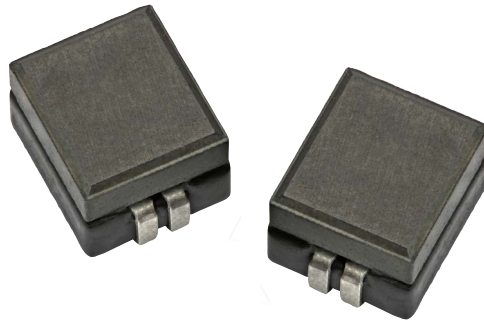


# FPT705

## 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



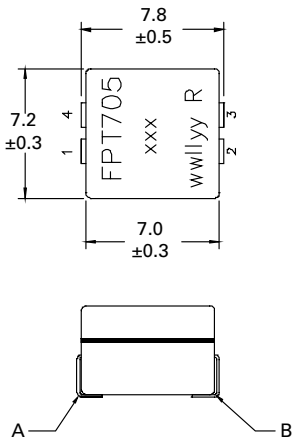
Picor® and Cool-Power® are trademarks of Vicor Corporation.

**Product Specifications**

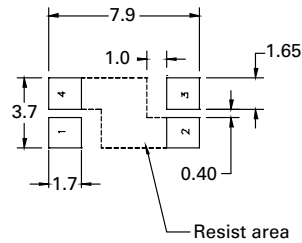
Part Number <sup>5</sup>	OCL <sup>1</sup> (nH) ±10%	I <sub>rms</sub> <sup>2</sup> (A)	I <sub>sat</sub> <sup>3</sup> (A)	DCR (mΩ) @ +20 °C ±0.15 mΩ
FPT705-170-R	170 (±12%)	13	31	0.65
FPT705-190-R	190	13	28	0.65
FPT705-200-R	200	13	25	0.65
FPT705-230-R	230	13	23	0.65
FPT705-270-R	270	13	19	0.65
FPT705-300-R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

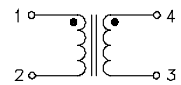
**Dimensions (mm)**



**Recommended Pad Layout**



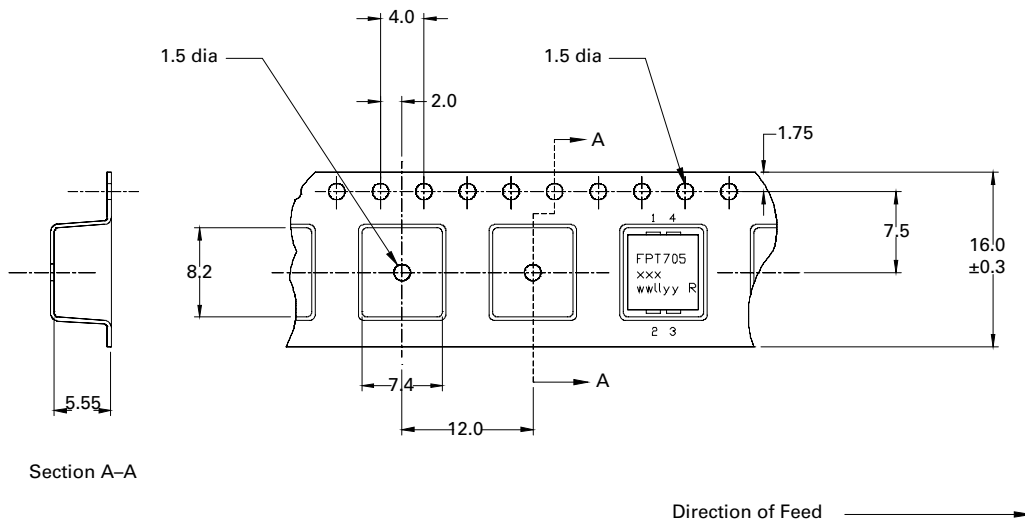
**Schematic**



Part marking: FPT705, xxx=inductance value in nH, wwllly= 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

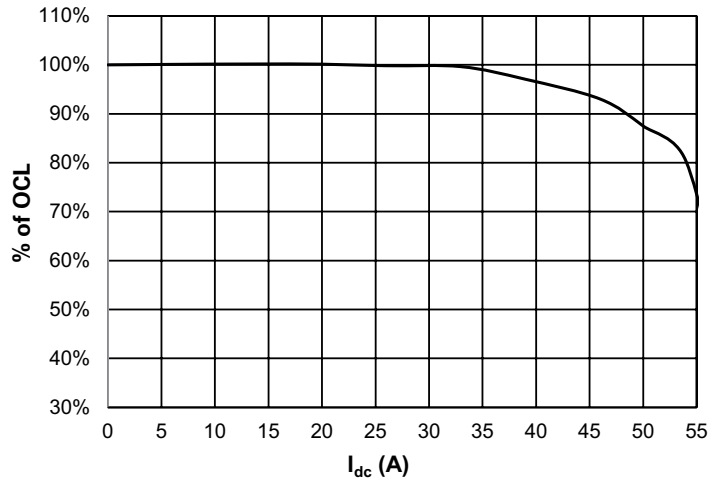
**Packaging information (mm)**

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

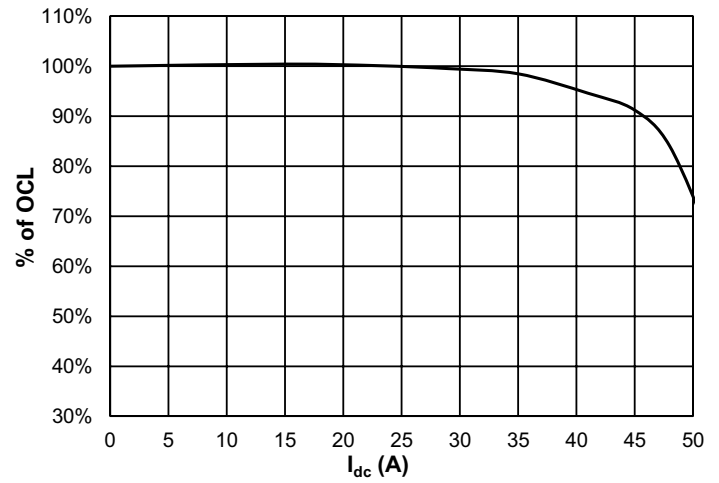


Inductance characteristics

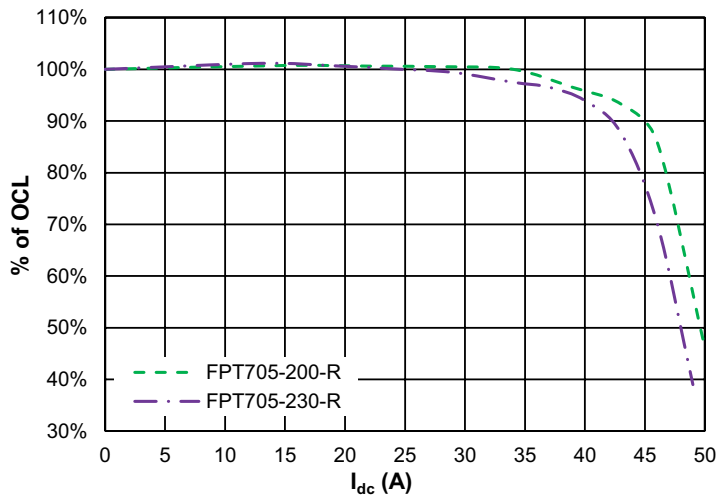
FPT705-170-R



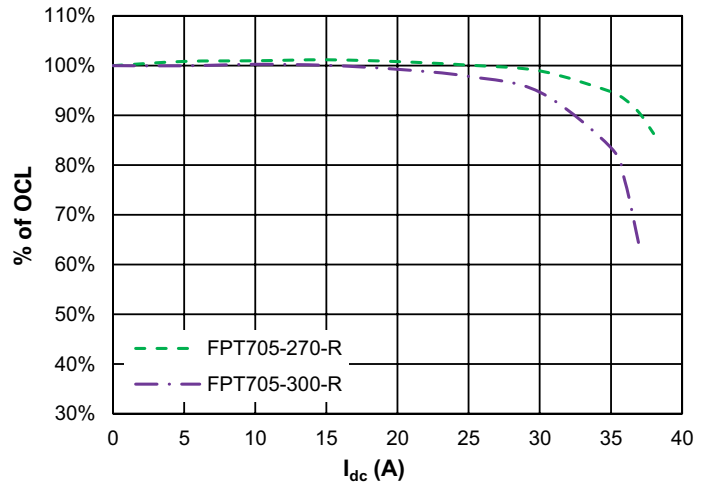
FPT705-190-R



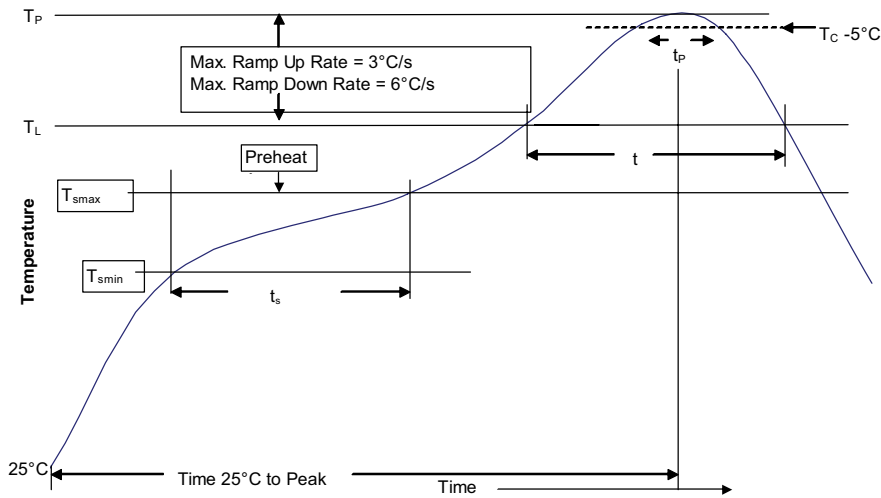
FPT705-200-R, FPT705-230-R



FPT705-270-R, FPT705-300-R



**Solder reflow profile**



**Table 1 - Standard SnPb Solder (T<sub>c</sub>)**

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<sub>c</sub>)**

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		
• Temperature min. (T <sub>smin</sub> )	100°C	150°C
• Temperature max. (T <sub>smax</sub> )	150°C	200°C
• Time (T <sub>smin</sub> to T <sub>smax</sub> ) (t <sub>s</sub> )	60-120 Seconds	60-120 Seconds
Average ramp up rate T <sub>smax</sub> to T <sub>p</sub>	3°C/ Second Max.	3°C/ Second Max.
Liquidous temperature (T <sub>L</sub> )	183°C	217°C
Time at liquidous (t <sub>L</sub> )	60-150 Seconds	60-150 Seconds
Peak package body temperature (T <sub>p</sub> )*	Table 1	Table 2
Time (t <sub>p</sub> )** within 5 °C of the specified classification temperature (T <sub>c</sub> )	20 Seconds**	30 Seconds**
Average ramp-down rate (T <sub>p</sub> to T <sub>smax</sub> )	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<sub>p</sub>) is defined as a supplier minimum and a user maximum.

\*\* Tolerance for time at peak profile temperature (t<sub>p</sub>) is defined as a supplier minimum and a user maximum.

Life Support Policy: Eaton does not authorize the use of any of its products for use in life support devices or systems without the express written approval of an officer of the Company. Life support systems are devices which support or sustain life, and whose failure to perform, when properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in significant injury to the user.

Eaton reserves the right, without notice, to change design or construction of any products and to discontinue or limit distribution of any products. Eaton also reserves the right to change or update, without notice, any technical information contained in this bulletin.

**Eaton**  
Electronics Division  
1000 Eaton Boulevard  
Cleveland, OH 44122  
United States  
www.eaton.com/electronics

© 2017 Eaton  
All Rights Reserved  
Printed in USA  
Publication No. 4451- BU-SB15121  
September 2017

Eaton is a registered trademark.

All other trademarks are property of their respective owners.