

POEB4FW

Power over ethernet (PoE)/PD forward transformer



Product features

- Forward topology
- IEEE 802.3xx
- Up to 250 kHz switching frequency
- Input range from 40 V to 60 V
- EFD30 SMT package (36 mm x 33 mm x 14.5 mm)
- 1500 Vac isolation between primary and secondary
- Power level: 156 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)

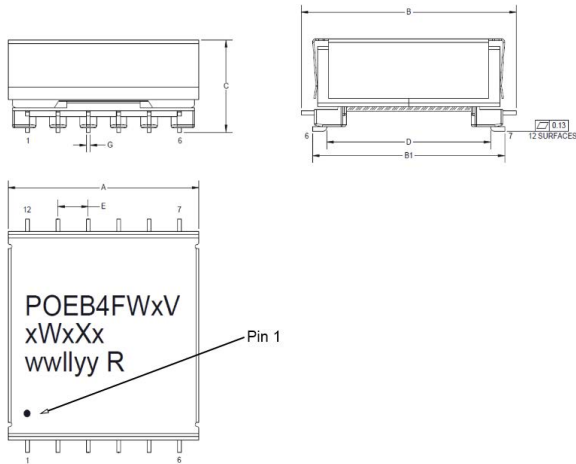


Product specifications

Part number ³	Output power (W)	OCL ¹ (µH) ±27%	SCL ² (µH) maximum	Turns Ratio Schematic 1: Pri : Sec 1 : Aux ±3%	Output	DCR (mΩ) maximum @ +25 °C (Pri)	DCR (mΩ) maximum @ +25 °C (Sec 1)	DCR (mΩ) maximum @ +25 °C (Aux)	Schematic
POEB4FW1V156W1X12	156	100	0.25	1:0.5:0.5	(1) x 12.0 V @ 13.0 A	20	4.25	250	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
- Part Number Definition: POEB3FWxVxWxXx
POEB4FW=Product code and size
xVxW, xV=Version indicator, xW= Output power, xXx=number of outputs and output voltage

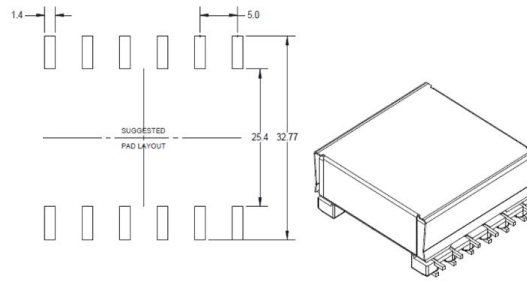
Mechanical parameters, schematic, pad layout (mm)



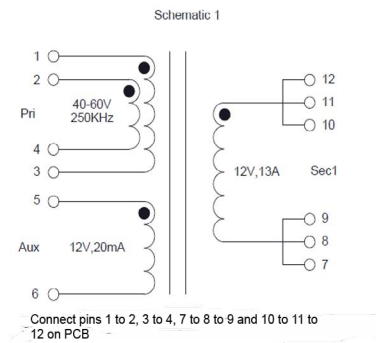
Dimension	Value
A	33.02 maximum
B	36.07 maximum
B1	31.6
C	14.0 ± 0.5
D	27.0 typical
E	5.0 ± 0.3
G	0.64 ± 0.1

Part marking: Dot indicates pin 1, POEB4FW = Product code and size, xV=Version indicator, xW= Total output power, xXx=number of outputs and output voltage, wwllly 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

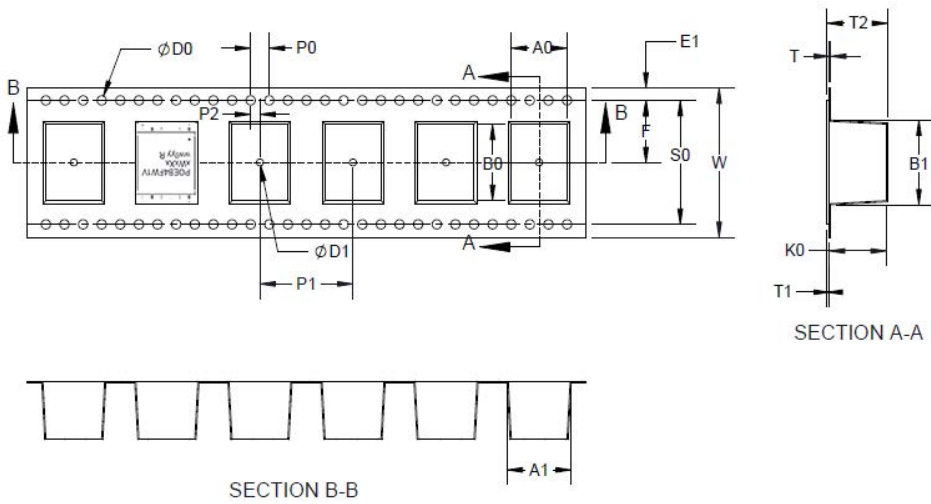


Schematic



Packaging information (mm)

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



Dimension	Value
$W \pm 0.30$	56
$F \pm 0.10$	26.2
$E1 \pm 0.10$	1.75
$P0 \pm 0.10$	4
$P1 \pm 0.10$	48
$P2 \pm 0.15$	2
$D0 + 0.10/-0$	1.5
$D1$ minimum	2
$A0 \pm 0.10$	31.5
$A1$ ref.	27.1
$B0 \pm 0.10$	37
$B1 \pm 0.1$	32
$K0 \pm 0.10$	15
$T \pm 0.05$	0.5
$T1$ maximum	0.1
$T2$ maximum	15.7
$S0$	52.4

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

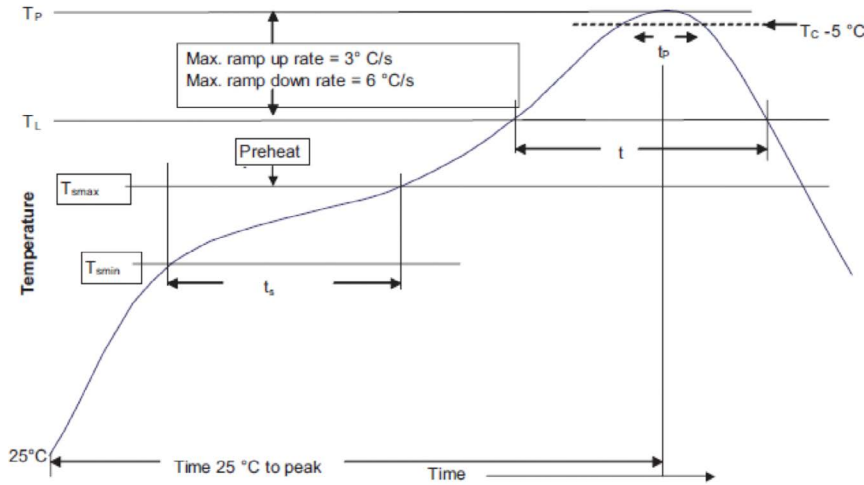


Table 1 - Standard SnPb solder (T_c)

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.

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