

FPT1006

Dual conductor high current power inductors



Description

- Dual conductor, two-turn construction
- Magnetically shielded
- Inductance range from 340 nH to 580 nH
- Current range from 19 A to 40.5 A
- 10.5 mm x 8.8 mm footprint surface mount package in a 6.4 mm height
- Ferrite core material
- Halogen free, lead free, RoHS compliant

Applications

- Compatible with Picor® Cool-Power® ZVS Buck and Buck-Boost Regulator Families

Environmental Data

- Storage temperature range (component): -55 °C to +125 °C
- Operating temperature range (component): -55 °C to +125 °C (ambient plus self-temperature rise)
- Solder reflow temperature: J-STD-020D compliant



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Product Specifications

Part Number ⁵	OCL ¹ (nH) ±10%	I _{rms} ² (A)	I _{sat} ³ (A)	DCR ⁴ (mΩ) maximum @ 20°C
FPT1006-340-R	340	19	40.5	1.0
FPT1006-400-R	400	19	35.5	1.0
FPT1006-500-R	500	19	27.5	1.0
FPT1006-580-R	580	19	23.0	1.0

1. Open Circuit Inductance (OCL) Test Parameters: 100 kHz, 0.1 Vrms, 0.0 Adc, +25 °C (Pins 4-2, short 1-3)

2. I_{rms}: DC current for an approximate temperature rise of 40 °C without core loss. Derating is necessary for AC currents. PCB layout, trace thickness and width, air-flow, and proximity of other heat generating components will affect the temperature rise. It is recommended that the temperature of the part not exceed +125 °C under worst case operating conditions verified in the end application.

3. I_{sat}: Peak current for approximately 5% rolloff @ +25 °C

4. DCR tested from pins (1-2) and (3-4)

5. Part Number Definition: FPT1006-xxx-R

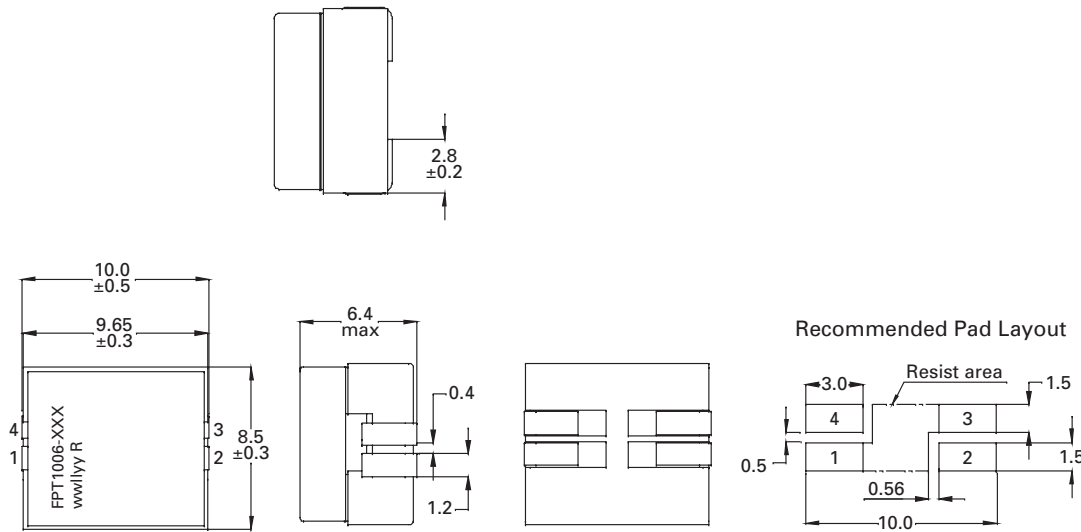
FPT1006 = Product code and size

xxx = Inductance value in nH,

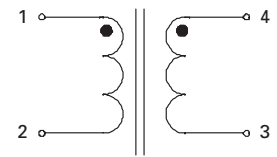
-R suffix = RoHS compliant

Note: Hipot: 250 Vdc minimum for 2 seconds, 1.0 mA pins (1-2) and pins (4-3) to core

Dimensions (mm)



Schematic



Pins 1 and 3 connected through PCB trace

Part marking: FPT1006-xxx, xxx = inductance value in nH,

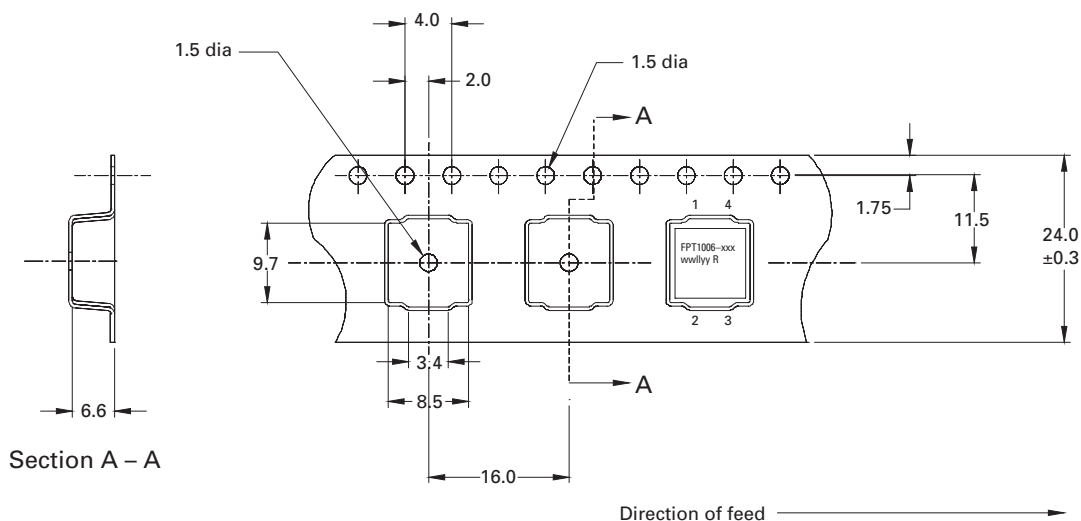
wwlllyy=date code, R=revision level

Tolerances are ±0.25 unless stated otherwise

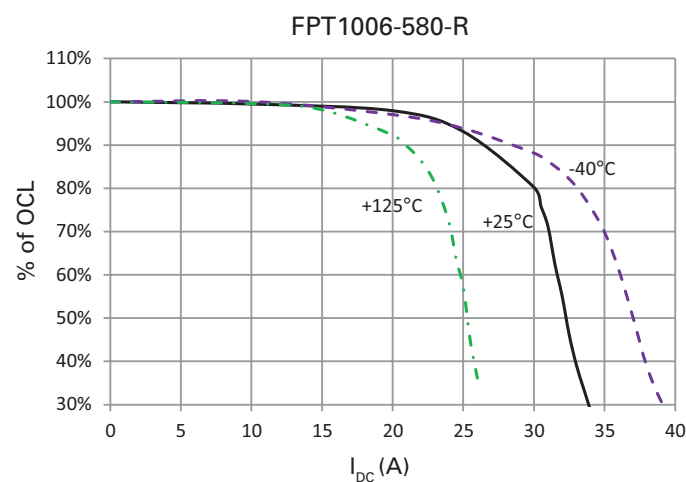
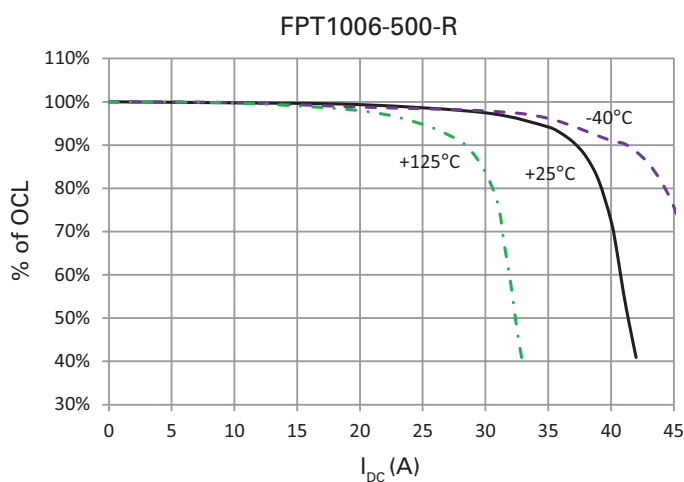
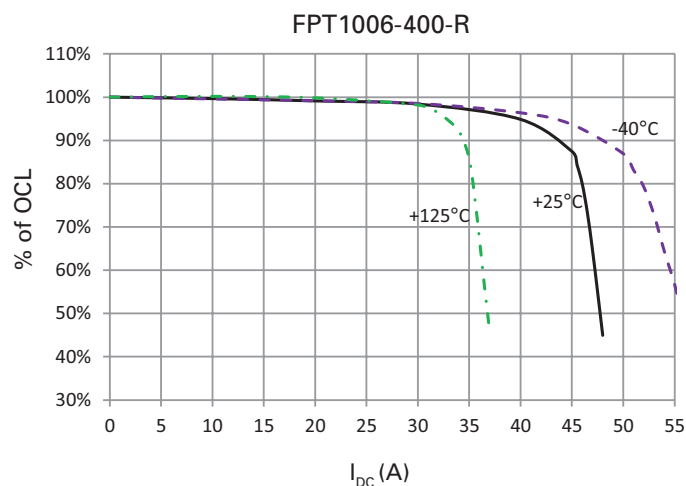
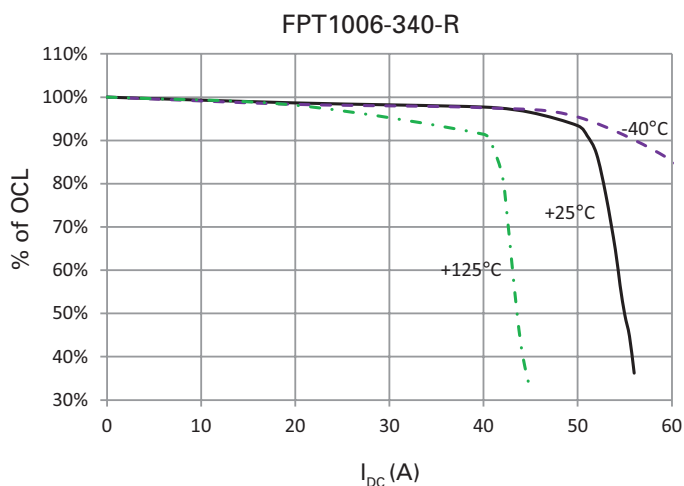
All mounting surfaces to be coplanar within 0.102 mm

Packaging information (mm)

Supplied in tape and reel packaging, 620 parts per 13" diameter reel



Inductance characteristics



Solder reflow profile

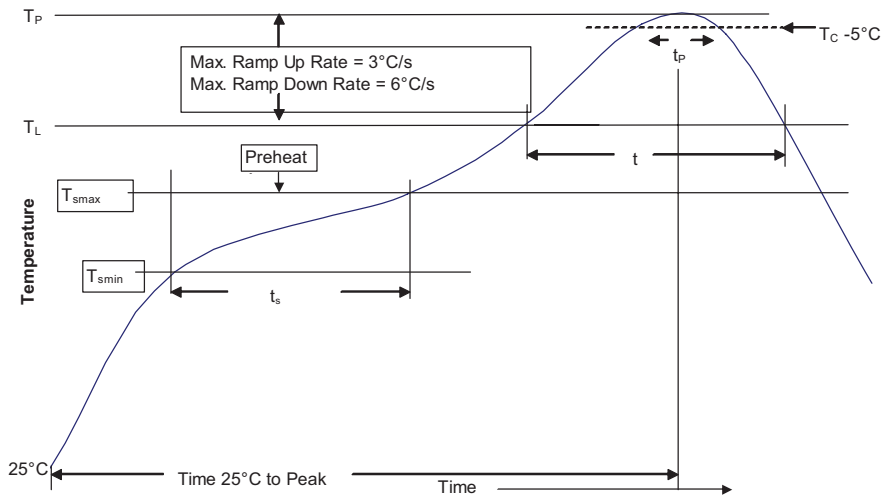


Table 1 - Standard SnPb Solder (T_C)

Package Thickness	Volume mm^3 <350	Volume mm^3 ≥ 350
<2.5mm)	235°C	220°C
$\geq 2.5\text{mm}$	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
<1.6mm	260°C	260°C	260°C
1.6 – 2.5mm	260°C	250°C	245°C
>2.5mm	250°C	245°C	245°C

Reference JEDEC J-STD-020D

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
Average ramp up rate T_{smax} to T_P	3°C/ Second Max.	3°C/ Second Max.
Liquidous temperature (T_L)	183°C	217°C
Time at liquidous (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)	20 Seconds**	30 Seconds**
Average ramp-down rate (T_P to T_{smax})	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.

** Tolerance for time at peak profile temperature (t_p) is defined as a supplier minimum and a user maximum.

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