

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)



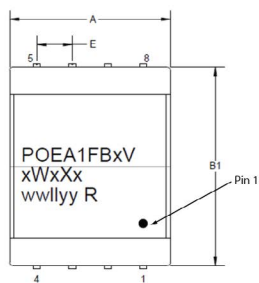
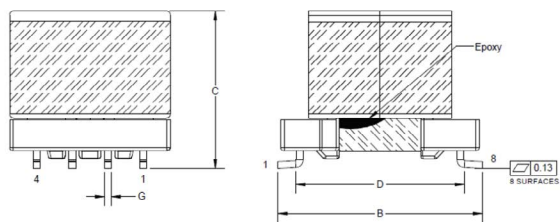
Product specifications

Part number ⁴	Output power (W)	OCL ¹ (μH) ±10%	SCL ² (μH) maximum	I _{sat} ³ (A)	Turns ratio	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

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

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

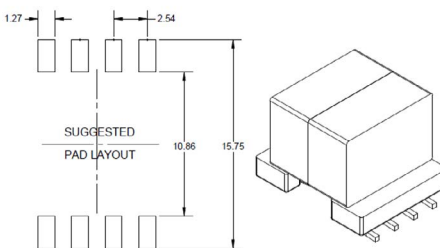
Mechanical parameters, schematic, pad layout (mm)



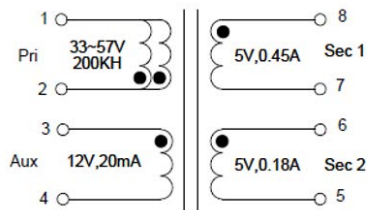
Dimension	Value
A	12.5 maximum
B	15.24 maximum
B1	14.2 ± 0.5
C	11.6 maximum
D	12.04 typical
E	2.54 ± 0.3
G	0.5 ± 0.1

Part marking: Dot= Pin 1, POEA1FB = Product code and size, xV=Version indicator, xW= Output power, xXx=number of outputs and output voltage, wwlyy 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

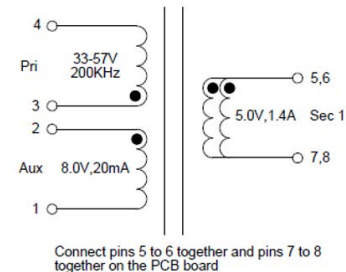
Recommended PCB Layout



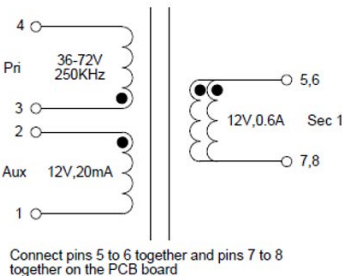
Schematic 1



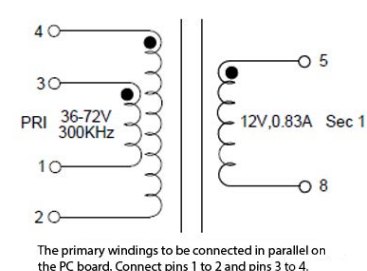
Schematic 2



Schematic 3

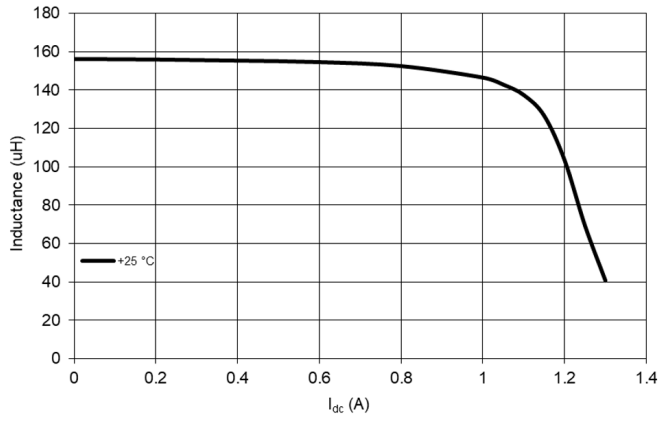


Schematic 4

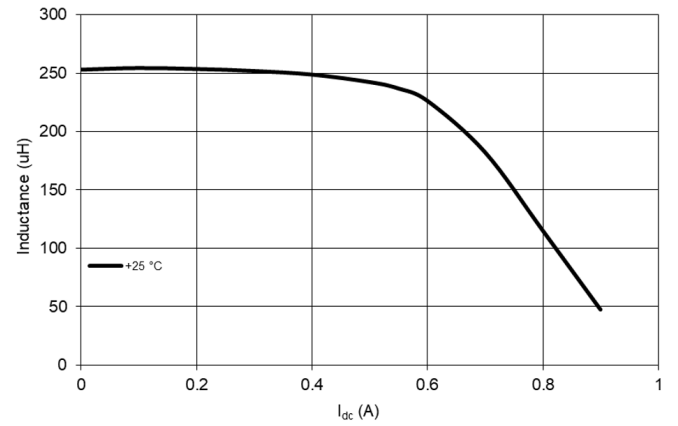


OCL (inductance) vs current characteristics

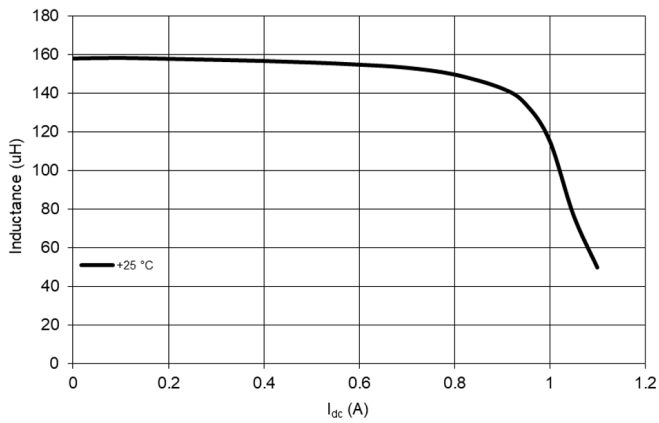
POEA1FB1V3W2X5



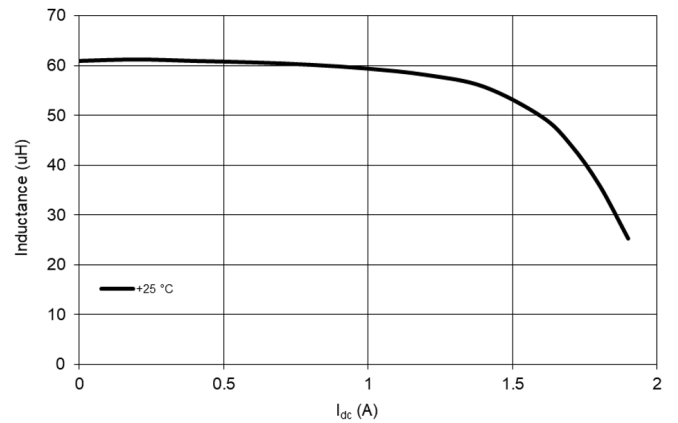
POEA1FB1V7W1X5



POEA1FB1V7W1X12

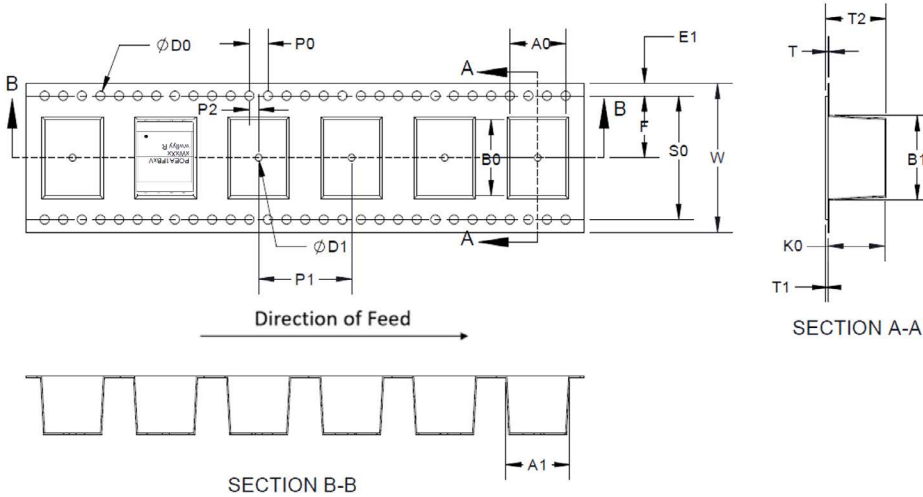


POEA1FB1V10W1X12



Packaging information (mm)

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



Dimension	Value
$W \pm 0.30$	32
$F \pm 0.10$	14.2
$E1 \pm 0.10$	1.75
$P0 \pm 0.10$	4
$P1 \pm 0.10$	20
$P2 \pm 0.1$	2
$D0 + 0.10/-0$	1.5
D1 minimum	2
$A0 \pm 0.10$	12
A1 ref.	9.6
$B0 \pm 0.10$	16.4
$B1 \pm 0.1$	14.8
$K0 \pm 0.10$	12
$T \pm 0.05$	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

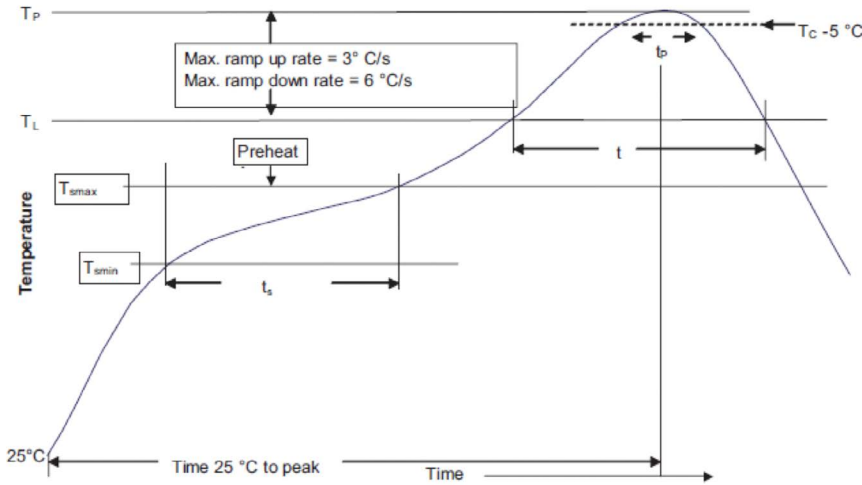


Table 1 - Standard SnPb solder (T_C)

Package thickness	Volume mm ³ <350	Volume mm ³ ≥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 mm ³ <350	Volume mm ³ 350 - 2000	Volume mm ³ >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)	183 °C	217 °C
Time (t_L) maintained above T_L	60-150 seconds	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.

Life Support Policy: Eaton does not authorize the use of any of its products for use in life support devices or systems without the express written approval of an officer of the Company. Life support systems are devices which support or sustain life, and whose failure to perform, when properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in significant injury to the user.

Eaton reserves the right, without notice, to change design or construction of any products and to discontinue or limit distribution of any products. Eaton also reserves the right to change or update, without notice, any technical information contained in this bulletin.

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

© 2023 Eaton
All Rights Reserved
Printed in USA
Publication No. ELX1266 BU-ELX22129
January 2023

Eaton is a registered trademark.
All other trademarks are property of their respective owners.

Follow us on social media to get the latest product and support information.

