POEA2FB

Power over ethernet (PoE)/PD flyback transformer

Product features

- Flyback topology
- IEEE 802.3xx
- Up to 250 kHz switching frequency
- Input range from 33 V to 72 V
- EP13 SMT package
  (14.2 mm x 17.75 mm x 12.7 mm) and (14.5 mm x 17.65 mm x 14 mm)
- 1500 Vac isolation between primary and secondary
- Power levels: 10 to 27 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

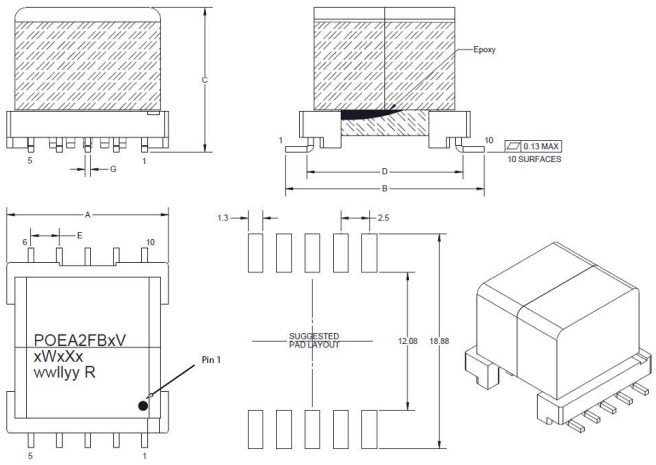
Product specifications

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 : Aux Schematic 5: Pri : Sec 1 : Aux Schematic 6: Pri : Sec 1 : Aux Schematic 7: Pri : Sec 1 : Aux Schematic 8: Pri : Sec 1 Schematic 9: Pri : Sec 1 : Aux Schematic 10: Pri : Sec 1 : Aux Schematic 11: Pri : Sec 1 Schematic 12: Pri : Sec 1 : Aux Schematic 13: Pri : Sec 1 : Aux Schematic 14: 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
POEA2FB1V10W2X5	10	180	1.2	1	1 :0.167: 0.167 :0.36	(2) x 5.0 V	330	13.5	190	230	1
POEA2FB2V12W1X12	12	42.9	1	2.25	1 :0.45:0.25	(1) x 12.0 V @ 1.0 A	100	20	-	100	2
POEA2FB3V12W1X12	12	140 ± 7%	1.3	1.4	1:0.389:0.444	(1) x 12.0 V @ 1.0 A	365	40	-	290	3
POEA2FB4V12W1X12	12	100.5	0.9	1	1:0.565:0.52	(1) x 12.0 V @ 1.0 A	110	40	-	561	4
POEA2FB1V13W1X5	13	70	1.5	1.9	1:0.32:0.84	(1) x 5.0 V @ 2.5 A	180	15	-	600	5
POEA2FB2V13W1X5	13	127	0.95	1.5	1:0.25:0.5	(1) x 5.0 V @ 2.6 A	222	39	-	348	6
POEA2FB1V13W1X12	13	127	0.65	1.2	1:0.5:0.5	(1) x 12.0 V @ 1.1 A	199	64	-	308	7
POEA2FB1V13W1X24	13	40	0.7	2.4	1:1	(1) x 24.0 V @ 0.55 A	100	100	-	-	8
POEA2FB1V14W1X14	14	127	2.5	1.7	1:0.333:0.208	(1) x 14.0 V @ 1.0 A	460	65	-	94	9
POEA2FB2V14W1X5	14	100	0.88	1.4	1:0.25:0.535	(1) x 5.0 V @ 2.8 A	210	9	-	300	10
POEA2FB1V15W1X5	15	40	0.65	2.5	1:0.4	(1) x 5.0 V @ 3.0 A	108	20	-	-	11
POEA2FB1V18W1X12	18	37	0.56	2.7	1:0.333:0.333	(1) x 12.0 V @ 1.5 A	70	12	-	180	12
POEA2FB1V19W1X8	19	90	1	1.9	1:0.25:0.389	(1) x 8.0 V @ 2.3 A	245	20	-	245	13
POEA2FB1V27W1X3	27	100 ± 15%	0.4	0.8	1 :0.167 :0.5	(1) x 3.3 V @ 8.0 A	29.4	3.2	-	120	14

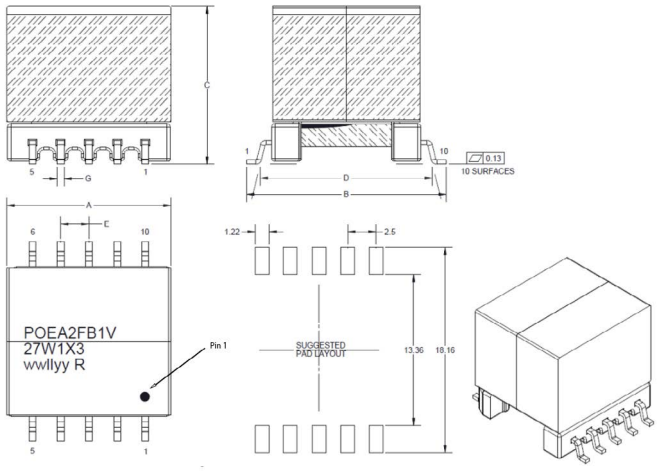
1. Open circuit inductance (OCL) is for the primary, test parameters: 100 kHz, 0.1 V_{rms}, 0.0 Adc, +25 °C
2. Short circuit inductance (SCL) is for the primary with the other windings shorted, test parameters: 100 kHz, 0.1 V_{rms}, 0.0 Adc, +25 °C
3. I_{sat} is for the primary, peak current for less than or equal to 10% rolloff @ +25 °C
4. Part Number Definition: POEA2FBxVxWxXx
POEA2FB=Product code and size
xVxW, xV=Version indicator, xW= Output power, xXx=number of outputs and output voltage

Mechanical parameters and pad layout (mm)

Style 1



Style 2

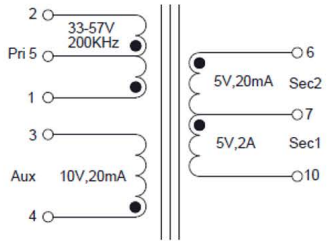


Dimension	POEA2FBxVxWxXx (Except POEA2FB1V27W1X3) Style 1	POEA2FB1V27W1X3 Style 2
A	14.2 maximum	14.5 maximum
B	17.75 maximum	17.65 maximum
C	12.7 maximum	14.0 maximum
D	13.2 typical	15.0 typical
E	2.5 ± 0.3	2.5 ± 0.3
G	0.5 ± 0.1	0.6 ± 0.15

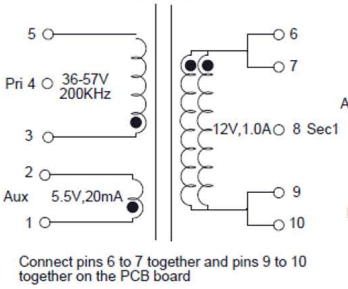
Part marking: Dot indicates pin 1, POEA2FB = Product code and size,
xV=Version indicator, xW= Output power,
xXx=number of outputs and output voltage.
wwllyy R= Lot code
All pin length doesn't include tin icicles
All soldering surfaces to be coplanar within 0.13 millimeters
Tolerances are ±0.25 millimeters unless stated otherwise
Pad layout tolerances are ±0.1 millimeters unless stated otherwise
Traces or vias underneath the transformer is not recommended

Schematic

Schematic 1

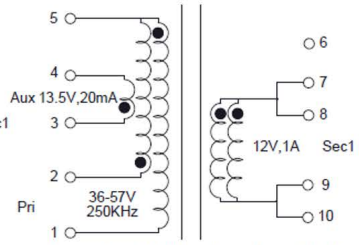


Schematic 2



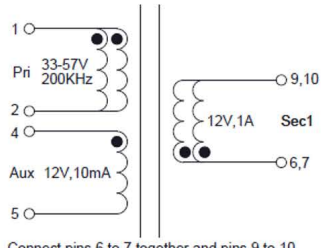
Connect pins 6 to 7 together and pins 9 to 10 together on the PCB board

Schematic 3



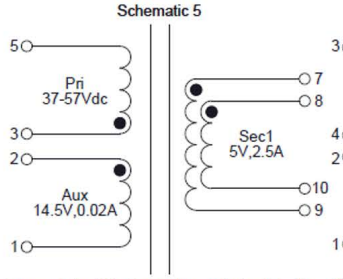
Connect pins 7 to 8 together and pins 9 to 10 together on the PCB board

Schematic 4



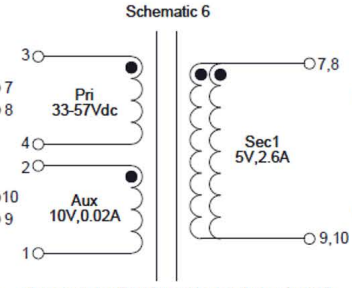
Connect pins 6 to 7 together and pins 9 to 10 together on the PCB board

Schematic 5



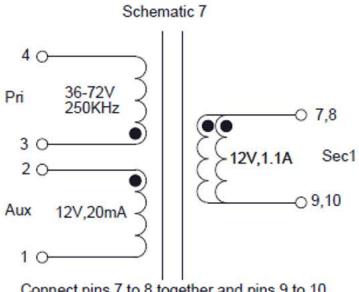
Connect pins 7 to 8 together and pins 9 to 10 together on the PCB board

Schematic 6



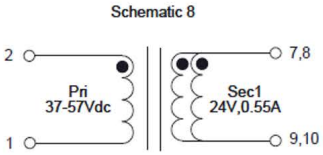
Connect pins 7 to 8 together and pins 9 to 10 together on the PCB board

Schematic 7



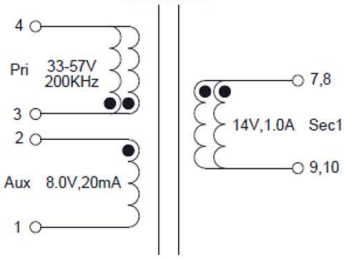
Connect pins 7 to 8 together and pins 9 to 10 together on the PCB board

Schematic 8



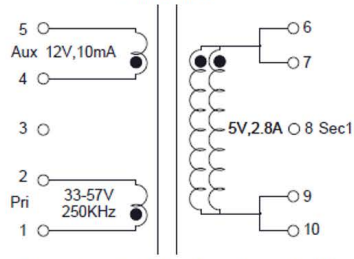
Connect pins 7 to 8 together and pins 9 to 10 together on the PCB board

Schematic 9



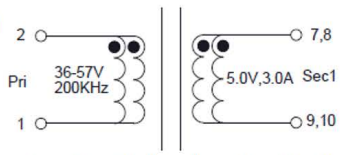
Connect pins 7 to 8 together and pins 9 to 10 together on the PCB board

Schematic 10



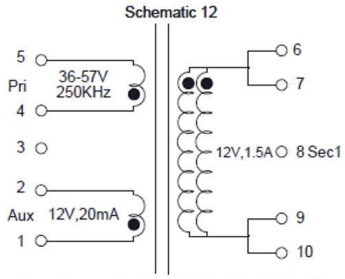
Connect pins 6 to 7 together and pins 9 to 10 together on the PCB board

Schematic 11



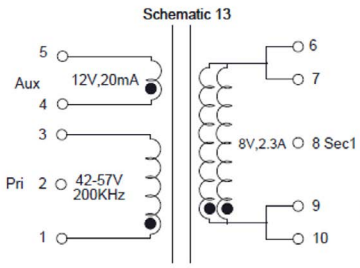
Connect pins 7 to 8 together and pins 9 to 10 together on the PCB board

Schematic 12



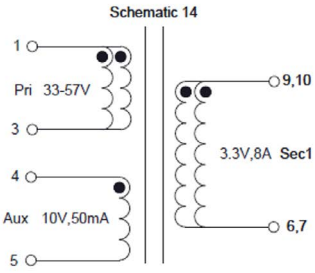
Connect pins 6 to 7 together and pins 9 to 10 together on the PCB board

Schematic 13



Connect pins 6 to 7 together and pins 9 to 10 together on the PCB board

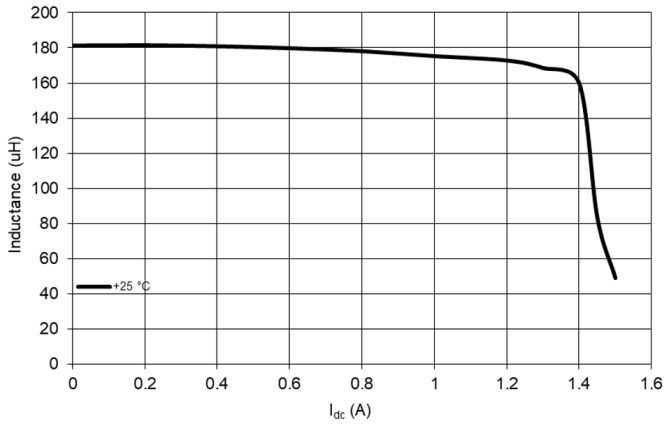
Schematic 14



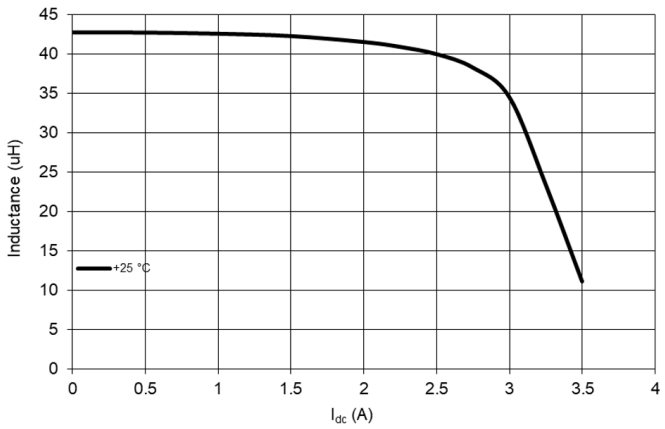
Connect pins 6 to 7 together and pins 9 to 10 together on the PCB board

OCL (inductance) vs current characteristics

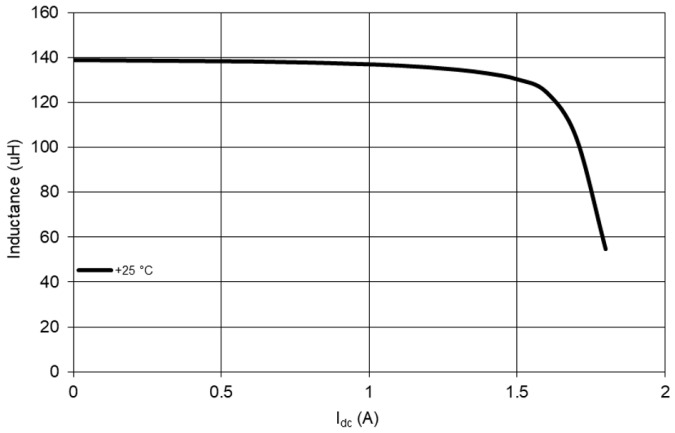
POEA2FB1V10W2X5



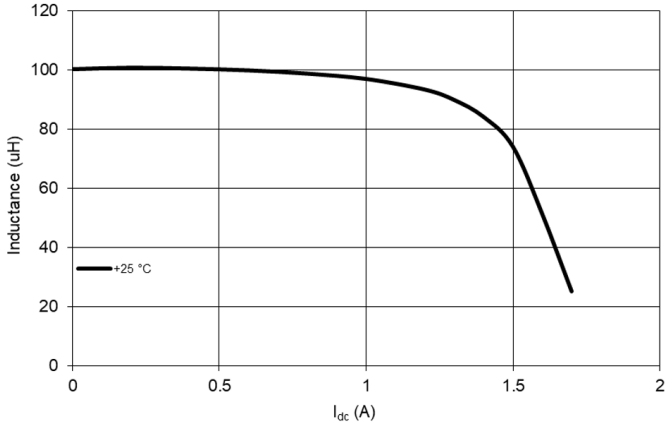
POEA2FB2V12W1X12



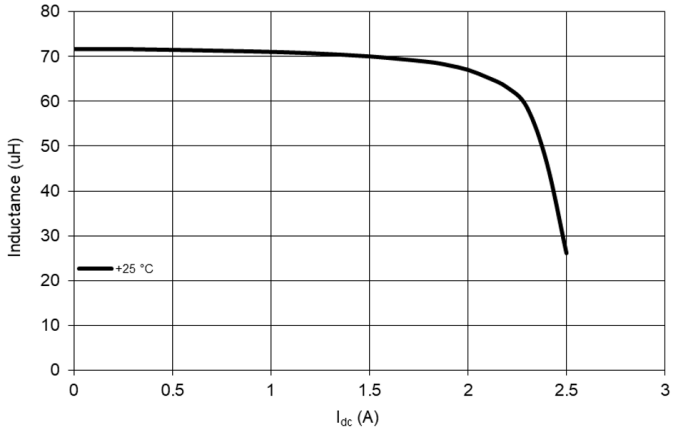
POEA2FB3V12W1X12



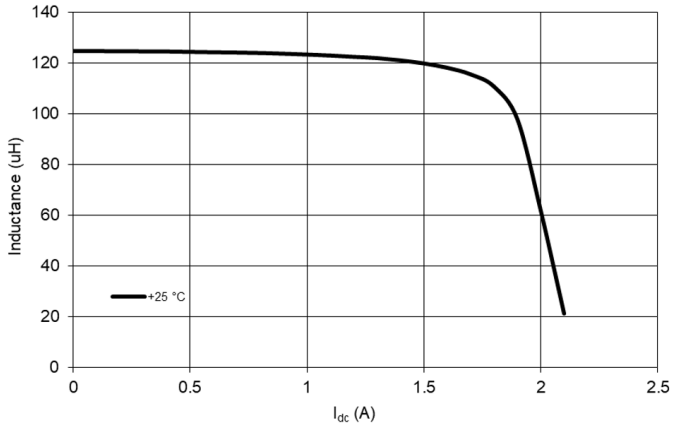
POEA2FB4V12W1X12



POEA2FB1V13W1X5

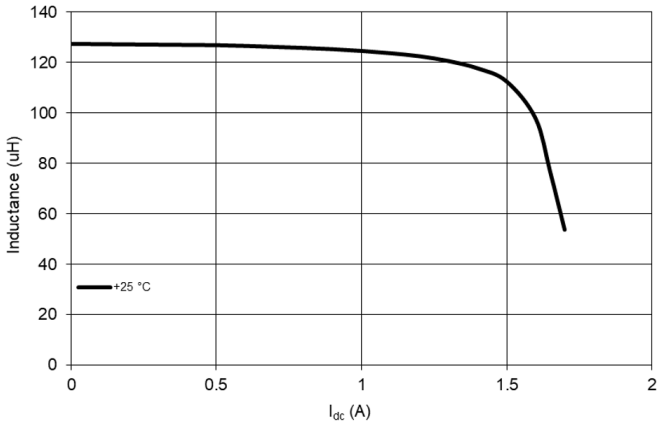


POEA2FB2V13W1X5

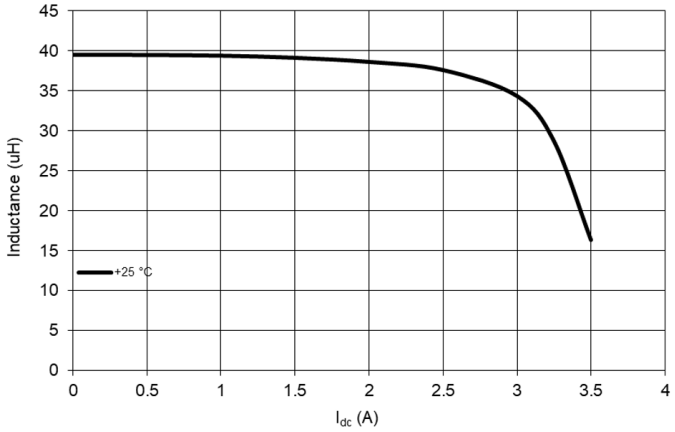


OCL (inductance) vs current characteristics

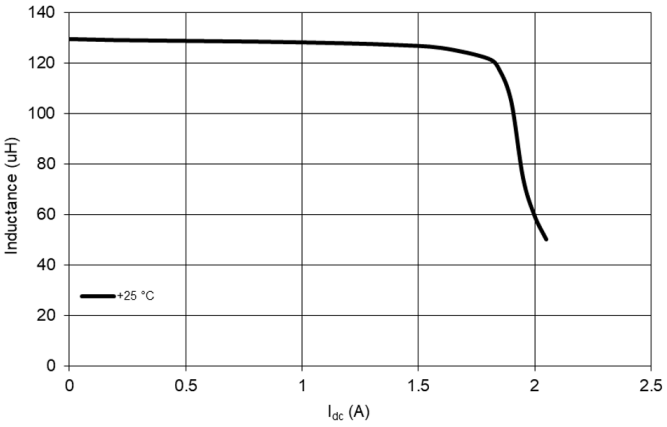
POEA2FB1V13W1X12



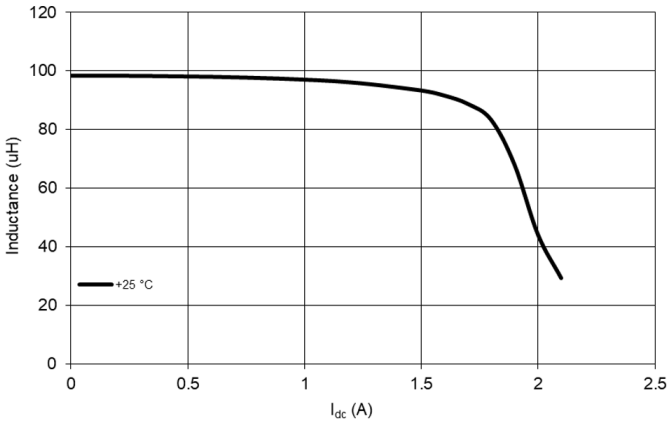
POEA2FB1V13W1X24



POEA2FB1V14W1X14

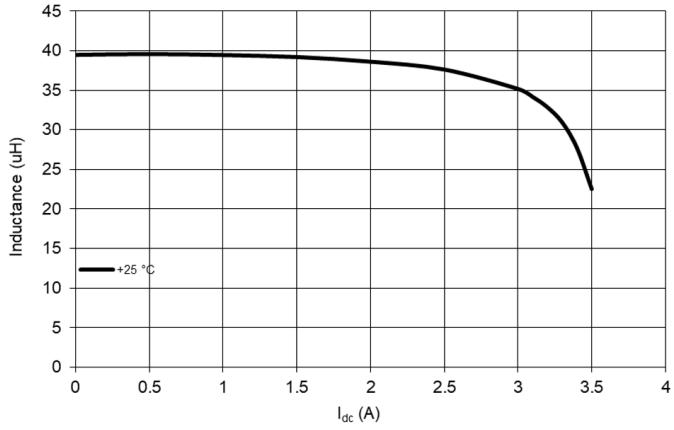


POEA2FB2V14W1X5

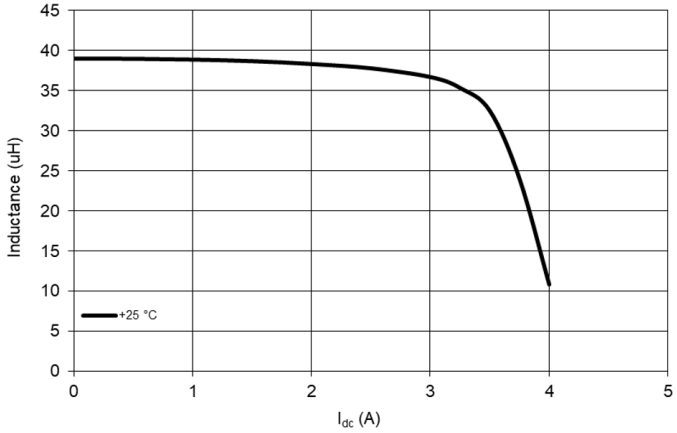


OCL (inductance) vs current characteristics

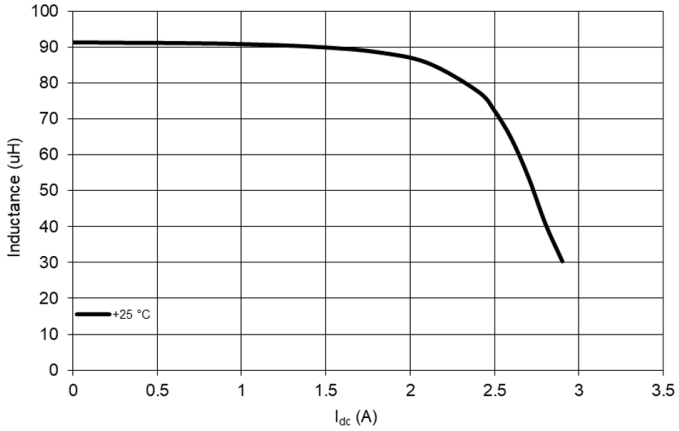
POEA2FB1V15W1X5



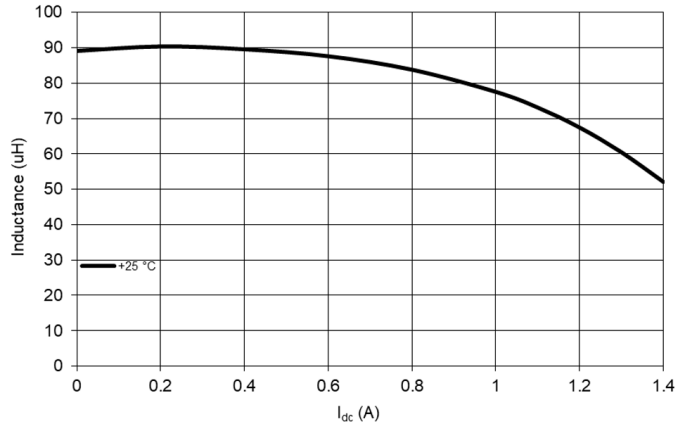
POEA2FB1V18W1X12



POEA2FB1V19W1X8

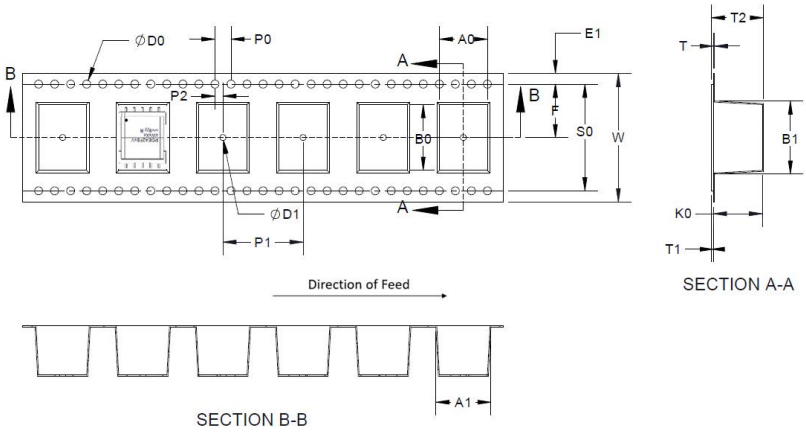


POEA2FB1V27W1X3



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	14.20
E1 ± 0.10	1.75
P0 ± 0.10	4
P1 ± 0.10	24
P2 ± 0.1	2
D0 + 0.10/-0	1.5
D1 minimum	2
A0 ± 0.10	14.00 except POEA2FB1V27W1X3 13.70 for POEA2FB1V27W1X3
A1 ref.	11.70 except POEA2FB1V27W1X3 11.60 for POEA2FB1V27W1X3
B0 ± 0.10	18.20 except POEA2FB1V27W1X3 18.60 for POEA2FB1V27W1X3
B1 ± 0.1	15.50 except POEA2FB1V27W1X3 13.80 for POEA2FB1V27W1X3
K0 ± 0.10	13.30 except POEA2FB1V27W1X3 14.40 for POEA2FB1V27W1X3
T ± 0.05	0.5
T1 maximum	0.1
T2 maximum	14.00 except POEA2FB1V27W1X3 15.10 for POEA2FB1V27W1X3
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

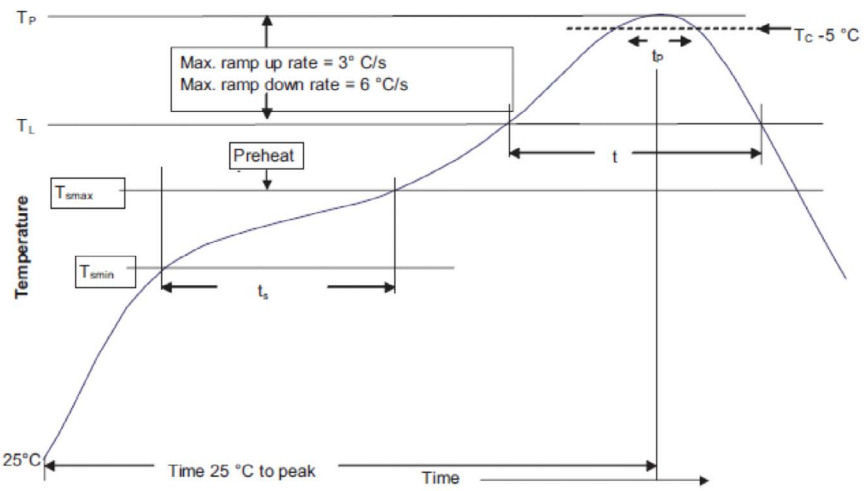


Table 1 - Standard SnPb solder (T_C)

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 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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