

# 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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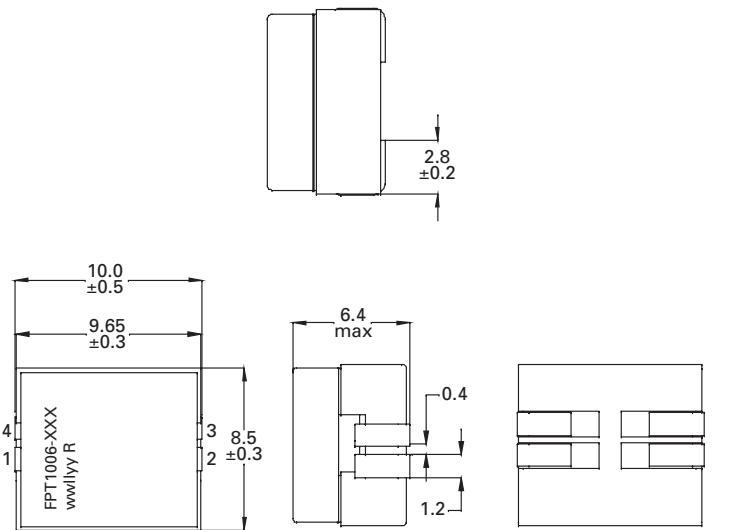
## Product Specifications

Part Number <sup>5</sup>	OCL <sup>1</sup> (nH) $\pm 10\%$	I <sub>rms</sub> <sup>2</sup> (A)	I <sub>sat</sub> <sup>3</sup> (A)	DCR <sup>4</sup> (m $\Omega$ ) 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<sub>rms</sub>: 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<sub>sat</sub>: Peak current for approximately 5% rolloff @ +25 °C

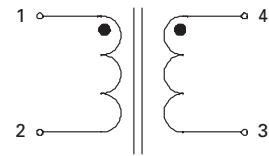
4. DCR tested from pins (1-2) and (3-4)  
5. Part Number Definition: FPT1006-xxx-R  
FPT1006 = Product code and size  
xxx = Inductance value in nH,  
-R suffix = RoHS compliant  
Note: Hipot: 250 Vdc minimum for 2 seconds, 1.0 mA pins (1-2) and pins (4-3) to core

## Dimensions (mm)



Recommended Pad Layout

Schematic

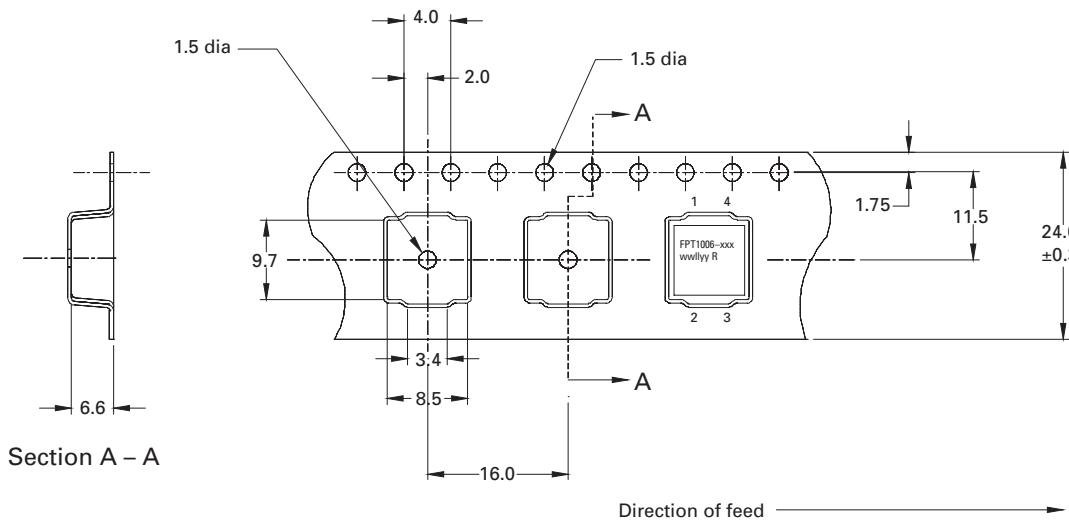


Pins 1 and 3 connected through  
PCB trace

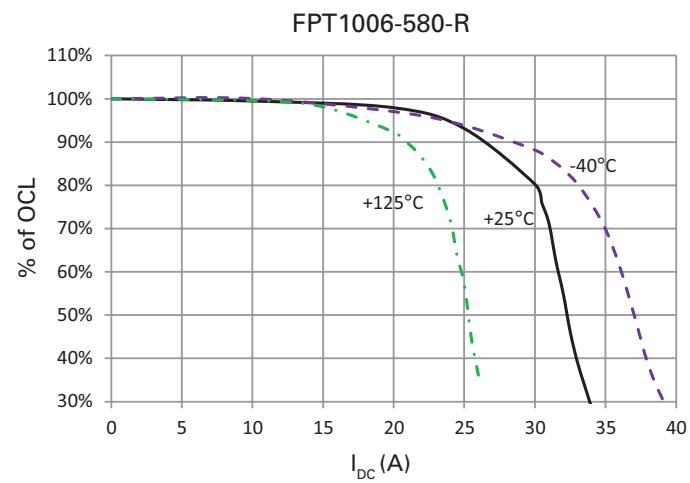
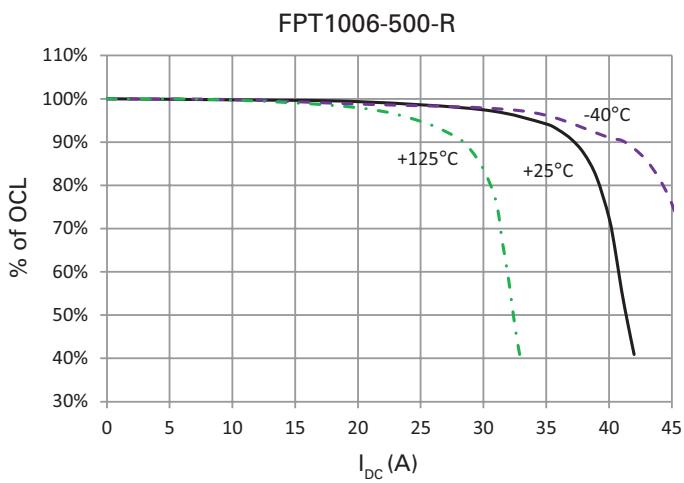
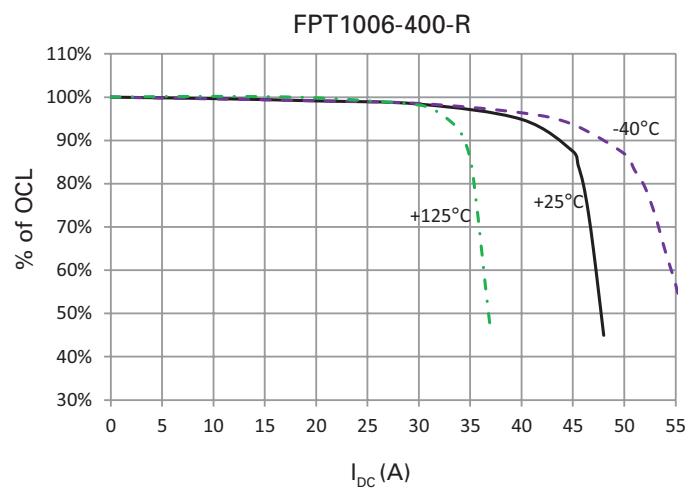
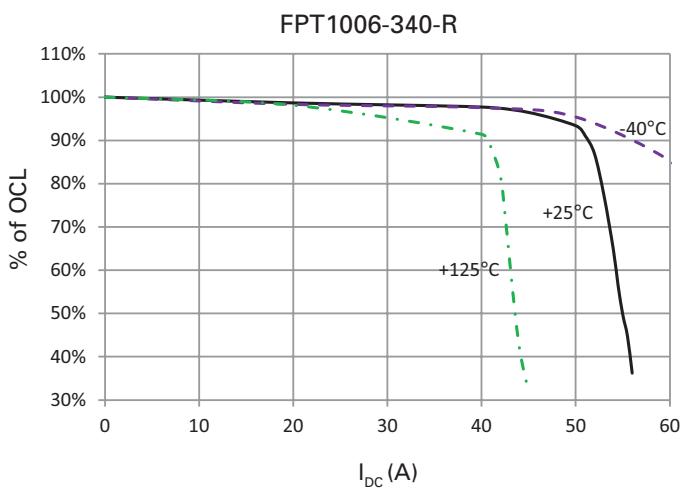
Part marking: FPT1006-xxx, xxx = inductance value in nH,  
wwllyy R  
Tolerances are  $\pm 0.25$  unless stated otherwise  
All mounting surfaces to be coplanar within 0.102 mm

### Packaging information (mm)

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



### Inductance characteristics



### Solder reflow profile

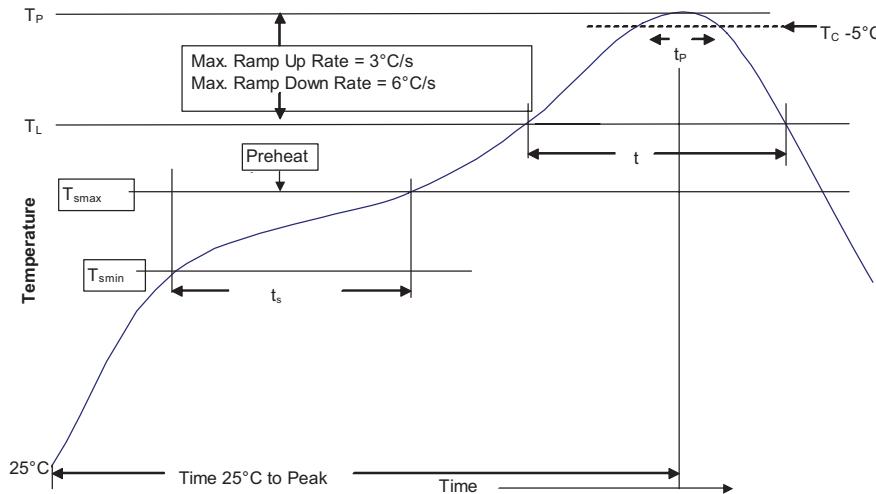


Table 1 - Standard SnPb Solder ( $T_c$ )

Package Thickness	Volume mm <sup>3</sup> <350	Volume mm <sup>3</sup> ≥350
<2.5mm)	235°C	220°C
≥2.5mm	220°C	220°C

Table 2 - Lead (Pb) Free Solder ( $T_c$ )

Package Thickness	Volume mm <sup>3</sup> <350	Volume mm <sup>3</sup> 350 - 2000	Volume mm <sup>3</sup> >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 JDEC J-STD-020D

Profile Feature	Standard SnPb Solder	Lead (Pb) Free Solder
Preheat and Soak	<ul style="list-style-type: none"> <li>Temperature min. (<math>T_{smin}</math>)</li> <li>Temperature max. (<math>T_{smax}</math>)</li> <li>Time (<math>T_{smin}</math> to <math>T_{smax}</math>) (<math>t_s</math>)</li> </ul>	100°C 150°C 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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