POEB2FB

Power over ethernet (PoE)/PD flyback transformer

Product features

- Flyback topology
- IEEE 802.3xx
- Up to 250 kHz switching frequency
- EFD20 SMT package (29.3 mm x 21.8 mm x 12 mm)
- Input range from 10 V to 60 V
- 1500 Vac isolation between primary and secondary
- Five power levels: 24, 30, 40, 42 and 60 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

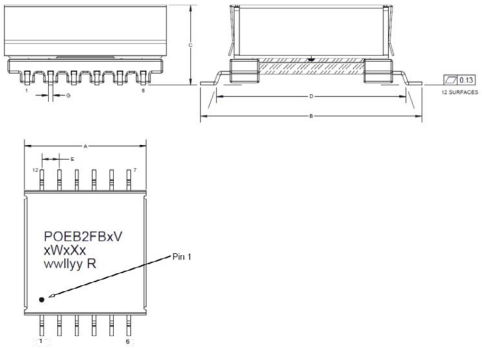
Powering Business Worldwide

Product specifications

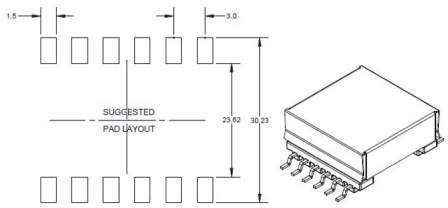
Part number[4]	Output power (W)	OCL[1] (µH) ±10%	SCL[2] (µH) maximum	I_{sat}[3] (A)	**Turns ratio** Schematic 1: Pri : Sec 1 : Sec 2) : Aux Schematic 2: Pri : Sec 1 : Sec 2 : Aux) Schematic 3: Pri) : Sec 1 : Aux) Schematic 4: Pri : Sec 1 : Aux Schematic 5: Pri : Sec 1 : Aux ±3%	Output	DCR (mΩ) maximum @ +25 °C (Pri)	DCR (mΩ) maximum @ +25 °C (Sec 1)	DCR (mΩ) maximum @ +25 °C (Sec 2)	DCR (mΩ) maximum @ +25 °C (Aux)	Schematic
POEB2FB1V24W2X12	24	11.5	0.5	3	1: 1 :0.9: 0.9	(2) x 12.0 V	28	23	130	130	1
POEB2FB1V30W2X5	30	100	1	1	1:0.182:0.227:0.409	(2) x 5.0 V	100	7	70	260	2
POEB2FB1V40W1X5	40	100	2	1	1:0.25:0.625	(1) x 5.0 V @ 8.0 A	150	11	-	215	3
POEB2FB1V42W1X12	42	100 ± 12%	1	1	1:0.5:0.5	(1) x 12.0 V @ 3.5 A	100	18	-	260	4
POEB2FB1V60W1X12	60	70	1	1.6	1:0.35:0.3	(1) x 12.0 V @ 5.0 A	85	7.2	-	120	5

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: POEB2FBxVxWxXx
POEB2FB=Product code and size
xVxW, xV=Version indicator, xW= Output power, xXx=number of outputs and output voltage

Mechanical parameters, schematic, pad layout (mm)



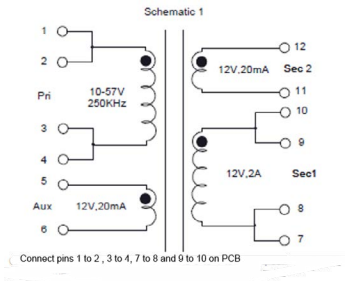
Recommended PCB Layout

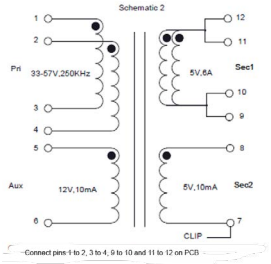


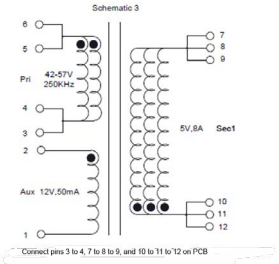
Dimension	Value
A	21.85 maximum
B	29.3 maximum
C	12.0 maximum
D	24.6 typical
E	3.0 ± 0.3
G	0.65 ± 0.15

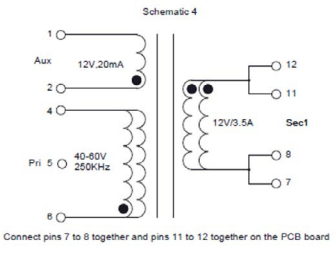
Part marking: Dot indicates pin 1, POEB2FB = Product code and size,
xV=Version indicator, xW= Output power,
xXx=number of outputs and output voltage.
wwllyy R= Lot code
All pin length doesn't include tin icicles
All soldering surfaces to be coplanar within 0.13 millimeters
Tolerances are ±0.25 millimeters unless stated otherwise
Pad layout tolerances are ±0.1 millimeters unless stated otherwise
Traces or vias underneath the transformer is not recommended

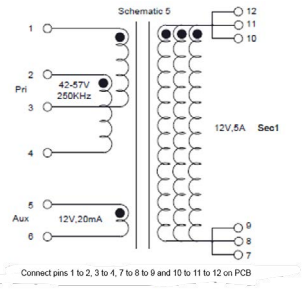
Schematic





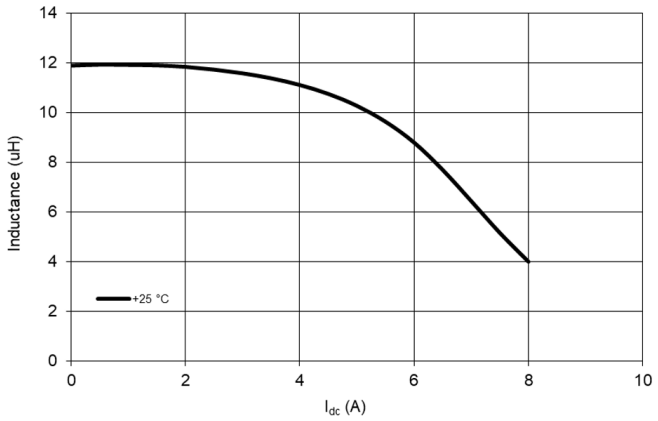




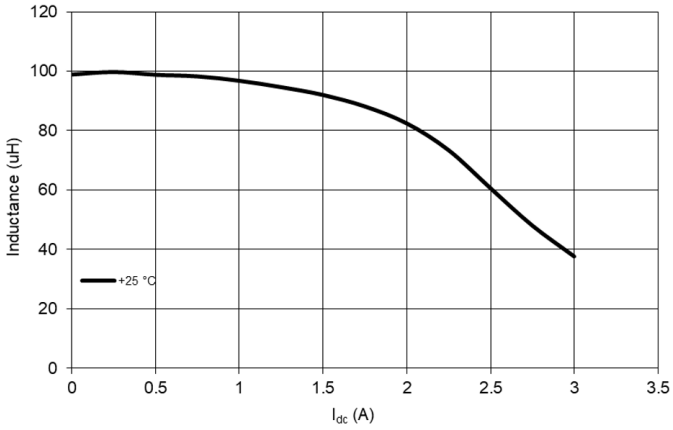


OCL (inductance) vs current characteristics

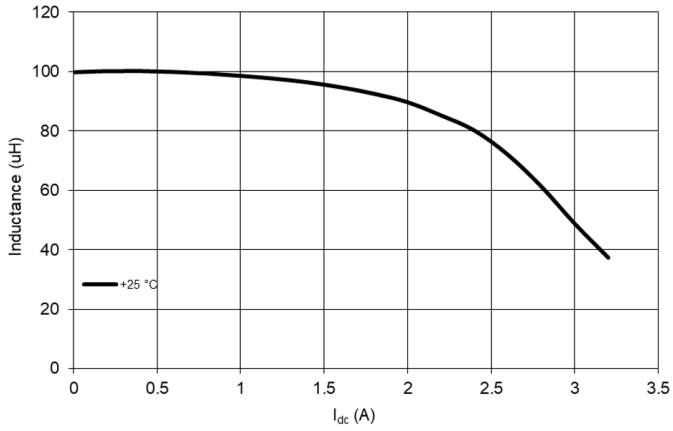
POEB2FB1V24W2X12



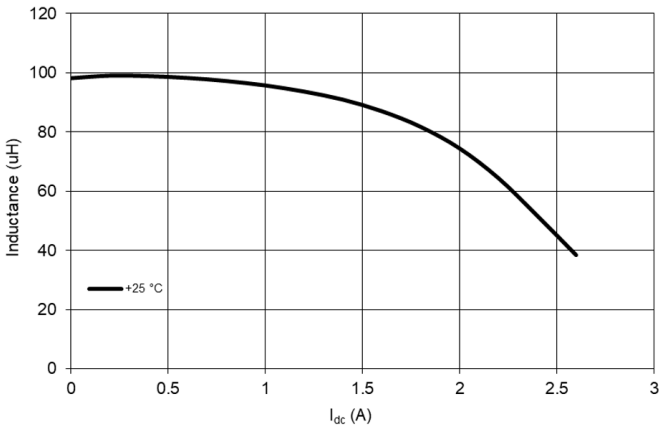
POEB2FB1V30W2X5



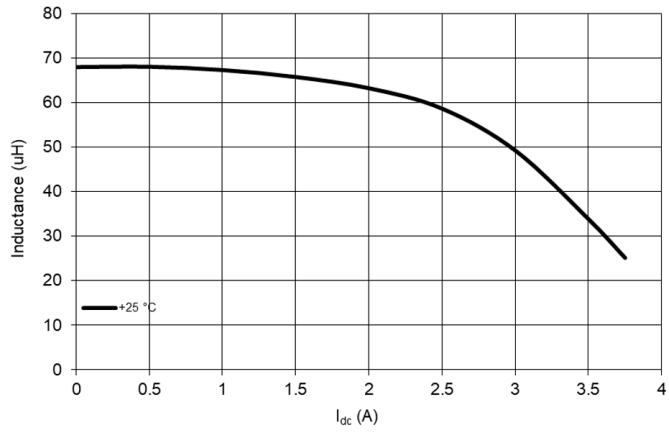
POEB2FB1V40W1X5



POEB2FB1V42W1X12

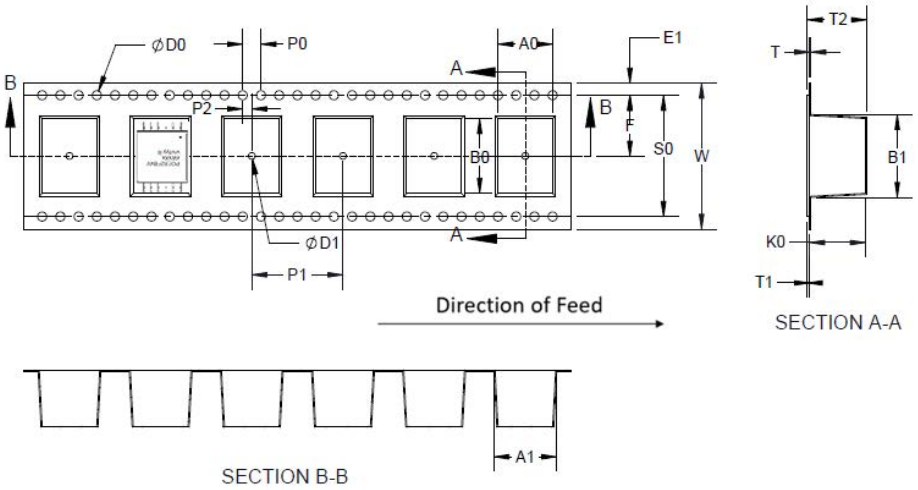


POEB2FB1V60W1X12



Packaging information (mm)

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



Dimension	Value
W ± 0.30	44
F ± 0.10	20.2
E1 ± 0.10	1.75
P0 ± 0.10	4
P1 ± 0.10	28
P2 ± 0.15	2
D0 + 0.10/-0	1.5
D1 minimum	2
A0 ± 0.10	22
A1 ref.	20.3
B0 ± 0.10	30
B1 ± 0.1	23
K0 ± 0.10	13
T ± 0.05	0.5
T1 maximum	0.1
T2 maximum	13.7
S0	40.4

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

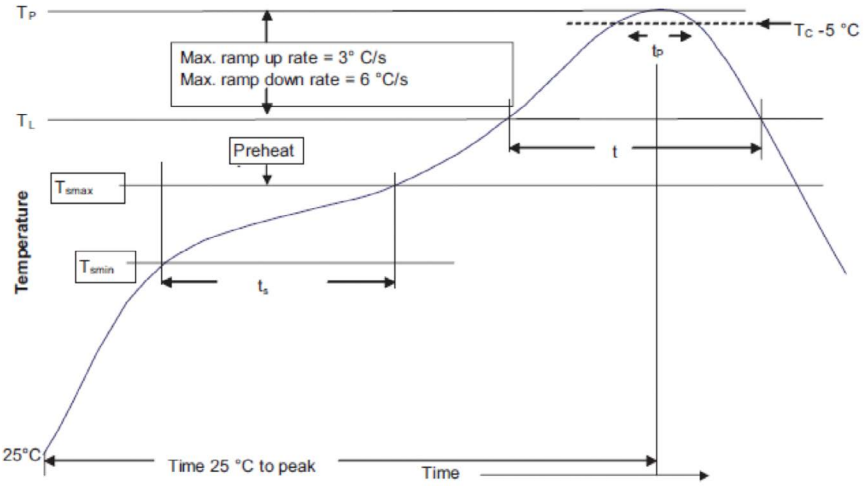


Table 1 - Standard SnPb solder (T_C)

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 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) 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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