POEA1FB

Power over ethernet (PoE)/PD flyback transformer

Product features

- Flyback topology
- IEEE 802.3xx
- Up to 300 kHz switching frequency
- Input range from 33 V to 72 V
- EP10 SMT package (15.2 mm x 12.5 mm x 11.6 mm)
- 1500 Vac isolation between primary and secondary
- Three power levels: 3, 7 and 10 watts
- Low leakage inductance
- Ferrite core material
- Moisture sensitivity level (MSL): 1

Applications

- Lighting
- Industrial automation
- Security systems
- VoIP phone systems
- Network and Bluetooth access points
- Network routers, repeaters
- Uninterruptible power supplies (UPS)
- Retail point-of-information (POI) systems
- Vending and gaming machines
- Remote cameras

Environmental compliance and general specifications

- Storage temperature (component): -40 °C to +125 °C
- Operating temperature range: -40 °C to +125 °C (ambient plus self-temperature rise)

Pb HALOGEN HF FREE RoHS

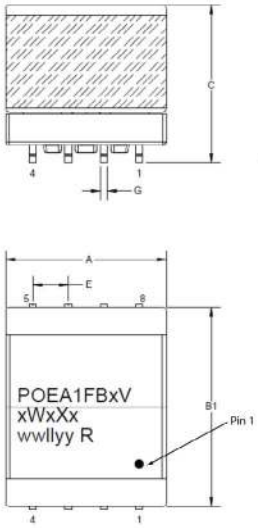
Powering Business Worldwide

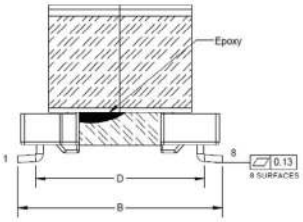
Product specifications

Part number[4]	Output power (W)	OCL[1] (µH) ±10%	SCL[2] (µH) maximum	I_{sat}[3] (A)	Turns ratio Schematic 1: Pri : Sec 1 : Sec 2 : Aux Schematic 2: Pri : Sec 1 : Aux Schematic 3: Pri : Sec 1 : Aux Schematic 4: Pri : Sec 1 ±3%	Output	DCR (mΩ) maximum @ +25 °C (Pri)	DCR (mΩ) maximum @ +25 °C (Sec 1)	DCR (mΩ) maximum @ +25 °C (Sec 2)	DCR (mΩ) maximum @ +25 °C (Aux)	Schematic
POEA1FB1V3W2X5	3	155 ± 15%	2.8	0.80	1:0.146:0.146:0.313	(2) x 5.0 V	350	50	150	320	1
POEA1FB1V7W1X5	7	253	7.5	0.45	1:0.125:0.208	(1) x 5.0 V @ 1.4 A	420	16	-	115	2
POEA1FB1V7W1X12	7	155	3.25	0.75	1 :0.667: 0.667	(1) x 12.0 V @ 0.6 A	414	343	-	822	3
POEA1FB1V10W1X12	10	60	1.7	1.20	1 :1	(1) x 12.0 V @ 0.83 A	130	170	-	-	4

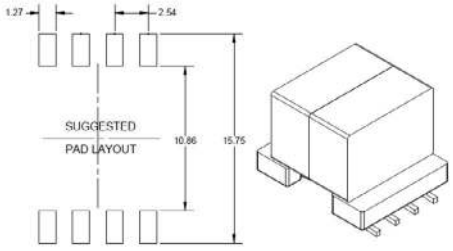
1. Open circuit inductance (OCL) is for the primary, test parameters: 100 kHz, 0.1 V_{rms}, 0.0 Adc, +25 °C
2. Short circuit inductance (SCL) is for the primary with the other windings shorted, test parameters: 100 kHz, 0.1 V_{rms}, 0.0 Adc, +25 °C
3. I_{sat} is for the primary, peak current for less than or equal to 10% rolloff @ +25 °C
4. Part Number Definition: POEA1FBxVxWxXx
POEA1FB=Product code and size
xVxW, xV=Version indicator, xW= output power, xXx=number of outputs and output voltage

Mechanical parameters, schematic, pad layout (mm)





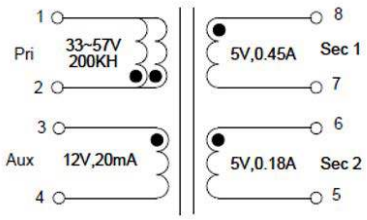
Recommended PCB Layout



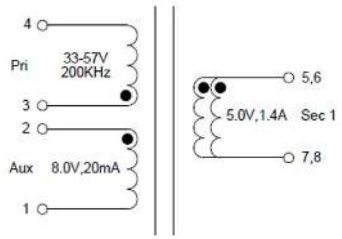
Dimension	Value
A	12.5 maximum
B	15.24 maximum
B1	14.2 ± 0.5
C	11.6 maximum
D	12.04 typical
E	2.54 ± 0.3
G	0.5 ± 0.1

Part marking: Dot= Pin 1, POEA1FB = Product code and size,
xV=Version indicator, xW= Output power,
xXx=number of outputs and output voltage.
wwllyy R= Lot code
All pin length doesn't include tin icicles
All soldering surfaces to be coplanar within 0.13 millimeters
Tolerances are ±0.25 millimeters unless stated otherwise
Pad layout tolerances are ±0.1 millimeters unless stated otherwise
Traces or vias underneath the transformer is not recommended

Schematic 1

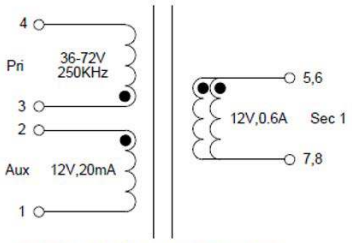


Schematic 2



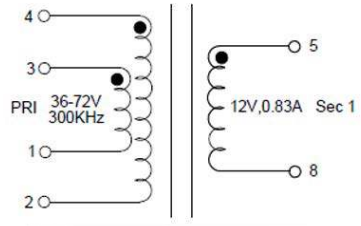
Connect pins 5 to 6 together and pins 7 to 8 together on the PCB board

Schematic 3



Connect pins 5 to 6 together and pins 7 to 8 together on the PCB board

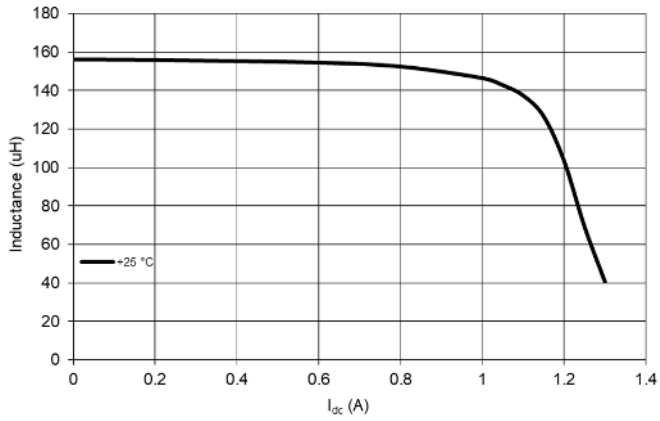
Schematic 4



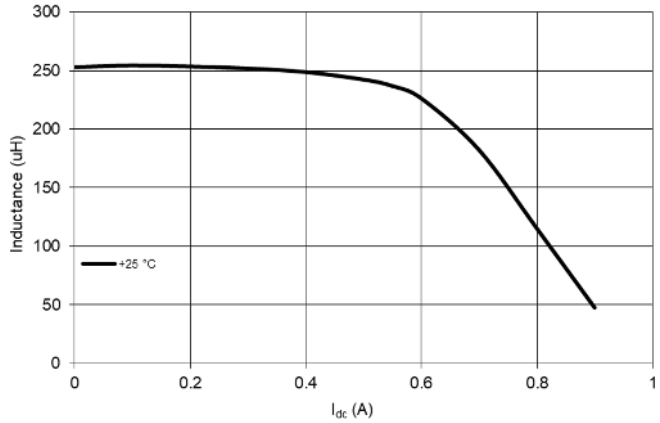
The primary windings to be connected in parallel on the PC board. Connect pins 1 to 2 and pins 3 to 4.

OCL (inductance) vs current characteristics

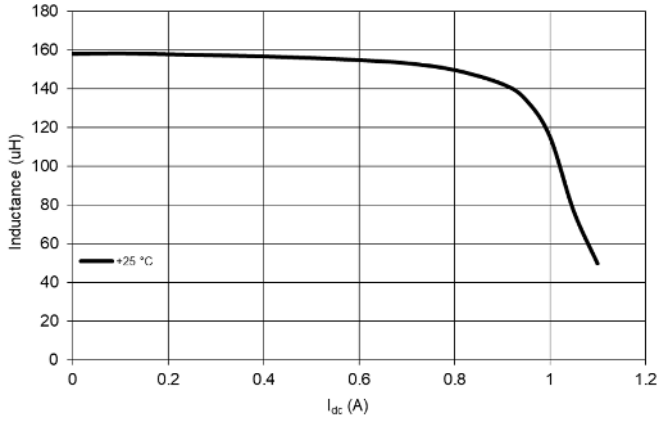
POEA1FB1V3W2X5



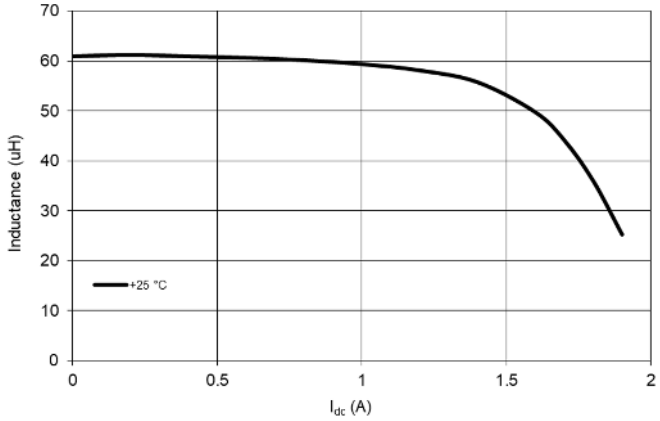
POEA1FB1V7W1X5



POEA1FB1V7W1X12

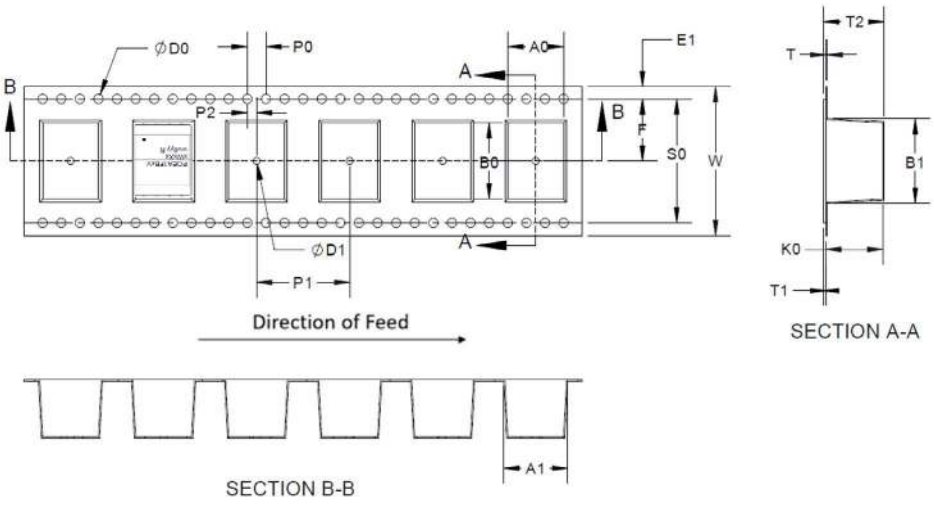


POEA1FB1V10W1X12



Packaging information (mm)

Supplied in tape and reel packaging, 13" diameter reel (EIA-481 compliant)
200 parts per reel



Dimension	Value
W ± 0.30	32
F ± 0.10	14.2
E1 ± 0.10	1.75
P0 ± 0.10	4
P1 ± 0.10	20
P2 ± 0.1	2
D0 + 0.10/-0	1.5
D1 minimum	2
A0 ± 0.10	12
A1 ref.	9.6
B0 ± 0.10	16.4
B1 ± 0.1	14.8
K0 ± 0.10	12
T ± 0.05	0.5
T1 maximum	0.1
T2 maximum	12.7
S0	28.4

General specifications

Reflow: MIL-STD-202G Condition J, +245 °C ± 5 °C, 30 s ± 5 s, 1 times reflow
Solderability: J-STD-002. 8 hours steam age test, Flux type: ROL0, Solder: +245 °C ± 5 °C
Mechanical shock: MIL-STD-202 Method 213. Half-sine shock pulse, peak=100 g's, 6.0 ms, total 18 shocks
Vibration: MIL-STD-202, Method 204. Gravity= 10 g, Frequency= 10 Hz to 55 Hz to 10 Hz, Direction: 3 (X,Y, Z), each 12 cycles, Duration= 20 minutes in each direction
Salt spray: GB/T6461-2002, Salt spray concentration= 5% ± 1%, Test temperature= +35 ± 2 °C, pH value= 6.5 to 7.2, Time= 48 hours, After removing the product, wash in warm water or salted water, then natural air-dried for 1 hour
High temperature storage test: MIL-STD-202G Method 108, +125 °C, Duration= 1000 hours
Temperature cycling: JESD22 Method JA-104,High temperature= +125 °C, low temperature -40 °C, conversion time 30 minutes, 100 cycles.
Biased humidity: MIL-STD-202G Method 103, +85 °C, 85% RH, Duration= 1000 hours.
Life: MIL-STD-202 Method 108, 1000 hours, +85 °C at rated I_{rms} (Ambient plus self temperature rise no more than +125 °C)

Solder reflow profile

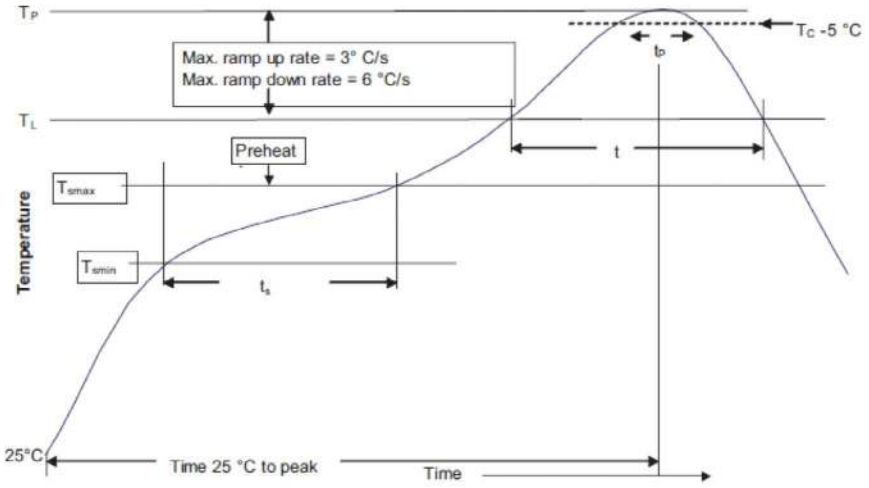


Table 1 - Standard SnPb solder (T_C)

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

Table 2 - Lead (Pb) free solder (T_C)

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

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
Ramp up rate T_L to T_p		3 °C/ second max.	3 °C/ second max.
Liquidous temperature (T_L) Time (t_L) maintained above 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)		10 seconds*	10 seconds*
Ramp-down rate (T_p to T_L)		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.

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