

# 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 170nH 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 (component): -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, 1000 parts per 13" diameter reel

Product Specifications				
Part Number <sup>5</sup>	OCL <sup>1</sup> (nH)	I <sub>rms</sub> <sup>2</sup> (Amps)	I <sub>sat</sub> <sup>3</sup> (Amps)	DCR <sup>4</sup> (mΩ) @ 20°C
FPT705-170-R	170 (±12%)	13	31	0.65 ± 0.15
FPT705-190-R	190		28	
FPT705-200-R	200		25	
FPT705-230-R	230		23	
FPT705-270-R	270		19	
FPT705-300-R	300		17	

1. Open Circuit Inductance (OCL) test parameters: 1.0MHz, 0.1V<sub>rms</sub>, 0.0A<sub>dc</sub> @ 25°C ± 10% (Pins 1-3, short 2-4).

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 < 2% rolloff at +25°C.

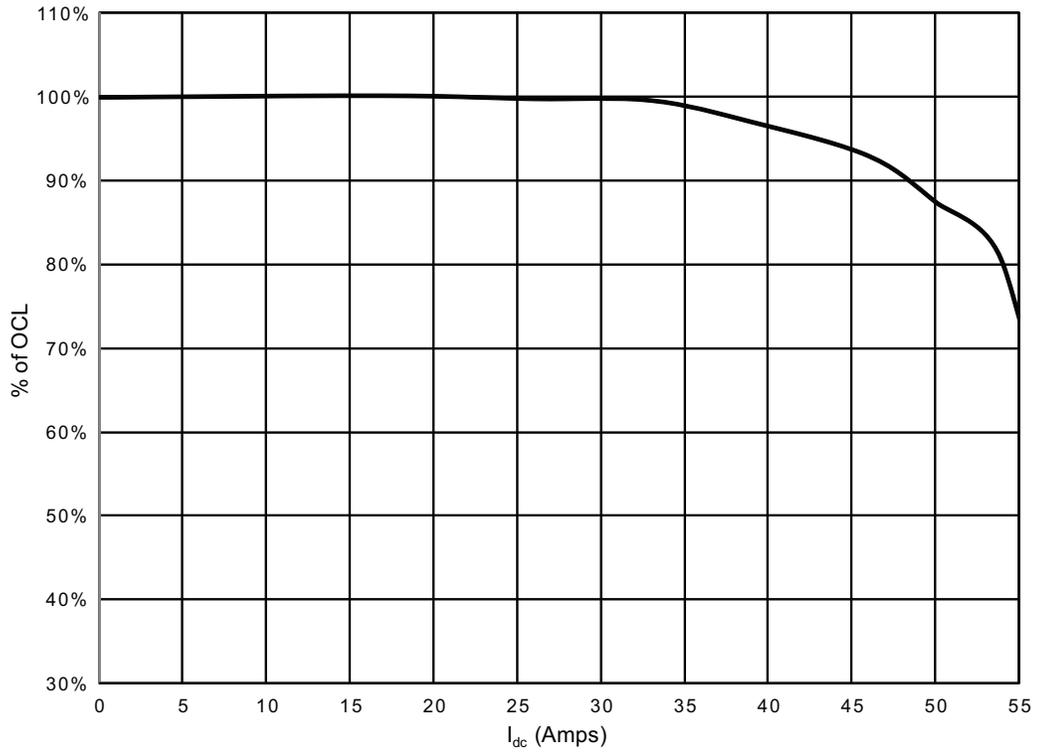
4. DCR Tested from Pins (1-2) and (3-4).

5. Part Number Definition: FPT705-xxx-R  
 FPT705 = Product code and size  
 xxx= Inductance value in nH  
 "-R" Suffix = RoHS compliant

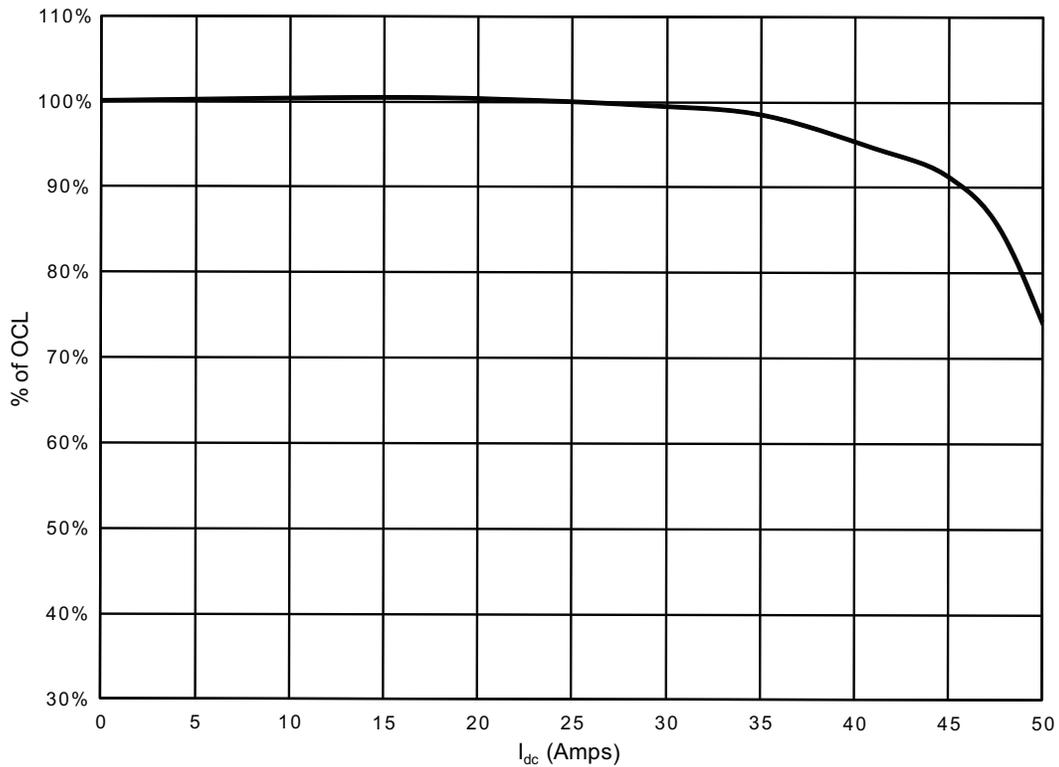


## Inductance Characteristics

FPT705-170-R

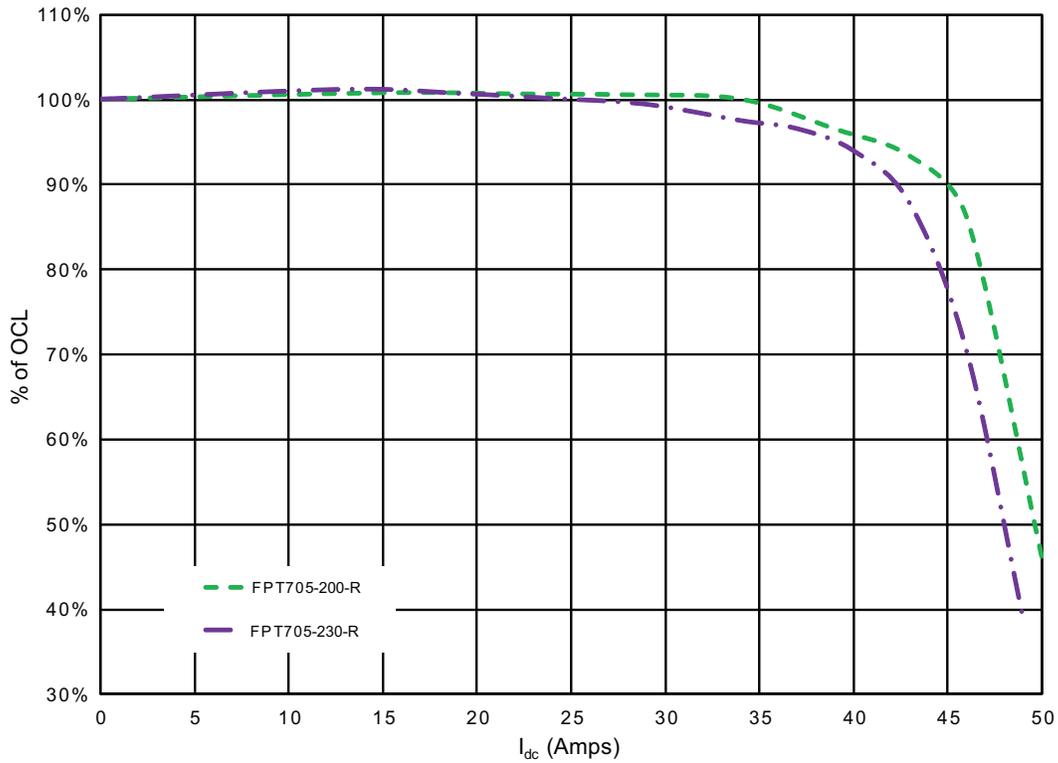


FPT705-190-R

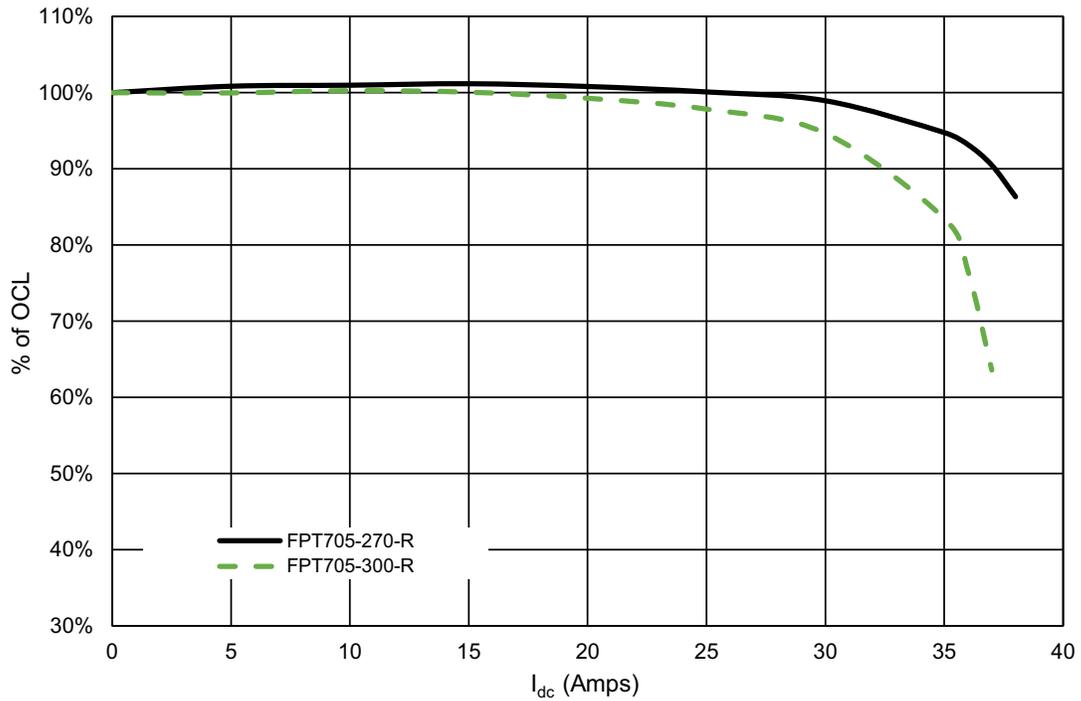


## Inductance Characteristics

### FPT705-200-R & -230-R



### FPT705-270-R & -300-R



## Solder Reflow Profile

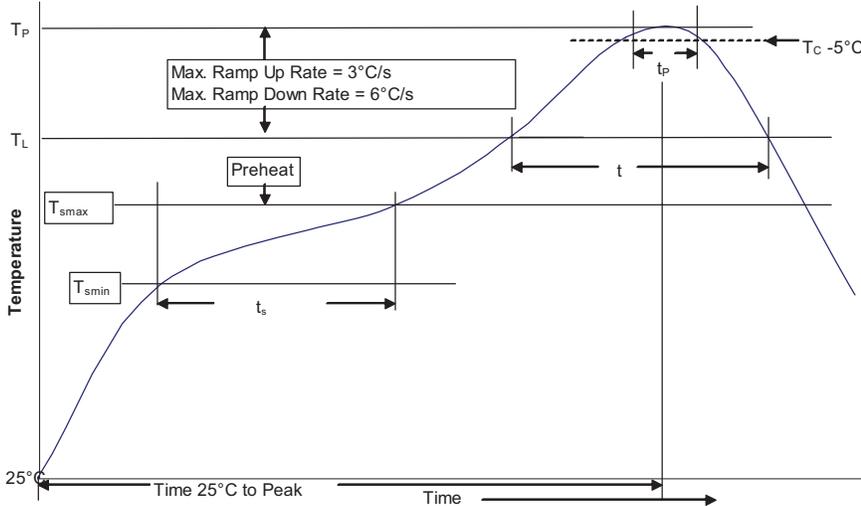


Table 1 - Standard SnPb Solder ( $T_c$ )

Package Thickness	Volume $\text{mm}^3$ <350	Volume $\text{mm}^3$ $\geq 350$
<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 $\text{mm}^3$ <350	Volume $\text{mm}^3$ 350 - 2000	Volume $\text{mm}^3$ >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 ( $T_L$ )	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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