase.



POE DC/DC TRANSFORMERS POE-EP13 SERIES



Features

- Surface mount
- Power from 12 to 72 W
- Output voltage from 3.3 to 12 V
- Operating temperature: -40°C up to +165°C
- RoHS compliant

Applications

- VoIP phones
- WLAN APs
- Security IP cameras
- Routers
- Gateways

ELECTRICAL CHARACTERISTICS:@25°C

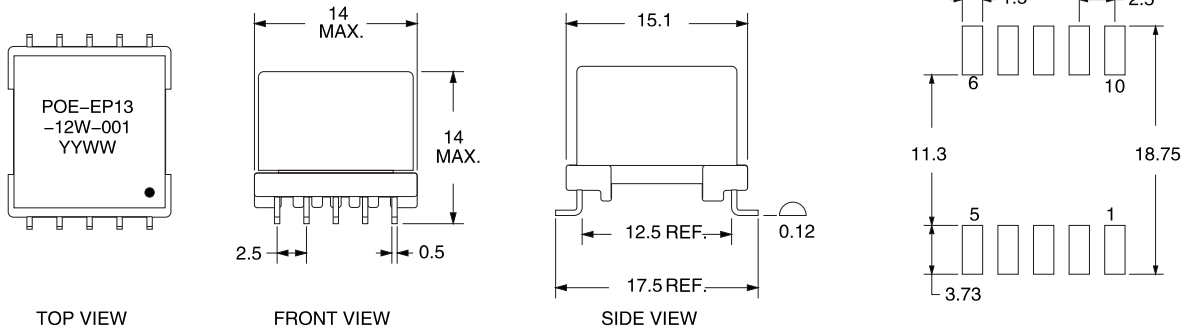
Part Number	Primary Inductance		Leakage Inductance		DCR		Turns ratio		Input Voltage Switching Frequency	Main Output
POE-EP13 -12W-001	(1-2) @ 100 kHz / 0.1 V	133uH ± 7%	(1-2) w/ (3,4,6,7,10) shorted @ 250 kHz / 0.1V	1.3uH max	(1-2) (3-4) (6-7) (7-10)	340mΩ max 250mΩ max 150mΩ max 8mΩ max	(1-2 : 3-4) (1-2 : 7-10) (1-2 : 6-7)	2.77 ± 3%:1 9 ± 3%:1 4.5 ± 3%:1	36 V – 57 V 200 kHz	3.3 V 3.3 A
POE-EP13 -25W-001	(1-2) @ 100 kHz / 0.1 V	100uH ± 10%	(1-2) w/ (4,5,6,7,9,10) shorted @ 100 kHz / 0.1 V	0.55uH max	(1-2) (4-5) (6,7-9,10)	116mΩ max 163mΩ max 6mΩ max	(1-2:4-5) (1-2:6,7-9,10)	1.82 ± 3%:1 4 ± 3%:1	33 V – 57 V 250 kHz	5 V 5 A
① POE-EPA13 -12W-001	(1-2) @ 1 kHz / 0.5 V	150uH ± 7%	(1-2) w/ (3,4,6,7,8,9,10) shorted @ 250 kHz / 0.5 V	1.0uH max	(1-2) (3-4) (6-7) (7,8-9,10)	166mΩ max 166mΩ max 68.5mΩ max 6.3mΩ max	(1-2:7,8-9,10) (1-2:3-4) (1-2:6-7)	6 ± 3%:1 2.66 ± 3%:1 6 ± 3%:1	36 V – 57 V 200 kHz	5 V 2.4 A
① POE-EPA13 -12W-002	(3-4) @ 100 kHz / 0.1 V	127uH ± 10%	(3-4) w/ (1,2,7,8,9,10) shorted @ 250 kHz / 0.1 V	0.65uH max	(3-4) (2-1) (7-9) (8-10)	170mΩ max 100mΩ max 65mΩ max 65mΩ max	(3-4:2-1) (3-4:7-9) (3-4:8-10)	2 ± 3%:1 2 ± 3%:1 2 ± 3%:1	36 V – 72 V 250 kHz	12 V 1.08 A
POE-EPA13 -25W-001	(1-2) @ 1 kHz / 0.5 V	65uH ± 7%	(1-2) w/ (3,4,6,7,8,9,10) shorted @ 250 kHz / 0.5 V	0.85uH max	(1-2) (3-4) (6-7) (7,8-9,10)	120mΩ max 80mΩ max 65mΩ max 5.5mΩ max	(1-2:7,8-9,10) (1-2:3-4) (1-2:6-7)	6 ± 3%:1 2.57 ± 3%:1 6 ± 3%:1	36 V – 57 V 200 kHz	5 V 5 A
① POE-EPA13 -25W-002	(1-3) @ 100 kHz / 0.1 V	80uH ± 7%	(1-3) @ 100 kHz / 0.1 V w/ (4,5,6,7,9,10) shorted	1.0uH max	(1-3) (4-5) (7,6-10,9) w/ (6,7,9,10) shorted	140mΩ max 195mΩ max 22mΩ max	(1-3:4-5) (1-3:7,6-10,9) w/ (6,7,9,10) shorted	2.375 ± 3%:1 3.166 ± 3%:1	36 V – 57 V 220 kHz	12 V 2.1 A
① POE-EPA13 -30W-001	(1-3) @ 100 kHz / 0.1 V	70uH ± 10%	(1-3) w/ (6,7,9,10) shorted @ 100 kHz / 0.1 V	1.4uH max	(1-3) (4-5) (6,7-9,10) w/ (6,7,9,10) shorted	93mΩ max 166mΩ max 4.45mΩ max	(1-3:4-5) (1-3:6,7-9,10) w/ (6,7,9,10) shorted	3.14 ± 3%:1 7.33 ± 3%:1	33 V – 57 V 200 kHz	5 V 6 A
② POE-EPA13 -70W-001	(1-3) @ 100 kHz / 0.1 V	100uH ± 15%	(1-3) w/ (4,5,6,7,9,10) shorted @ 100 kHz / 0.1 V	0.22uH max	(1-3) (1-2) (4-5) (6-9) (7-10)	33mΩ max 221mΩ max 135mΩ max 6.6mΩ max 6.6mΩ max	(1-3:1-2) (1-3:4-5) (1-3:6-9) (1-3:7-10)	1 ± 3%:1 1.43 ± 3%:1 3.33 ± 3%:1 3.33 ± 3%:1	41 V – 57 V 200 kHz	5 V 14 A
② POE-EPA13 -72W-001	(1-3) @ 100 kHz / 0.1 V	100uH ± 12%	(1-3) w/ (4,5,6,7,9,10) shorted @ 100 kHz / 0.1 V	0.24uH max	(1-3) (1-2) (4-5) (6-9) (7-10)	49mΩ max 240mΩ max 302mΩ max 36mΩ max 34mΩ max	(1-3:1-2) (1-3:4-5) (1-3:6-9) (1-3:7-10)	1 ± 3%:1 1.33 ± 3%:1 1.5 ± 3%:1 1.5 ± 3%:1	41 V – 57 V 200 kHz	12 V 6 A

Hi-Pot(Pri-Sec).....1500 Vac (60 Hz / 2 sec / 1 mA)
 Operating Temperature.....-40 °C to +105 °C
 Operating Temperature ①-40 °C to +125 °C
 Operating Temperature ②-40 °C to +165 °C

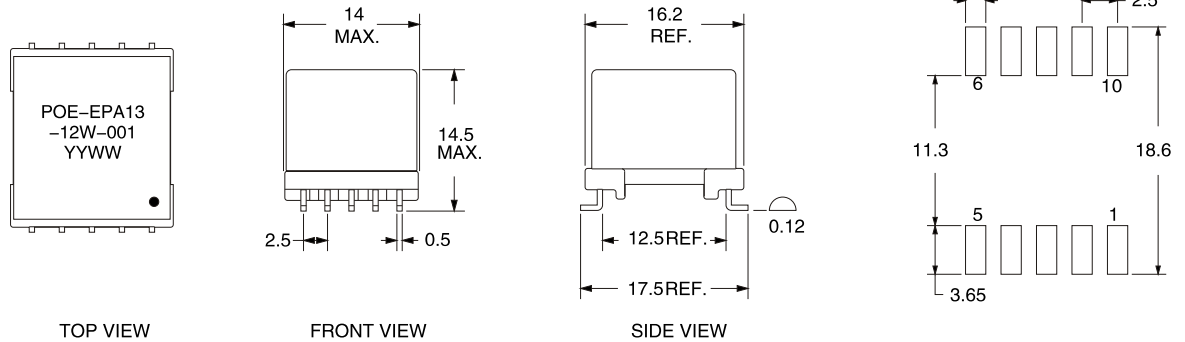
PHYSICAL CHARACTERISTICS:(mm)

LAYOUT:

POE-EP13

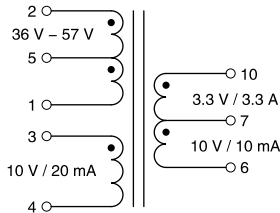


POE-EP13A

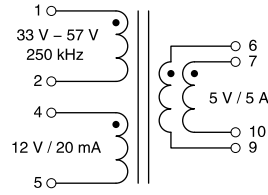


ELECTRICAL SCHEMATIC:

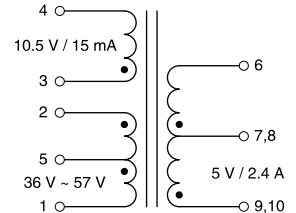
POE-EP13-12W-001



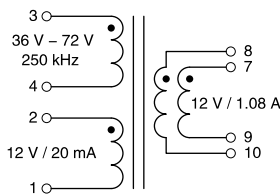
POE-EP13-25W-001



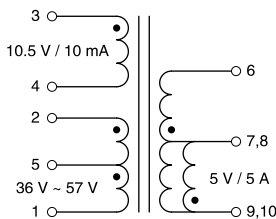
POE-EPA13-12W-001



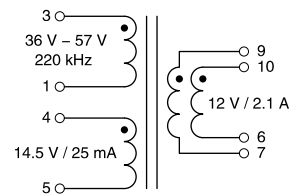
POE-EPA13-12W-002



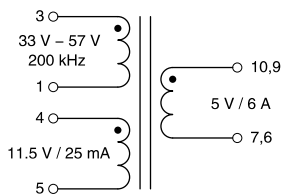
POE-EPA13-25W-001



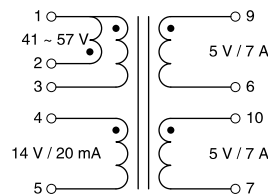
POE-EPA13-25W-002



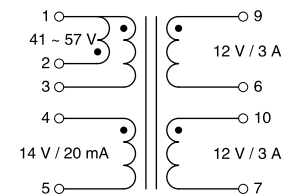
POE-EPA13-30W-001



POE-EPA13-70W-001



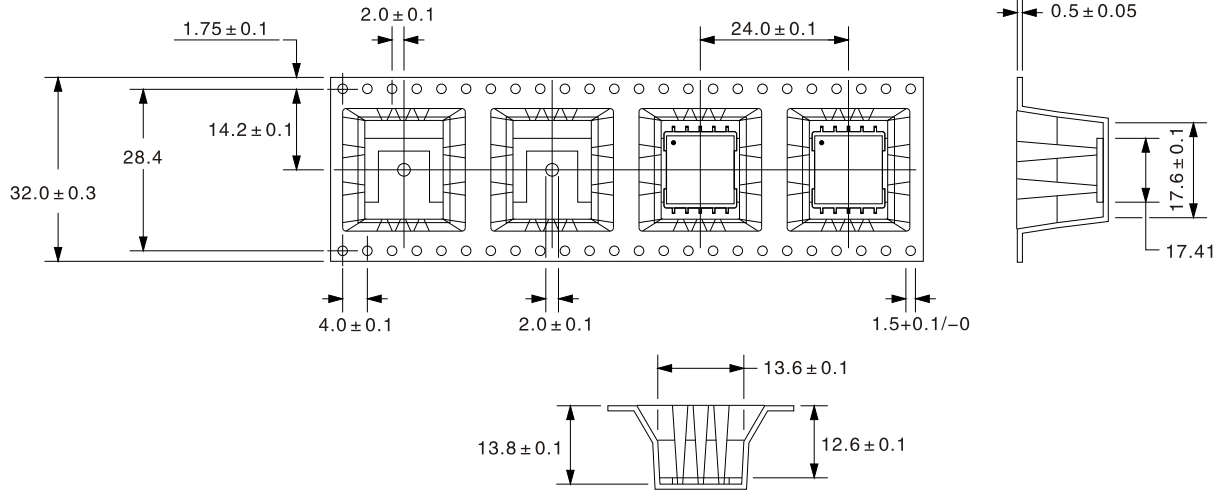
POE-EPA13-72W-001



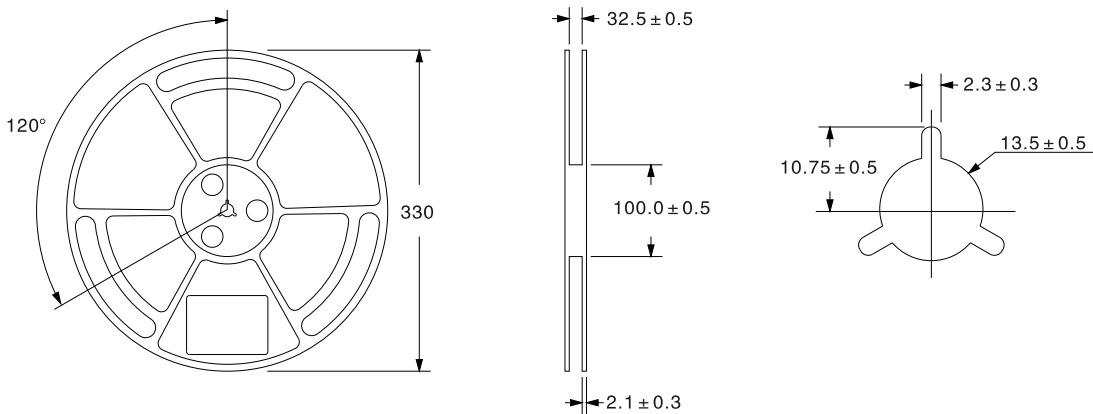
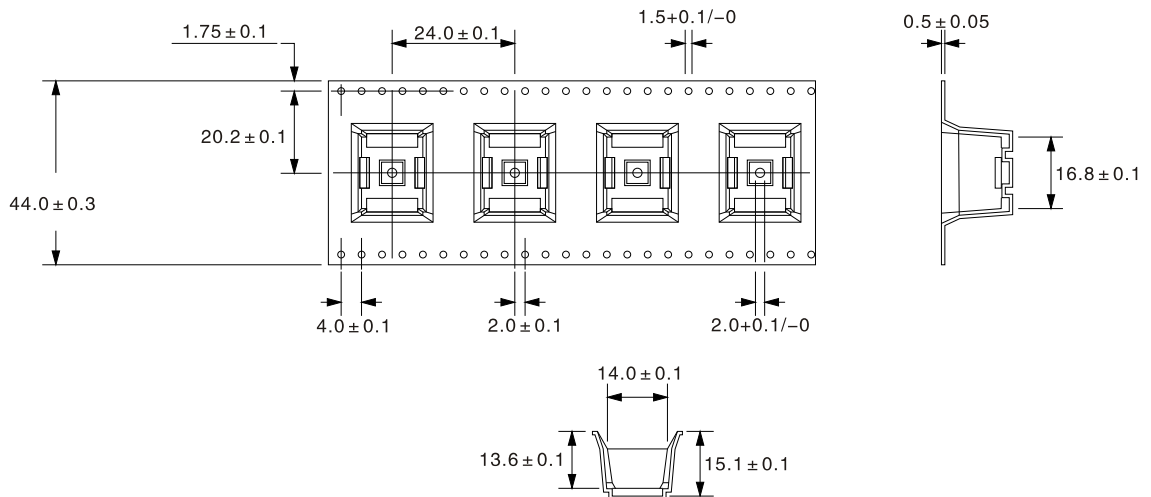
Secondary winding to be connected in parallel on PC board.

PACKAGING SPECIFICATIONS:(mm)

POE-EP13 180 pcs./reel, 3 reels/carton, 540 purchase.

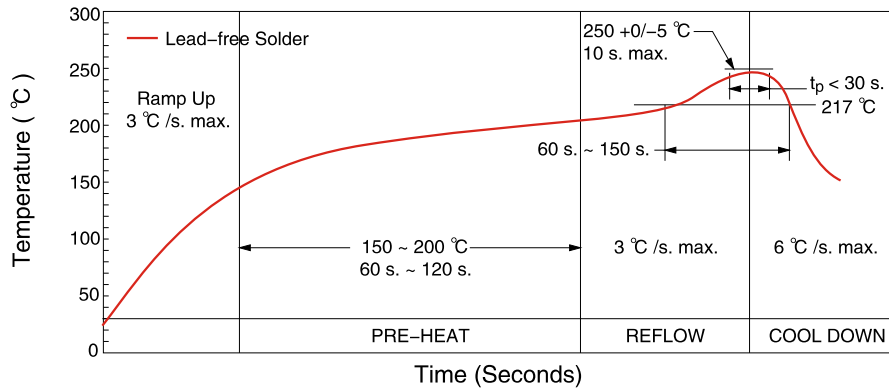


POE-EP13A 150 pcs./reel, 2 reels/carton, 300 purchase.



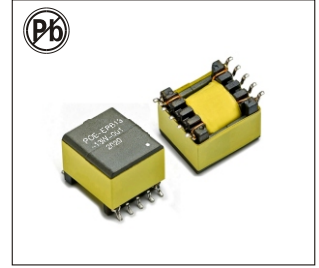
SOLDERING PROFILE:

The duration from room temperature (25 °C) to peak temperature is 8 minutes maximum.



POE FLYBACK TRANSFORMERS

POE-EPB13-13W-001



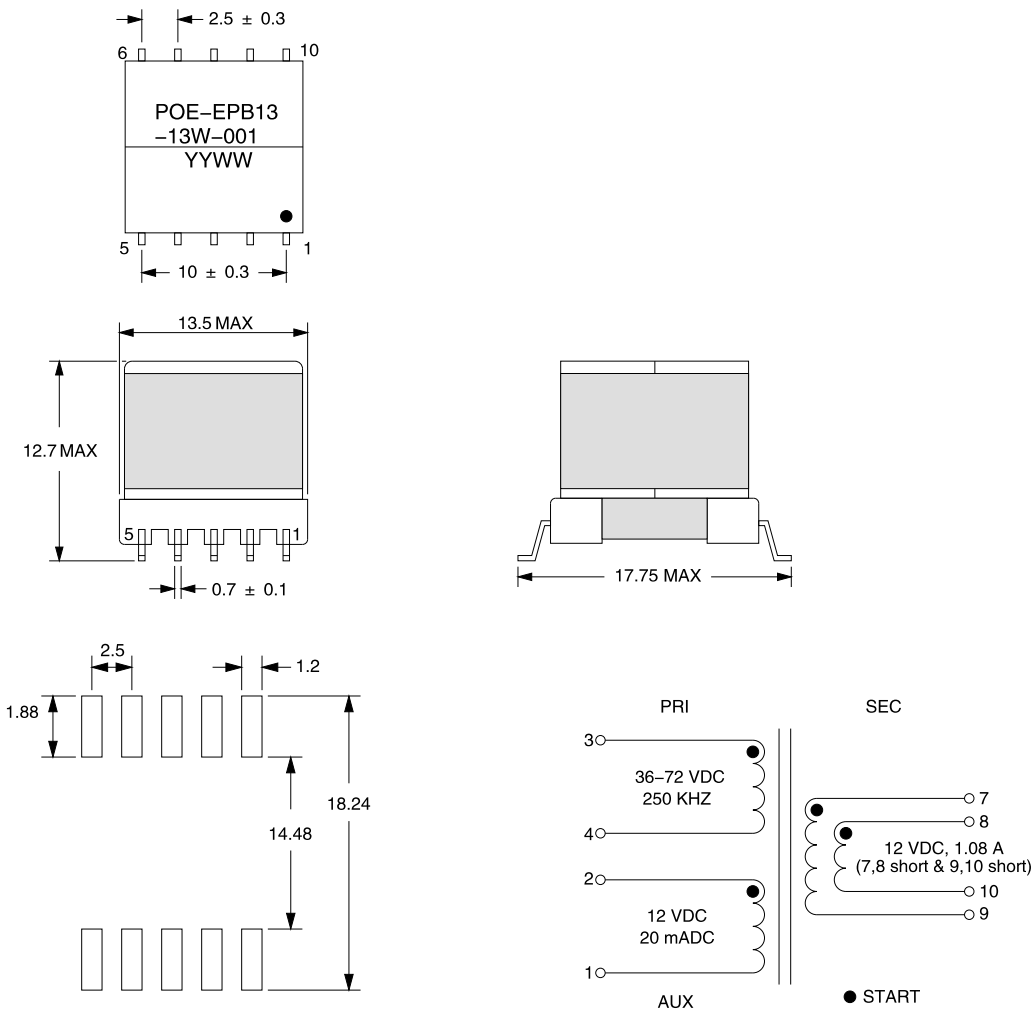
Features

- 13 W PoE
- 1.5 kVrms isolation voltage
- Supports IEEE 802.3af compliant, integrated PoE PD and PWM controllers
- UL 94V-0 rated bobbin
- UL 1446 Class B Insulation System
- RoHS compliant

ELECTRICAL CHARACTERISTICS:@25°C

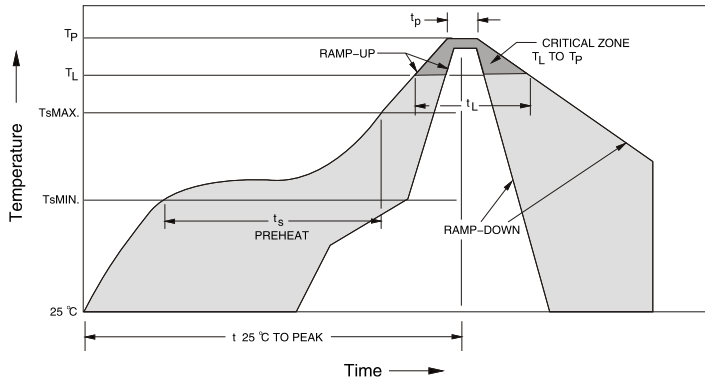
Part No.	L(3-4) ± 10% @250KHz,0.1V	DCR(m Ω)Max			Turn ratio ± 3% (3-4):(2-1) :(7-9):(8-10)	Input	Output
		3-4	2-1	7,8-9,10			
POE-EPB13-13W-001	127uH	199	308	33	1 : 0.5 : 0.5 : 0.5	36-72Vdc 250KHz	12Vdc@1.08A

PHYSICAL CHARACTERISTICS:(mm) LAYOUT:



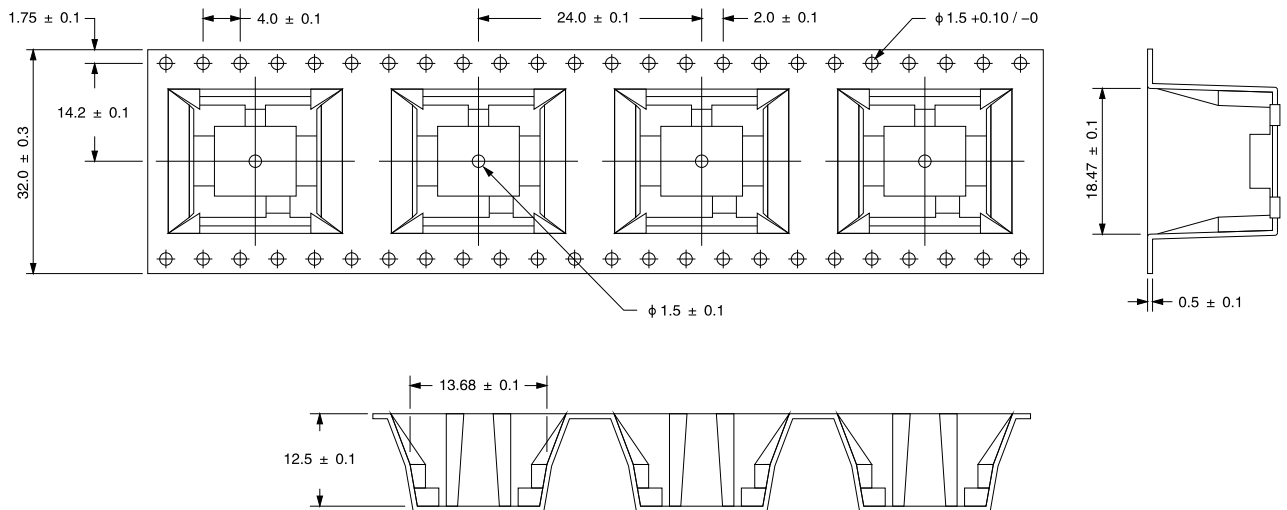
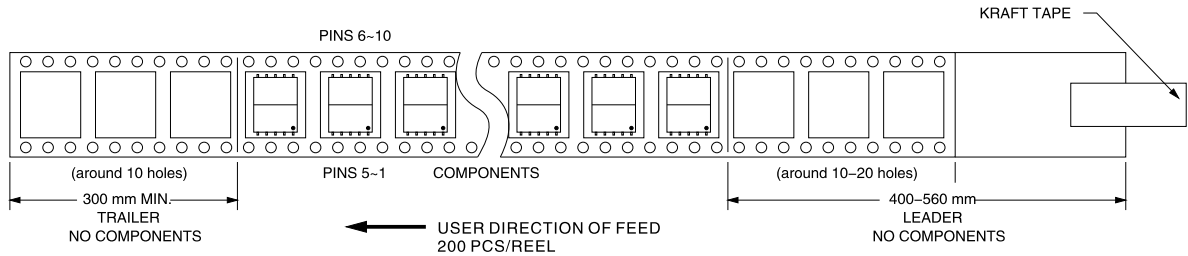
Primary (3-4) Leakage Inductance (250 kHz, 0.1 V Aux. Sec. shorted).....2.0uHMax.
 Hi-Pot.....
 Pri/Sec.....1.5 kVac, 2 mA, 2 Sec.
 Pri/Aux, Pri/core, Sec/core.....0.5 kVAC, 2 mA, 2 Sec.
 Operating Temperature.....-40 °C to +125 °C (temperature rise included)
 Storage Temperature.....-40 °C to +125 °C (Component)

SOLDERING PROFILE:



Ramp-up rate = 3 °C /sec. max.
 Ramp-down rate = 6 °C /sec. max.
 TL = 217 °C tL = 60-150 sec.
 TP = 245 °C ± 5 °C
 Time within 5 °C of actual Peak Temp (tp) = 20-40 sec.
 Ts min = 150 °C Ts max = 200 °C
 Ts min to Ts max = 60-180 sec., 25 °C to Peak Temperature = 6 min. max.

PACKAGING SPECIFICATIONS:(mm)



Packaging..... 200 pcs. per 13-inch reel

SMT POWER TRANSFORMERS STEP13 SERIES



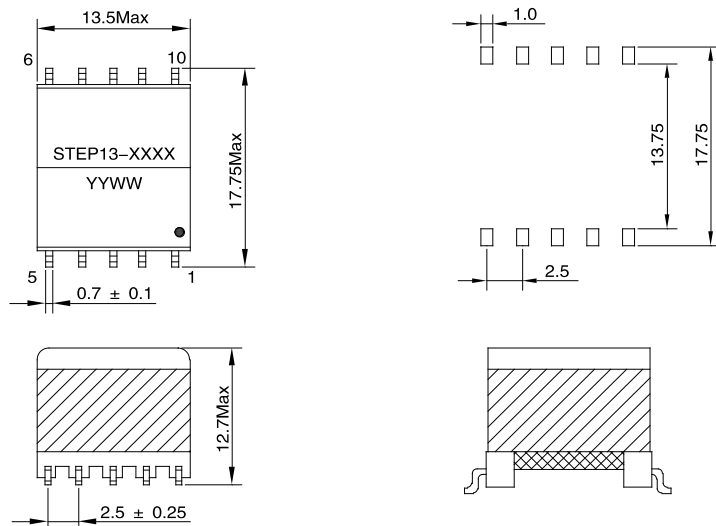
Features

- IEC60950 Compatible
- Transformers for PoE applications.
- Surface Mount Device Providing Compact Footprint
- 1500Vrms isolation from primary and bias to second or primary to second
- Operating temperature range(Including self temperature rise):-40°C to +125°C
- RoHS compliant

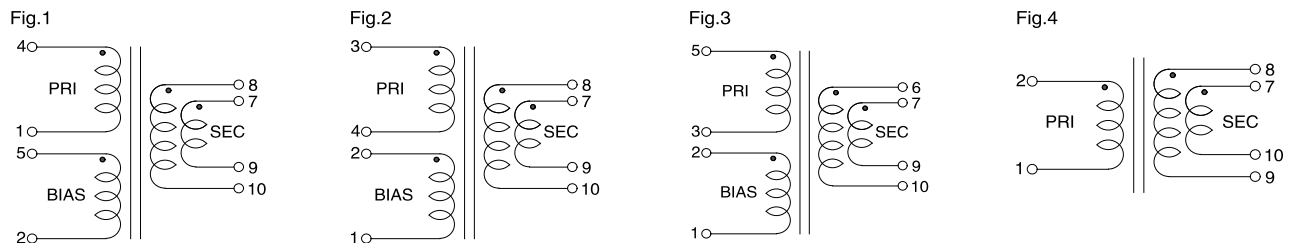
ELECTRICAL CHARACTERISTICS:@25°C

Part No. STEP13	Power (W)	Turns ratio		Output		OCL(μH) @200KHz,0.1V		OCL(μH) @250KHz,0.1V		LK(μH) @200KHz 0.1V	LK(μH) @250KHz 0.1V	DCR(mΩ Max)			Schema -tics
		Pri : Sec	Pri : Bias	Sec	Bias	@0A	@2A	@0A	@1A	Pri Short others	Pri Short others	Pri	Sec	Bias	
-2031	11	6:1	6:2	3.3V,3.3A	8V,20mA	115.5±10%	/	/	/	0.65Max	/	330	11	460	Fig.1
-3231	13.5	8:1	8:1.67	5V,2.7A	8V,20mA	127±10%	/	/	/	7.5Max	/	460	12	94	Fig.2
-0681	13.5	3.43:1	3.43:0.71	12V,1.13A	8V,20mA	127±10%	/	/	/	7.5Max	/	460	55	94	Fig.2
-2961	13	1:0.166	1:0.5	3.3V,4A	12V,20mA	/	/	127±10%	114Min	/	1.25Max	225	24	310	Fig.2
-2871	13	1:0.25	1:0.5	5V,2.6A	12V,20mA	/	/	127±10%	114Min	/	0.95Max	225	39	348	Fig.2
-0211	13	1:0.5	1:0.5	12V,1.08A	12V,20mA	/	/	127±10%	114Min	/	0.65Max	199	65	308	Fig.2
-4321	13	1:0.5	1:0.567	19.5V,0.67A	12V,20mA	/	/	127±10%	114Min	/	0.8Max	290	66	355	Fig.2
-2981	13	1:0.667	1:0.5	24V,0.54A	12V,20mA	/	/	127±10%	114Min	/	0.6Max	255	67	315	Fig.2
-0901	25	5:1	5:2.5	5V,5A	12V,30mA	/	/	37±10%	/	/	0.75Max	89	6.2	84	Fig.3
-1291	25	2:1	2:1.1	12V,2.1A	12V,30mA	/	/	37±10%	/	/	0.75Max	89	29	96	Fig.3
-0861	15	1:2	N/A	12V,1.25A	/	40±10%	36Min	/	/	0.566Max	/	100	155	/	Fig.4
-0921	15	5:2	N/A	5V,3A	/	40±10%	36Min	/	/	0.621Max	/	108	40	/	Fig.4
-4961	15	13:4	N/A	3.3V,4.5A	/	40±10%	36Min	/	/	1.0Max	/	100	13	/	Fig.4

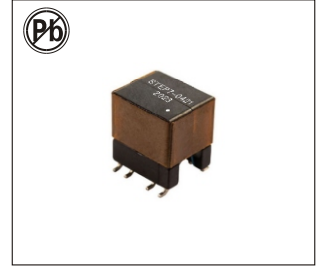
PHYSICAL CHARACTERISTICS:(mm) LAYOUT:



ELECTRICAL SCHEMATIC:



FLYBACK TRANSFORMERS STEP7-0421



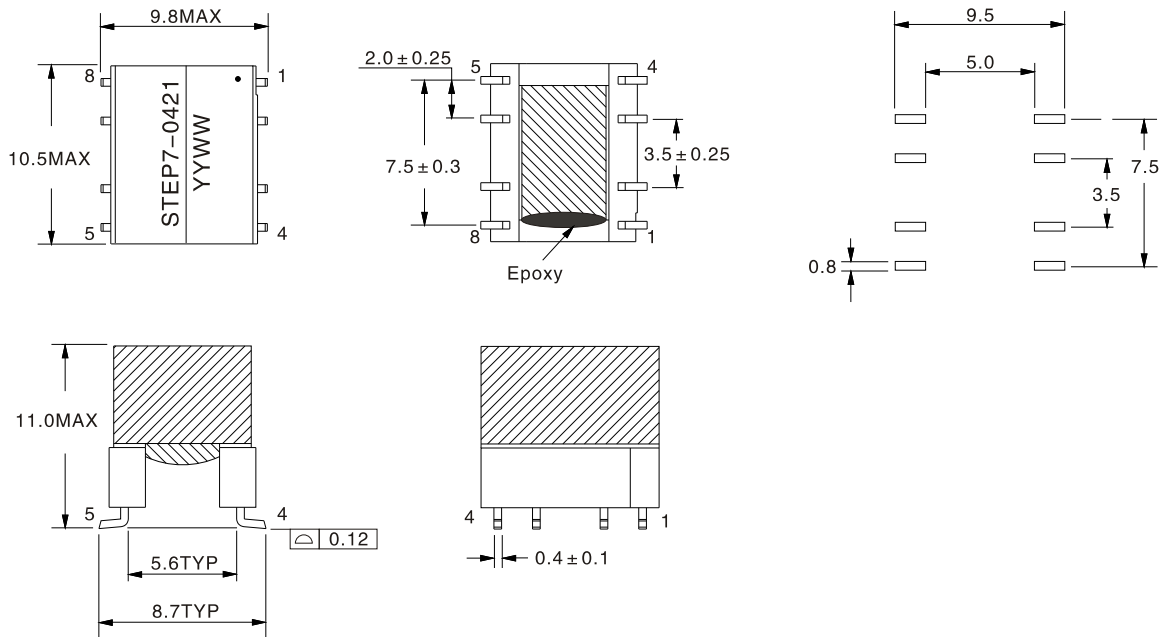
Features

- 4.5 to 60 V input voltage
- 6 to 28 V output voltage
- 2.2 kV isolation voltage
- Isolation type: Basic creepage and clearance >3 mm
- RoHS compliant

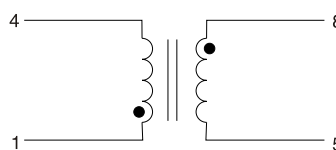
ELECTRICAL CHARACTERISTICS:@25°C

L(Pin1-4) @250 kHz, 1V		270uH ± 20%
DC Bias(Pin1-4) @250kHz, 1V ,DC0.4A		L0A*90% min
Leakage Inductance(Pin 1-4) @250kHz, 1V with 8-5 short		8.5uH max.
DCR	Pin 1-4	1.4 Ω max
	Pin 8-5	2.85 Ω max
Turns Ratio (± 2 %) & Polarity@20 kHz, 1V Input Terminal (1-4)		(1-4): (8-5)= 1:1
Hi-Pot	PRI-SEC	2.2KVac 2.0 mA, 60 sec.
	PRI-CORE	0.6KVac 2.0 mA, 60 sec.
	SEC-CORE	0.6KVAC 2.0 mA, 60 sec.
Operating Temperature Range		-40 °C to +125 °C (including temperature rise)
Storage Temperature Range		-40 °C to +85 °C

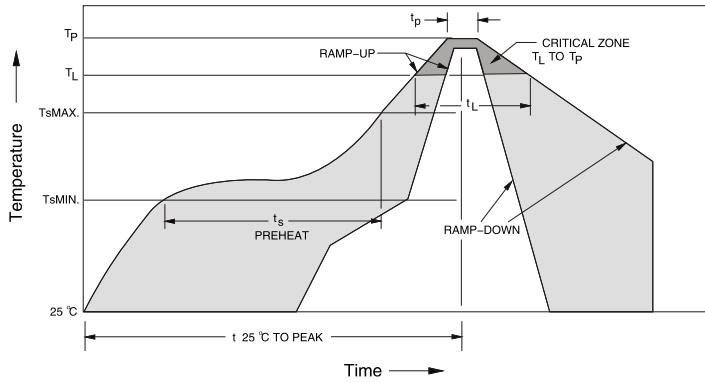
PHYSICAL CHARACTERISTICS:(mm) LAYOUT:



WINDING:



SOLDERING PROFILE:



Ramp-up rate = 3 °C /sec. max.
 Ramp-down rate = 6 °C /sec. max.
 Tl = 217 °C tL = 60-150 sec.
 Tp = 245 °C ± 5 °C
 Time within 5 °C of actual Peak Temp (tp) = 20-40 sec.
 Ts min = 150 °C Ts max = 200 °C
 Ts min to Ts max = 60-180 sec., 25 °C to Peak Temperature = 6 min. max.

PACKAGING SPECIFICATIONS:(mm)

