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

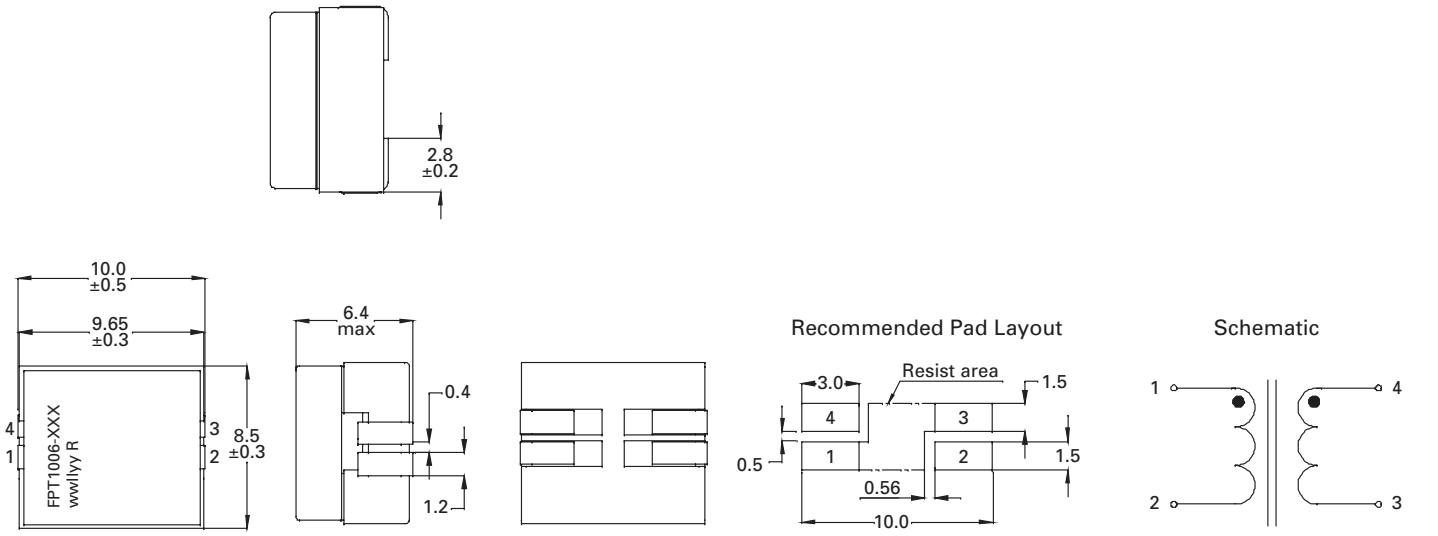
Product Specifications

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)

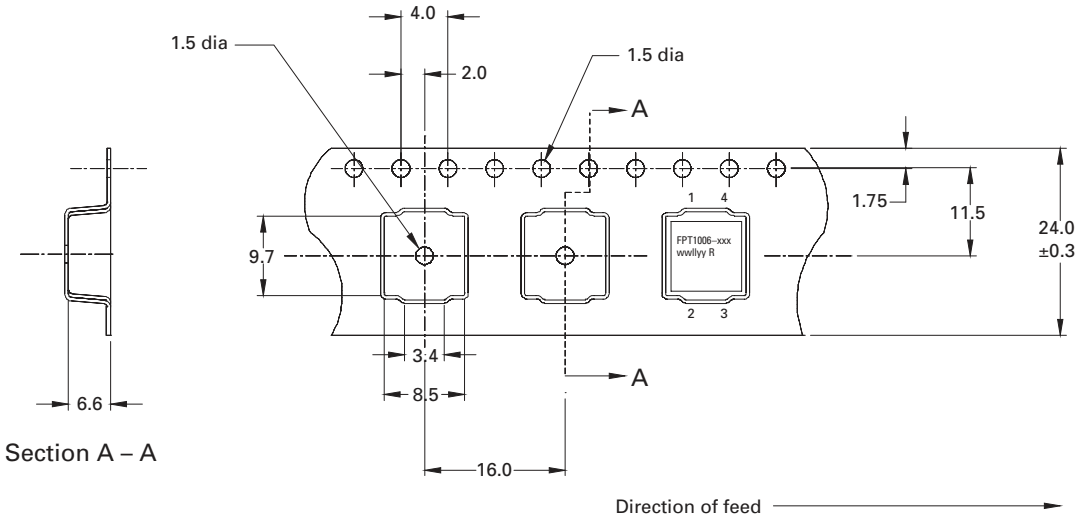


Part marking: FPT1006-xxx, xxx = inductance value in nH,
wwllyy=date code, R=revision level
Tolerances are ±0.25 unless stated otherwise
All mounting surfaces to be coplanar within 0.102 mm

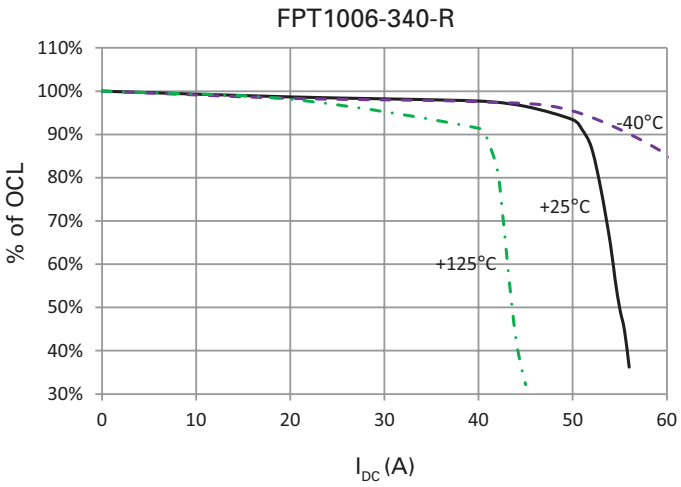
Pins 1 and 3 connected through PCB trace

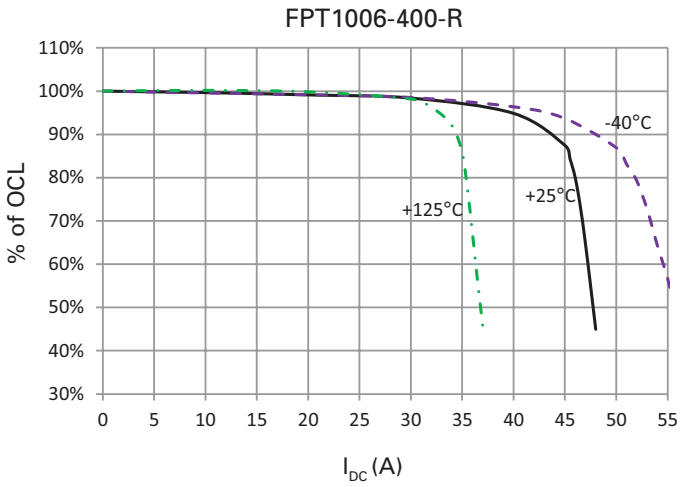
Packaging information (mm)

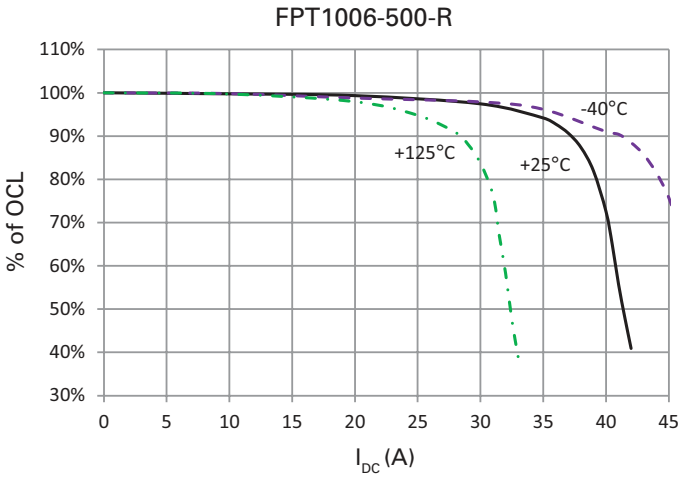
Supplied in tape and reel packaging, 620 parts per 13″ diameter reel

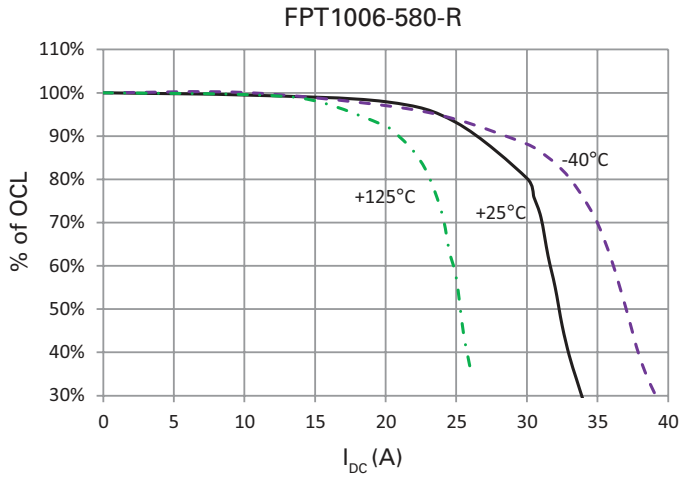


Inductance characteristics









Solder reflow profile

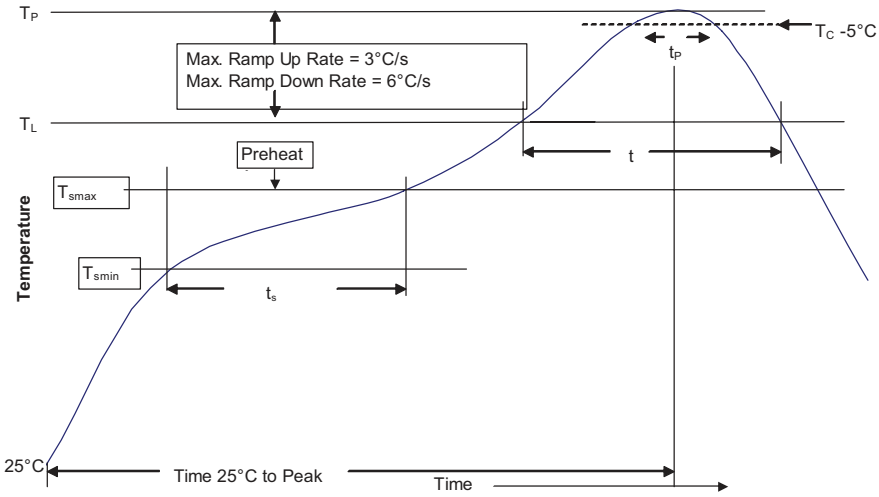


Table 1 - Standard SnPb Solder (T_C)

Package Thickness	Volume mm^3 <350	Volume mm^3 ≥350
<2.5mm)	235°C	220°C
≥2.5mm	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 JDEC 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) Time at liquidous (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)		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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