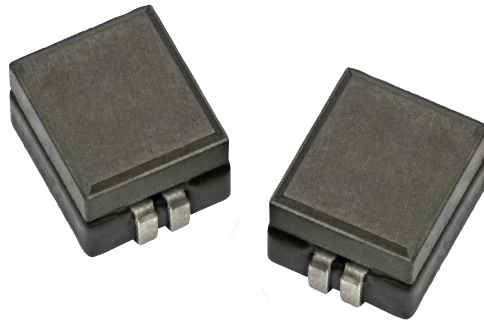


# FPT705

## Dual conductor, high current power inductors



### Product features

- Dual conductor, two-turn construction
- Magnetically shielded
- 8.3 mm x 7.5 mm footprint surface mount package in a 5.35 mm height
- Ferrite core material

### Applications

- Compatible with Picor® Cool-Power® ZVS Buck and Buck-Boost Regulator Families (Picor part number series PI33xx and PI34xx)

### Environmental Data

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



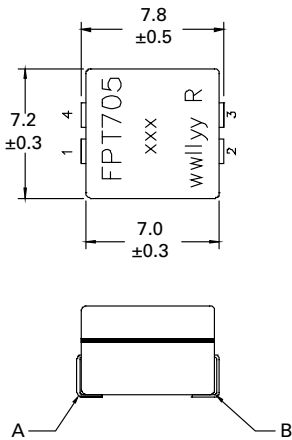
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**Product Specifications**

Part Number <sup>5</sup>	OCL <sup>1</sup> (nH) ±10%	I <sub>rms</sub> <sup>2</sup> (A)	I <sub>sat</sub> <sup>3</sup> (A)	DCR (mΩ) @ +20 °C ±0.15 mΩ
FPT705-170-R	170 (±12%)	13	31	0.65
FPT705-190-R	190	13	28	0.65
FPT705-200-R	200	13	25	0.65
FPT705-230-R	230	13	23	0.65
FPT705-270-R	270	13	19	0.65
FPT705-300-R	300	13	17	0.65

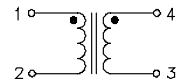
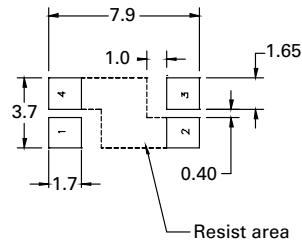
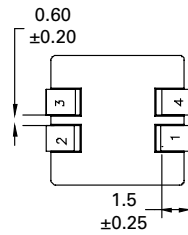
1. Open Circuit Inductance (OCL) Test Parameters: 1.0 MHz, 0.1 Vrms, 0.0 Adc, +25 °C
2. I<sub>rms</sub>: DC current for an approximate temperature rise of 40 °C without core loss. Derating is necessary for AC currents. PCB layout, trace thickness and width, air-flow, and proximity of other heat generating 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 2% rolloff @ +25 °C
4. DCR tested from pins (1-2) and pins (4-3)
5. Part Number Definition: FPT705-xxx-R  
FPT705 = Product code and size  
xxx= Inductance value in nH,  
-R suffix = RoHS compliant

**Dimensions (mm)**



**Recommended Pad Layout**

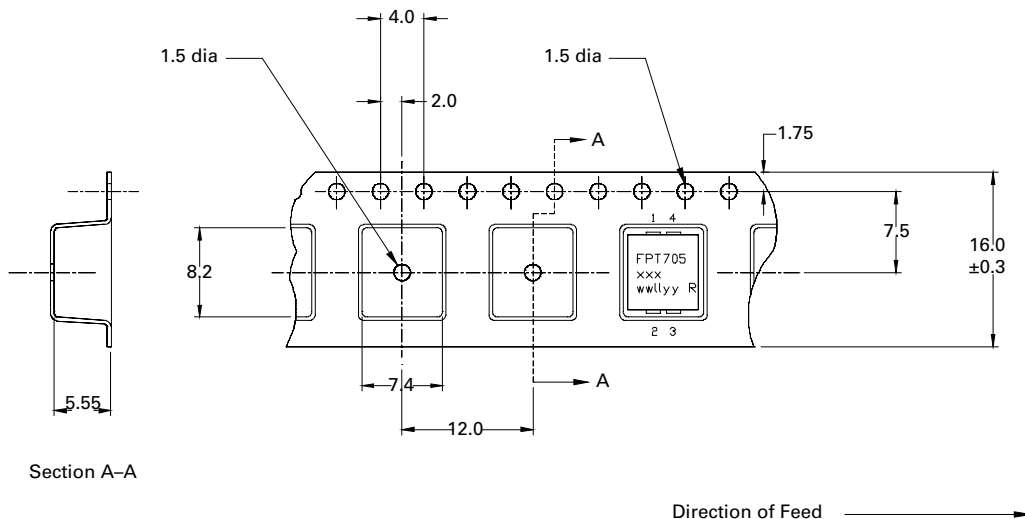
**Schematic**



Part marking: FPT705, xxx=inductance value in nH, wwlllyy= date code R= revision level  
Soldering surfaces to be coplanar within 0.10 millimeters  
DCR is measured from point "a" to point "b"  
Pins 2 and 4 are connected through the PCB trace  
Do not route traces or vias underneath the inductor

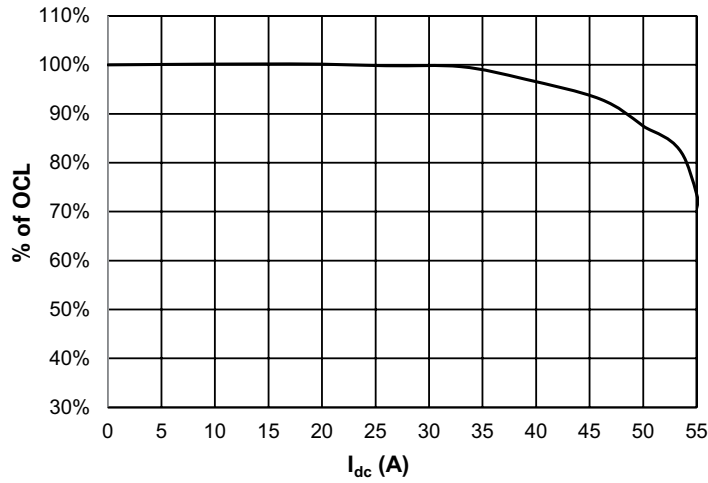
**Packaging information (mm)**

Supplied in tape and reel packaging, 1,000 parts per 13" diameter reel

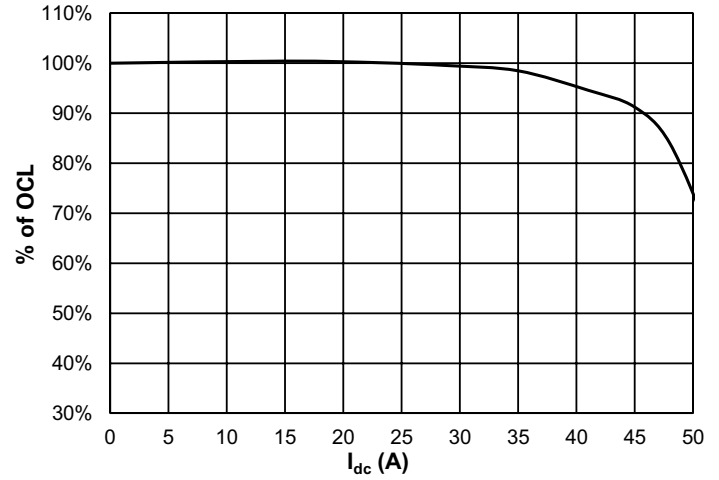


Inductance characteristics

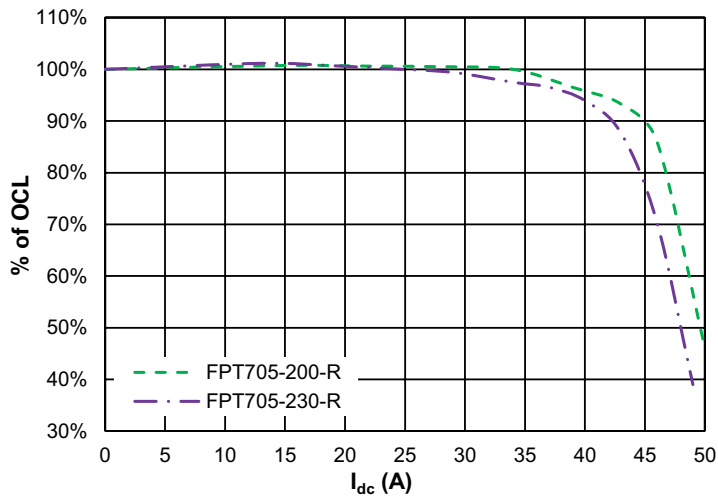
FPT705-170-R



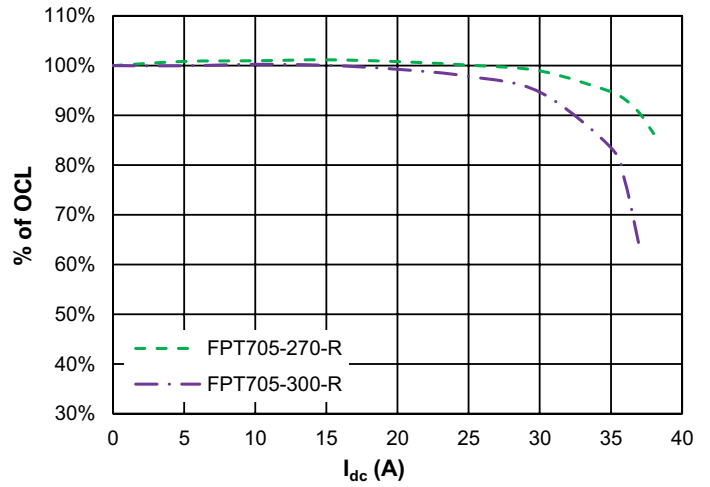
FPT705-190-R



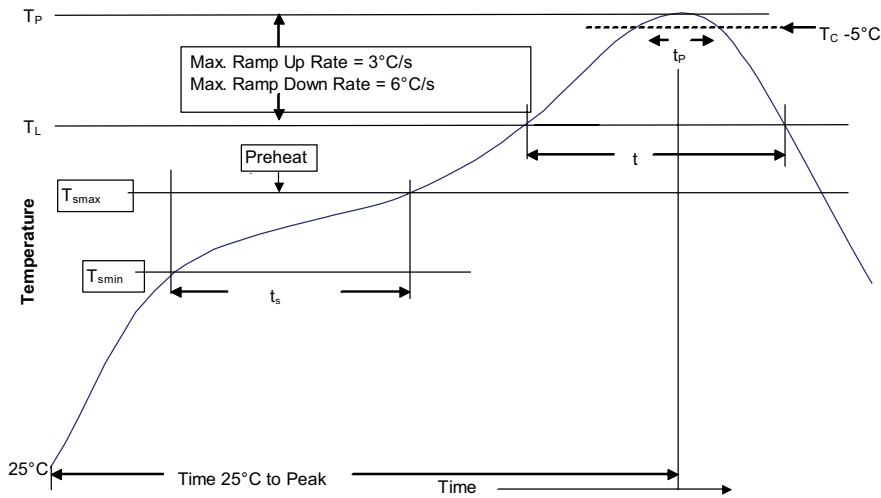
FPT705-200-R, FPT705-230-R



FPT705-270-R, FPT705-300-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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**Eaton**  
Electronics Division  
1000 Eaton Boulevard  
Cleveland, OH 44122  
United States  
www.eaton.com/electronics

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