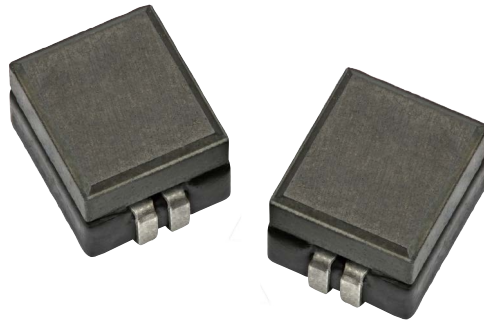


# FPT705

## 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



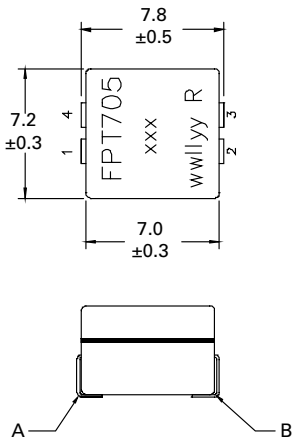
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**Product Specifications**

| Part Number <sup>5</sup> | OCL <sup>1</sup><br>(nH) ±10% | I <sub>rms</sub> <sup>2</sup><br>(A) | I <sub>sat</sub> <sup>3</sup><br>(A) | DCR (mΩ)<br>@ +20 °C<br>±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                             |

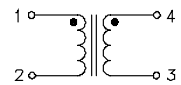
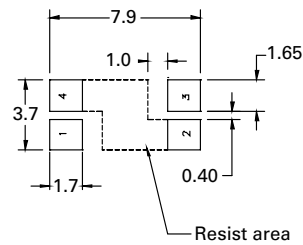
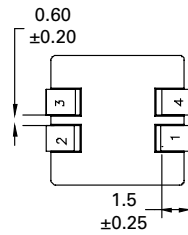
1. Open Circuit Inductance (OCL) Test Parameters: 1.0 MHz, 0.1 Vrms, 0.0 Adc, +25 °C
2. I<sub>rms</sub>: DC current for an approximate temperature rise of 40 °C without core loss. Derating is necessary for AC currents. PCB layout, trace thickness and width, air-flow, and proximity of other heat generating 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**

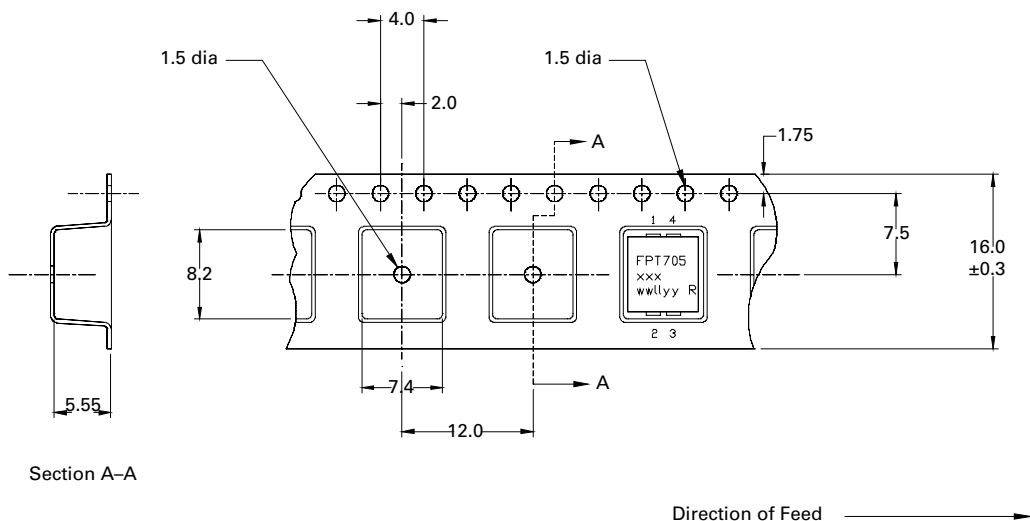
**Schematic**



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

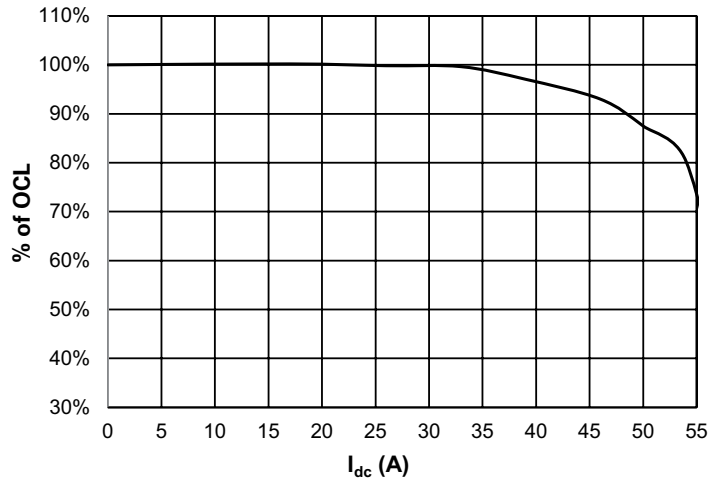
**Packaging information (mm)**

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

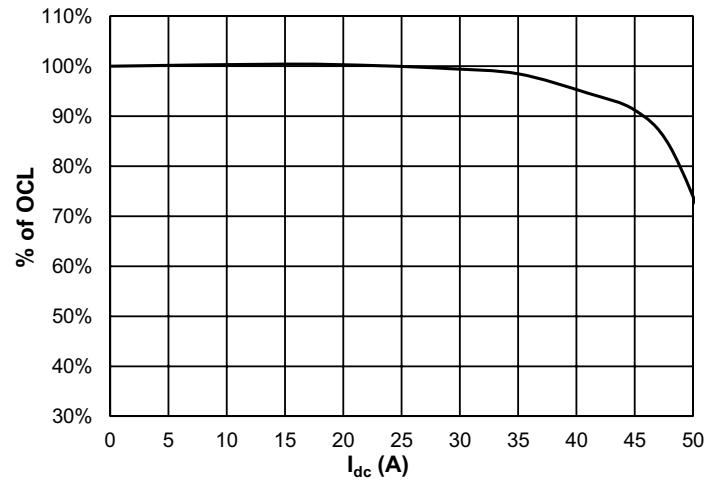


Inductance characteristics

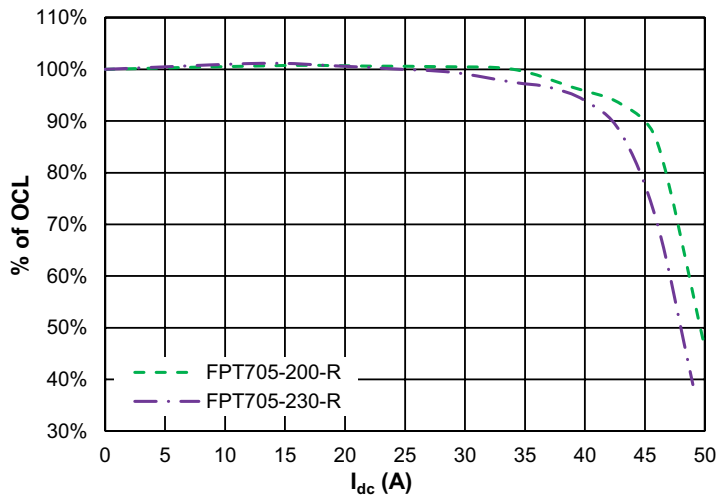
FPT705-170-R



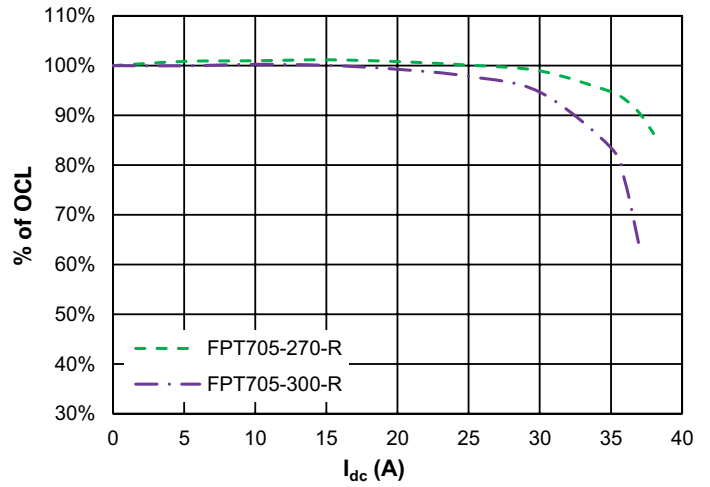
FPT705-190-R



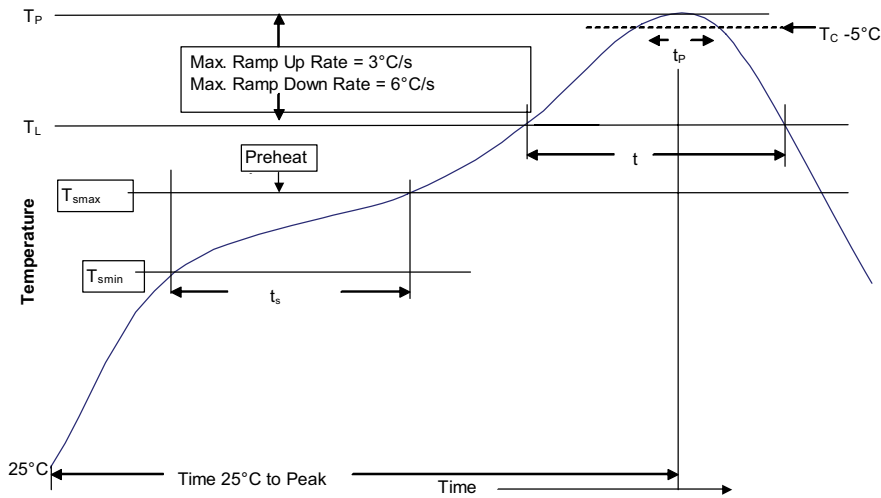
FPT705-200-R, FPT705-230-R



FPT705-270-R, FPT705-300-R



**Solder reflow profile**



**Table 1 - Standard SnPb Solder ( $T_c$ )**

| Package Thickness | Volume $mm^3$ <350 | Volume $mm^3$ $\geq$ 350 |
|-------------------|--------------------|--------------------------|
| <2.5mm)           | 235°C              | 220°C                    |
| $\geq$ 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 ( $T_L$ )  | 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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