

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)



Product specifications

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%

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
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

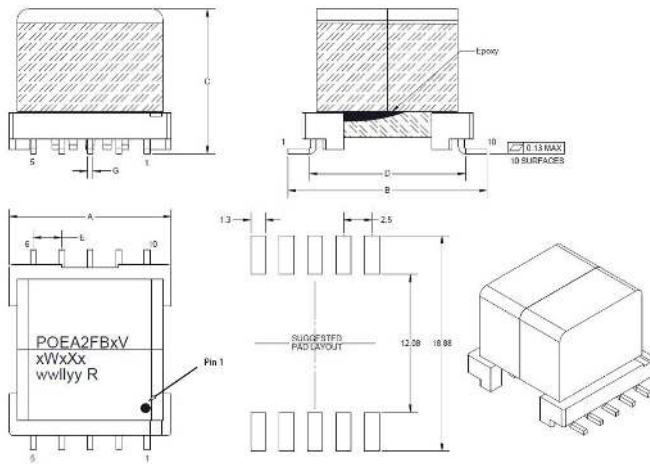
4. Part Number Definition: POEA2FBxVxWxXx

POEA2FB=Product code and size

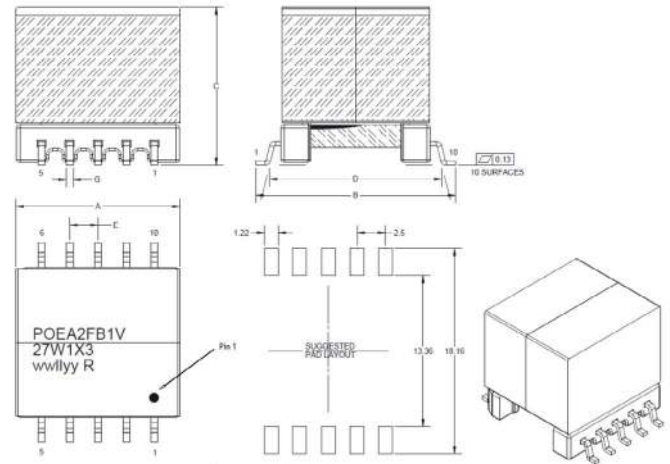
xVxW, xV=Version indicator, xW= Output power, xXx=number of outputs and output voltage

Mechanical parameters and pad layout (mm)

Style 1



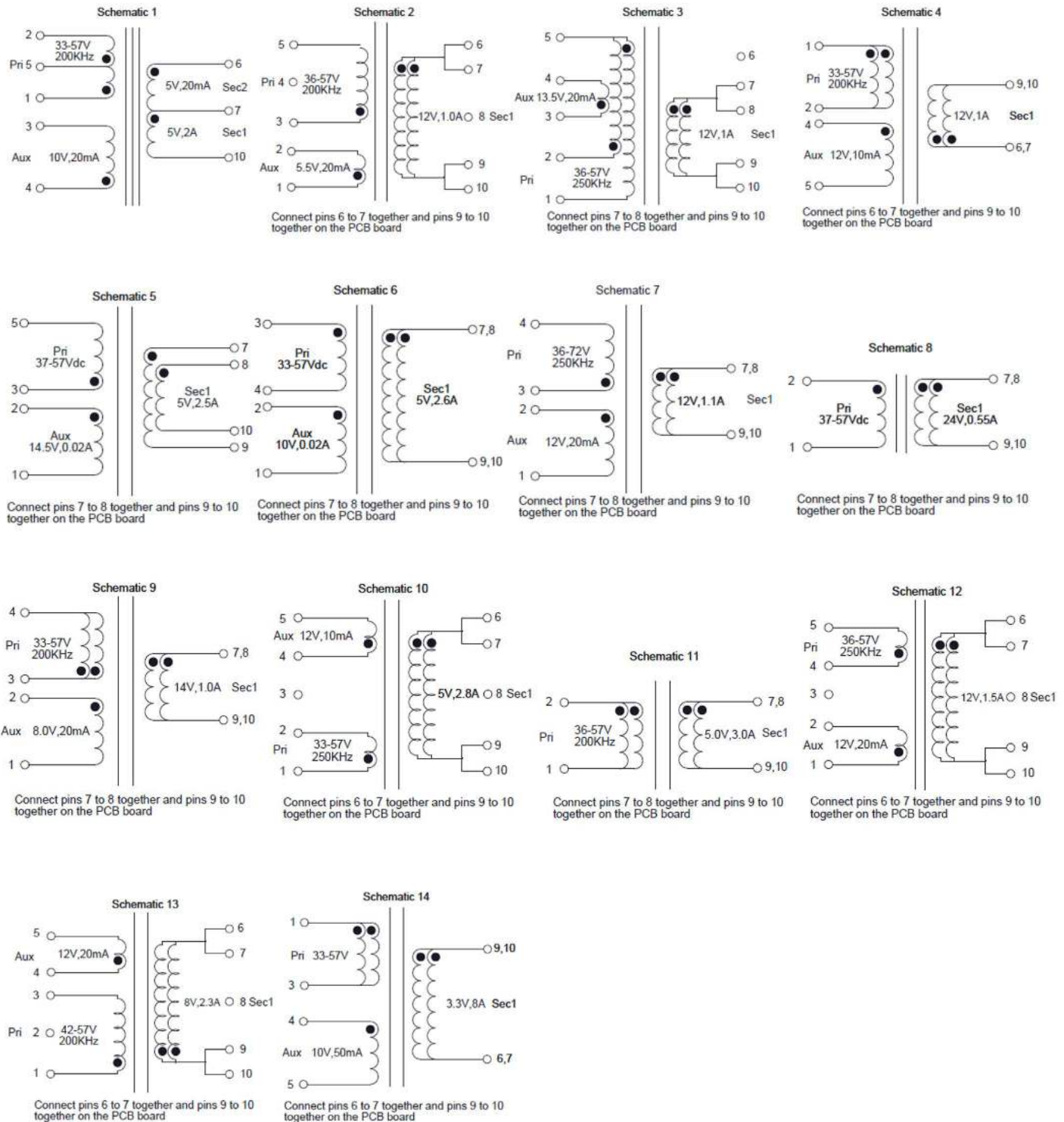
Style 2



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

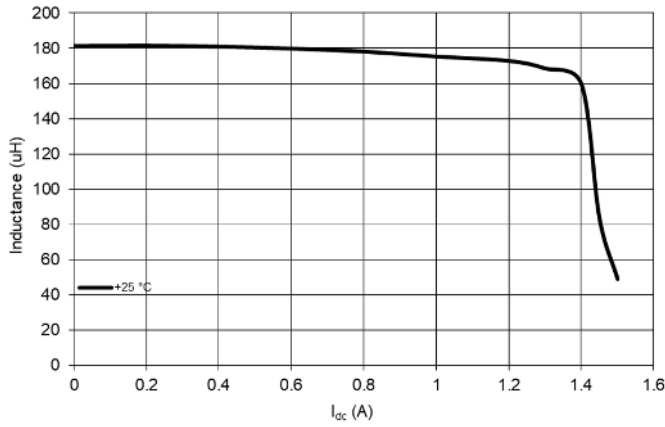
Part marking: Dot indicates pin 1, POEA2FB = Product code and size, xV=Version indicator, xW= Output power, xXx=number of outputs and output voltage. wwlly R= Lot code
All pin length doesn't include tin icicles
All soldering surfaces to be coplanar within 0.13 millimeters
Tolerances are ±0.25 millimeters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

Schematic

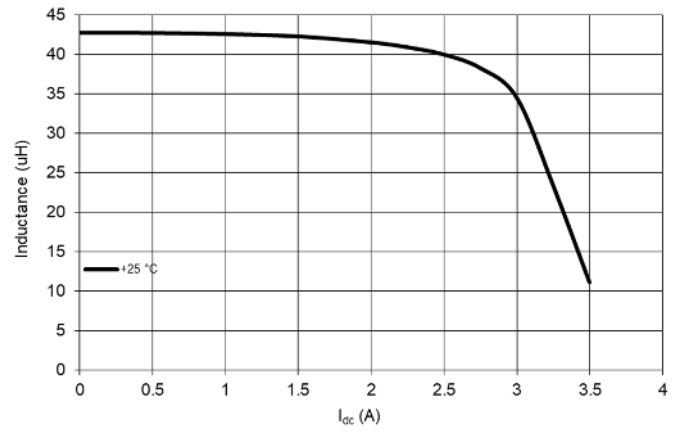


OCL (inductance) vs current characteristics

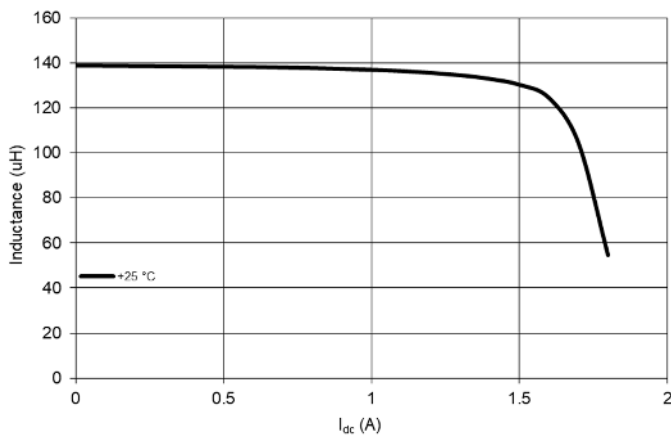
POEA2FB1V10W2X5



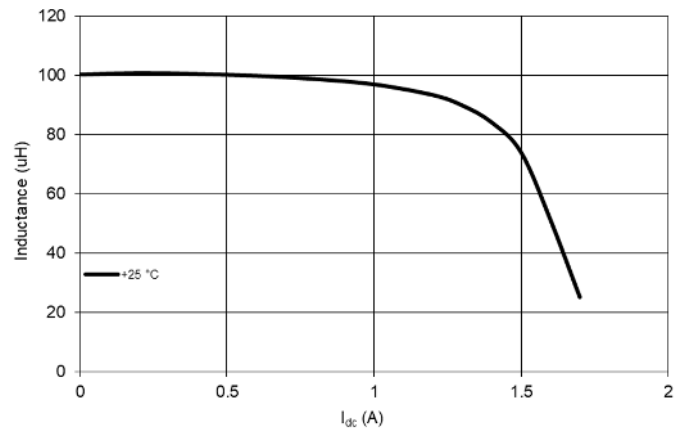
POEA2FB2V12W1X12



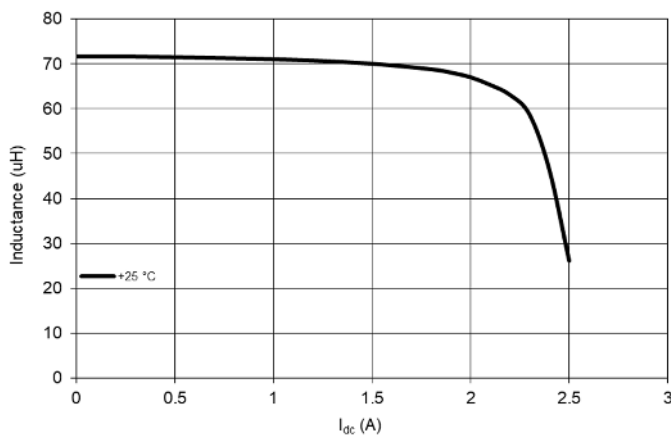
POEA2FB3V12W1X12



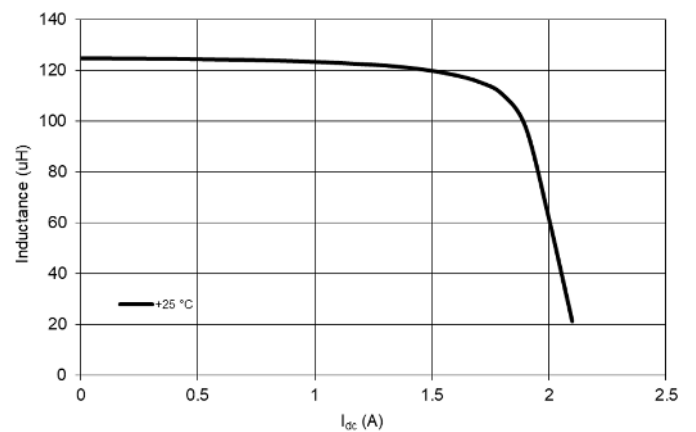
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POEA2FB1V13W1X5

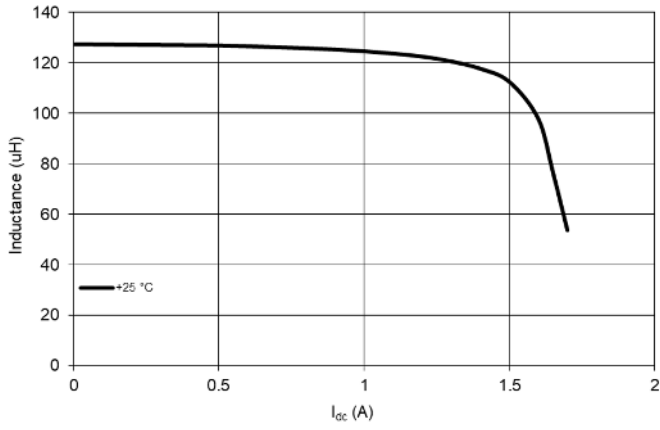


POEA2FB2V13W1X5

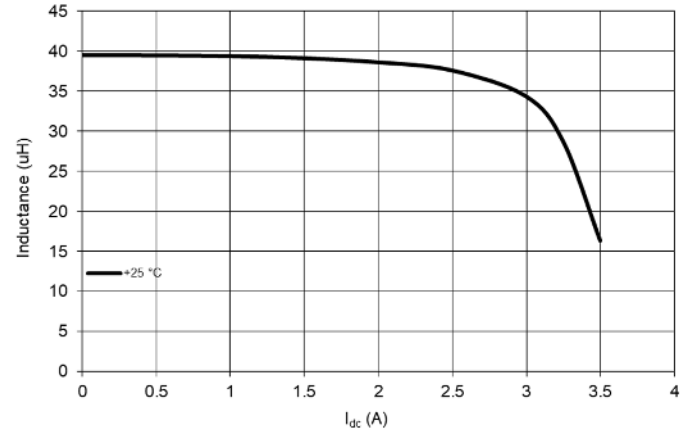


OCL (inductance) vs current characteristics

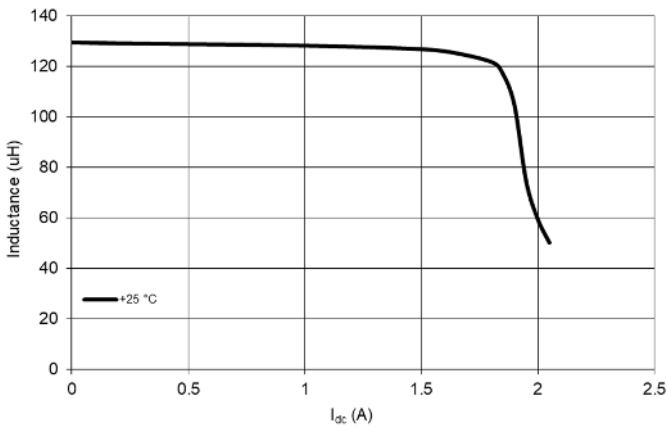
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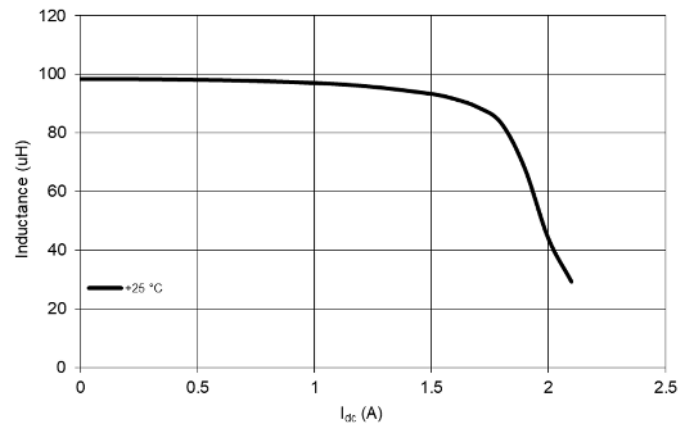
POEA2FB1V13W1X24



POEA2FB1V14W1X14

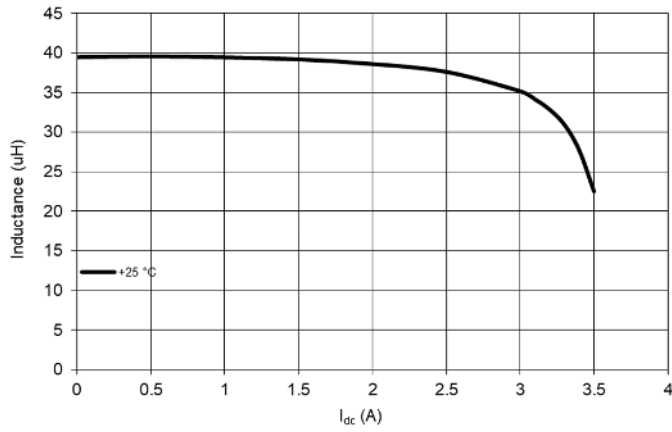


POEA2FB2V14W1X5

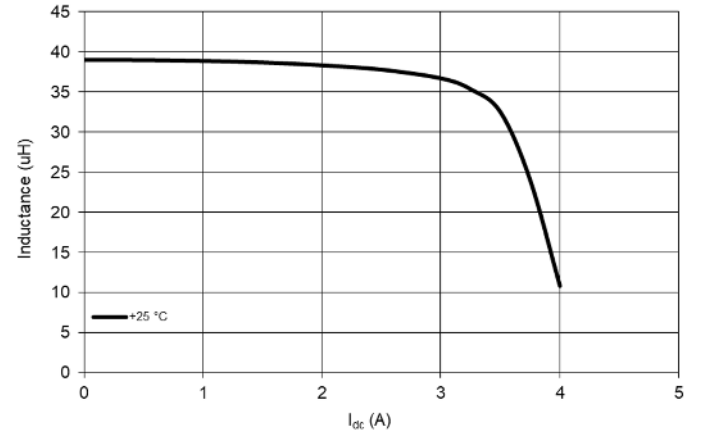


OCL (inductance) vs current characteristics

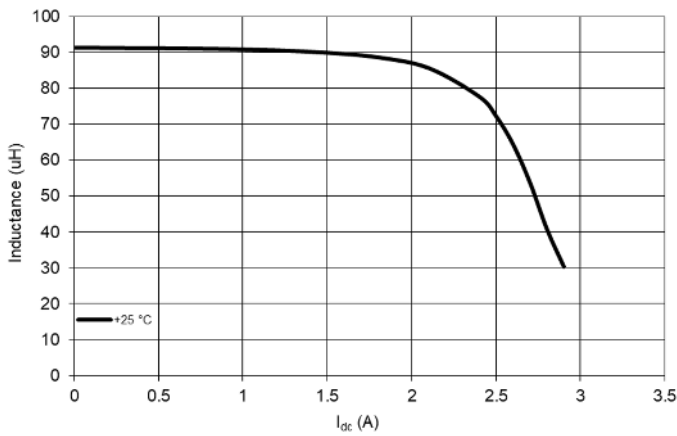
POEA2FB1V15W1X5



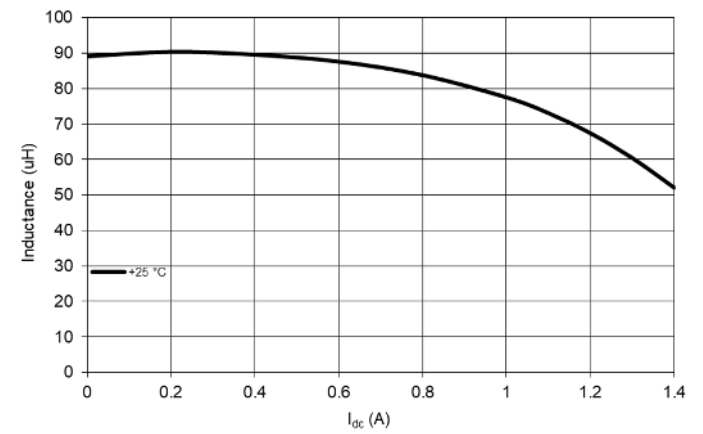
POEA2FB1V18W1X12



POEA2FB1V19W1X8

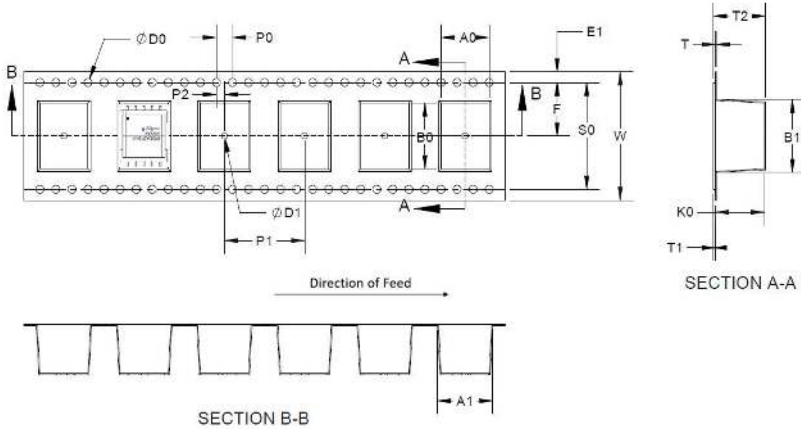


POEA2FB1V27W1X3



Packaging information (mm)

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



Dimension	Value
$W \pm 0.30$	32
$F \pm 0.10$	14.20
$E1 \pm 0.10$	1.75
$P0 \pm 0.10$	4
$P1 \pm 0.10$	24
$P2 \pm 0.1$	2
$D0 + 0.10/-0$	1.5
D1 minimum	2
$A0 \pm 0.10$	14.00 except POEA2FB1V27W1X3 13.70 for POEA2FB1V27W1X3
A1 ref.	11.70 except POEA2FB1V27W1X3 11.60 for POEA2FB1V27W1X3
$B0 \pm 0.10$	18.20 except POEA2FB1V27W1X3 18.60 for POEA2FB1V27W1X3
$B1 \pm 0.1$	15.50 except POEA2FB1V27W1X3 13.80 for POEA2FB1V27W1X3
$K0 \pm 0.10$	13.30 except POEA2FB1V27W1X3 14.40 for POEA2FB1V27W1X3
$T \pm 0.05$	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

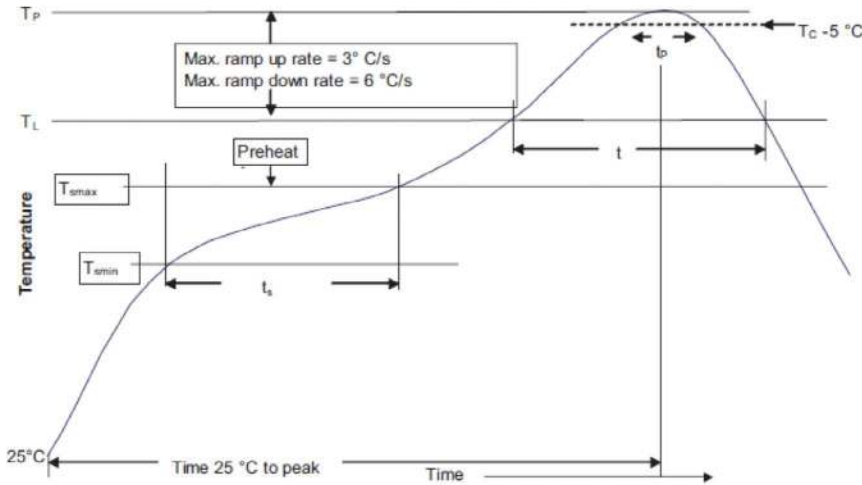


Table 1 - Standard SnPb solder (T_C)

Package thickness	Volume 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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