Dual Conductor, High Current Power Inductors

Flat-Pac™ FPT705 Series



Description

- Halogen free, lead free, RoHS compliant
- 125°C maximum total operating temperature
- 8.0 x 7.1 x 5.35mm maximum surface mount package
- Ferrite core material
- Dual conductor, two-turn construction
- Inductance range from 150nH to 300nH

Applications

- Designed specifically for use with Picor® Cool-Power® ZVS-Buck Regulator Family (Picor part number Series PI33xx and PI34xx)

Environmental Data

- Storage temperature range: -40°C to +125°C
- Operating temperature range: -40°C to +125°C (ambient + self-temperature rise)
- Solder reflow temperature: J-STD-020D compliant

Packaging

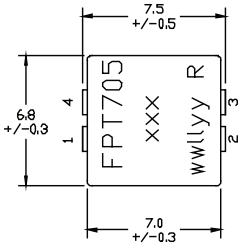
- Supplied in tape-and reel packaging, 1400 parts per 13” diameter reel

Product Specifications					
Part Number[6]	OCL[1] ±10% (nH)	FLL[2] min. (nH)	I_{rms}[3] (Amps)	I_{sat}[4] @ 25°C (Amps)	DCR[5] (mΩ) @ 20°C
FPT705-150-R	150	135	13	35	0.65 ± 0.15
FPT705-170-R	170	153		31	
FPT705-190-R	190	171		28	
FPT705-200-R	200	180		25	
FPT705-230-R	230	207		23	
FPT705-270-R	270	243		19	
FPT705-300-R	300	270		17	

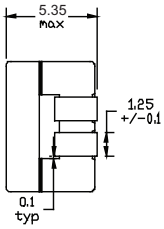
1. Open Circuit Inductance (OCL) test parameters: 100kHz, 0.1V_{rms}, 0.0Adc @ 25°C (Pins 1-3, short 2-4).
2. Full Load Inductance (FLL) test parameters: 100kHz, 0.1V_{rms}, I_{sat}1 @ 25°C (Pins 1-3, short 2-4).
3. I_{rms}: DC current for an approximate temperature rise of 40°C without core loss. Derating 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.
4. I_{sat}1: Peak current for approximately 2% rolloff at +25℃.
5. DCR Tested from Pins (1-2) and (3-4) @ 20°C.
6. Part Number Definition: FPT705-xxx-R
   FPT705 = Product code and size
   xxx= Inductance value in nH
   “-R” Suffix = RoHS compliant

Dimensions - mm

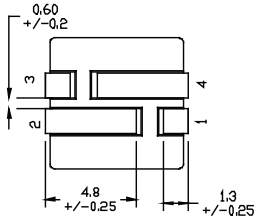
Top View



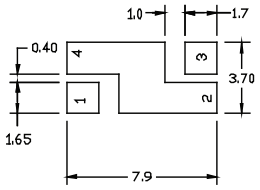
Side View



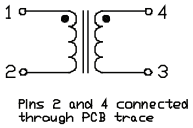
Bottom View



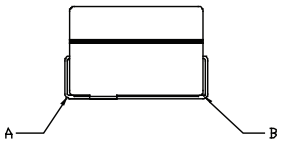
Recommended Pad Layout



Schematic



All soldering surfaces to be coplanar within 0.10 millimeters.

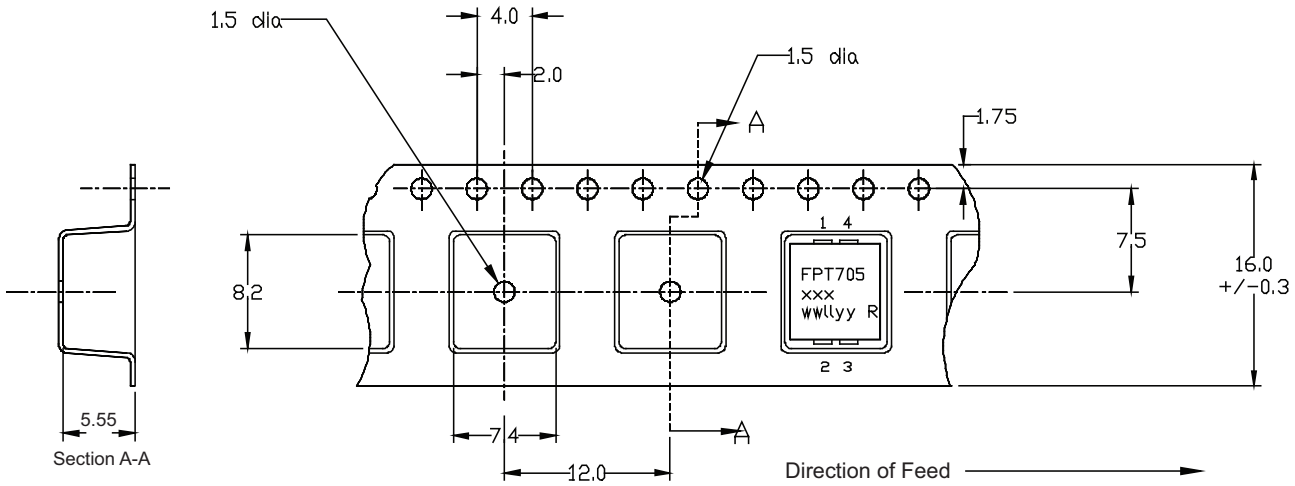


DCR is measured between points "A" and point "B"

Part Marking:

- FPT705 (Product code and size)
- xxx = (Inductance=(Inductance value in nH)
- wwllyy= Date Code, R= Revision level

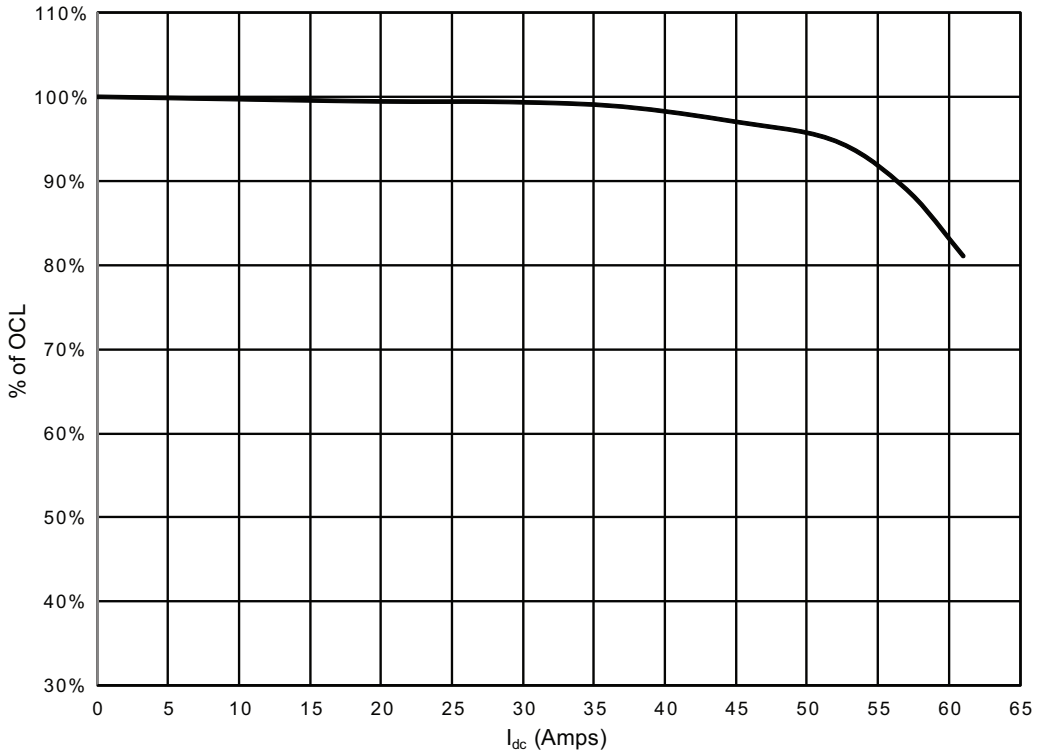
Packaging Information - mm



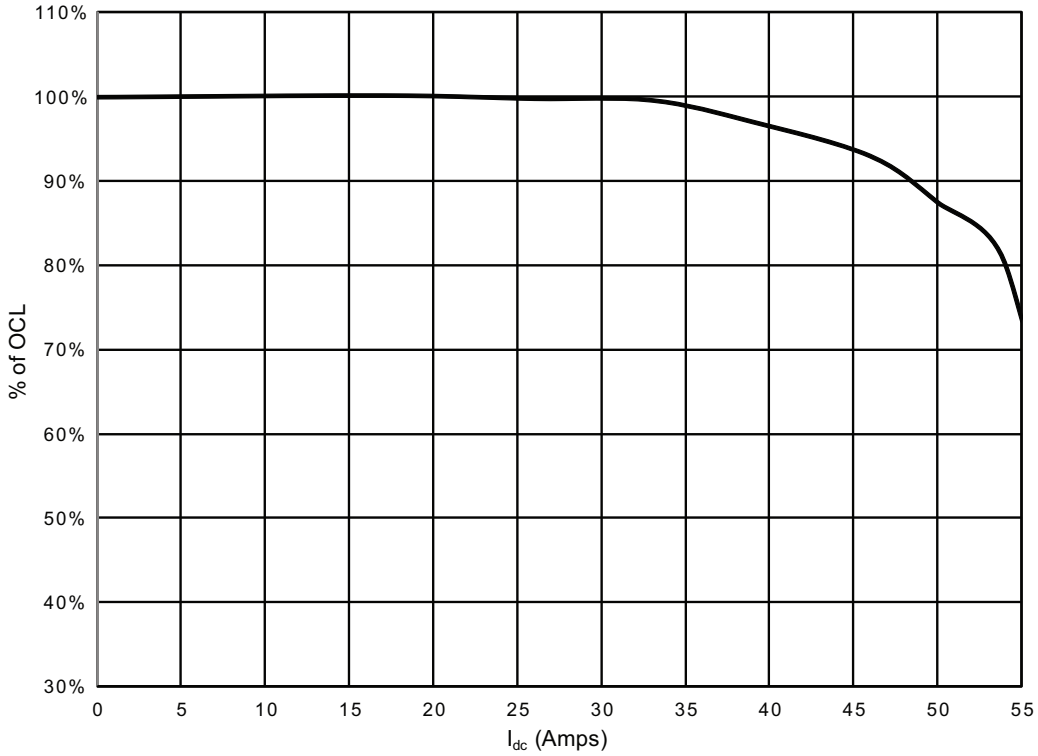
Supplied in tape and reel packaging, 1400 parts on a 13” diameter reel.

Inductance Characteristics

FPT705-150-R

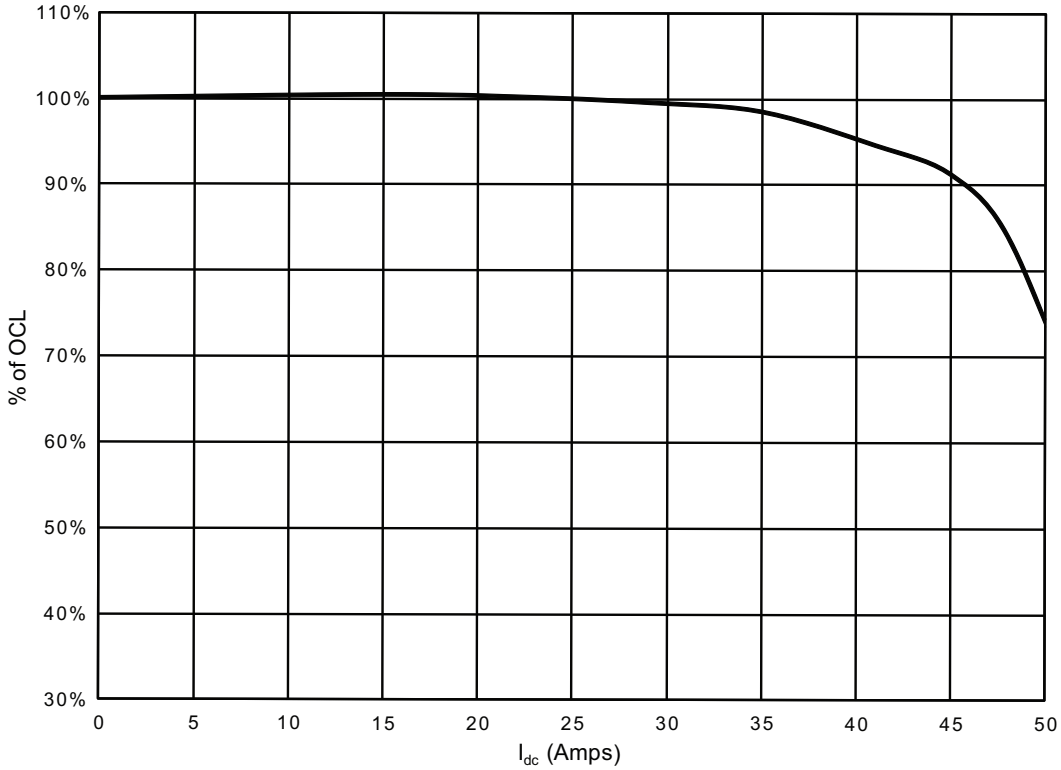


FPT705-170-R

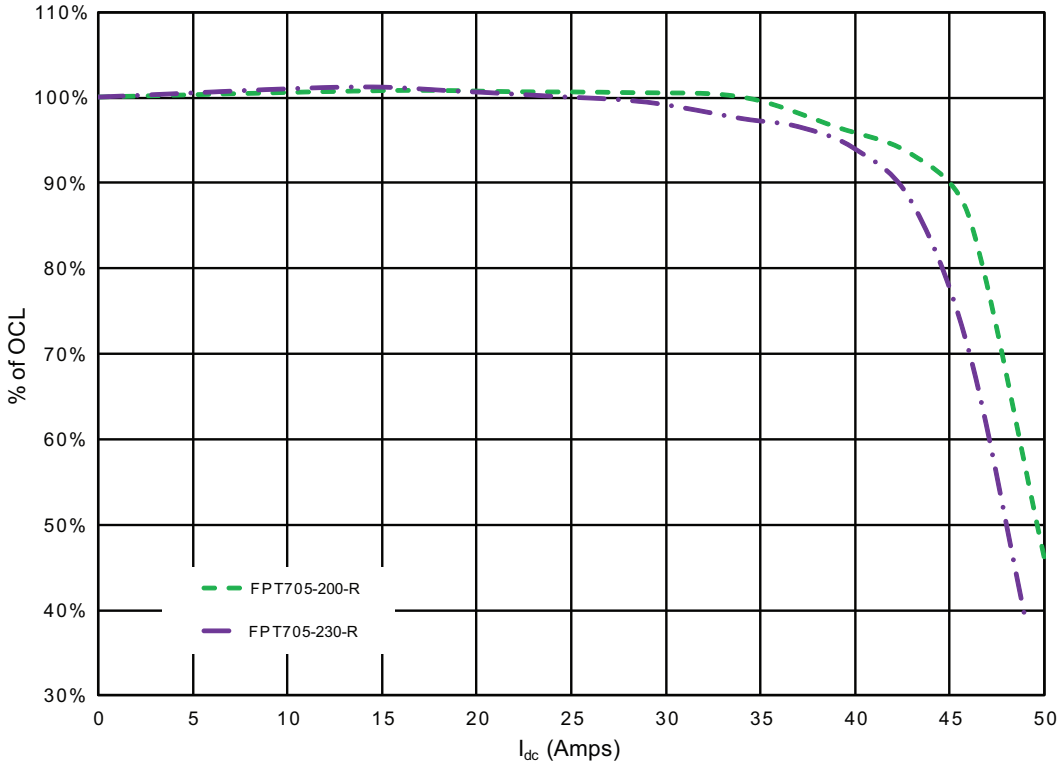


Inductance Characteristics

FPT705-190-R

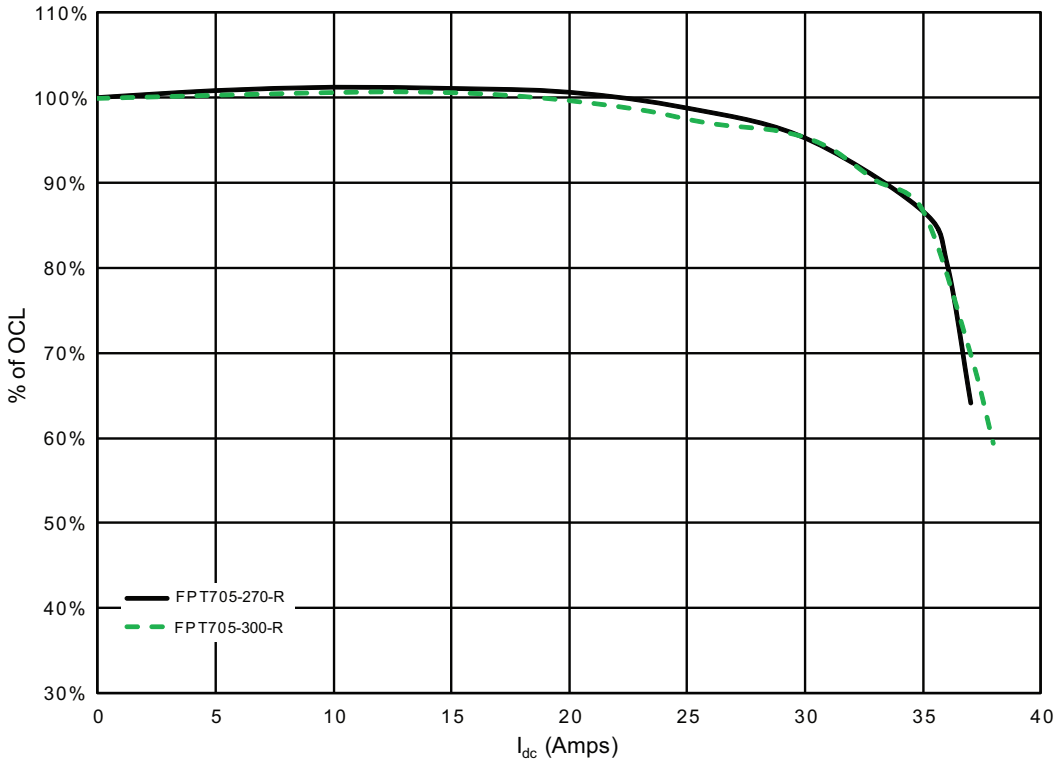


FPT705-200-R & -230-R



Inductance Characteristics

FPT705-270-R & -300-R



Solder Reflow Profile

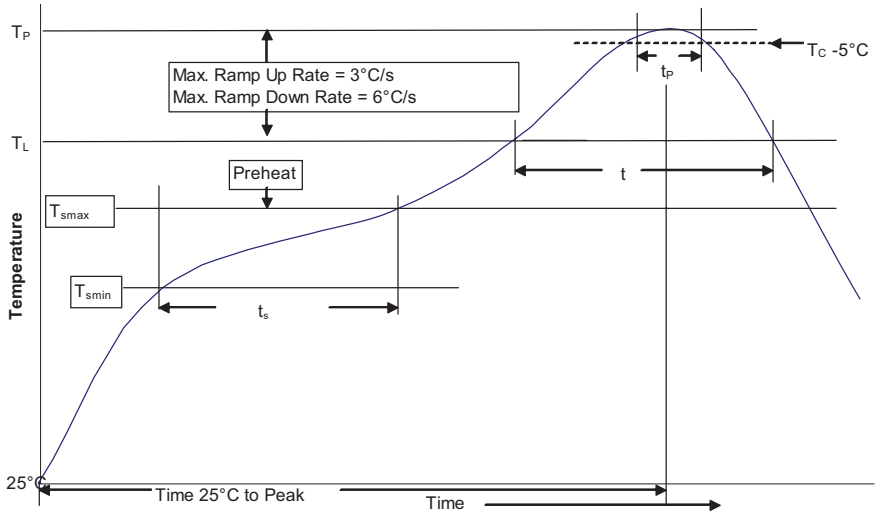


Table 1 - Standard SnPb Solder (T_C)

Package Thickness	Volume mm³ <350	Volume mm³ ≥350
<2.5mm	235°C	220°C
≥2.5mm	220°C	220°C

Table 2 - Lead (Pb) Free Solder (T_C)

Package Thickness	Volume mm³ <350	Volume mm³ 350 - 2000	Volume mm³ >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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