Effective September 2017 Supersedes Marchl 2015

# **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<sup>®</sup> Cool-Power<sup>®</sup> 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**

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	Part Number⁵	OCL <sup>1</sup> (nH) ±10%	lrms² (A)	lsat <sup>3</sup> (A)	DCR (mΩ) @ +20 °C ±0.15 mΩ
FPT705-230-R         200         13         25         0.65           FPT705-230-R         230         13         23         0.65	FPT705-170-R	170 (±12%)	13	31	0.65
FPT705-230-R 230 13 23 0.65	FPT705-190-R	190	13	28	0.65
	FPT705-200-R	200	13	25	0.65
FPT705-270-R 270 13 19 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	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. Ims: DC current for an approximate temperature rise of 40 °C without core loss. Derating is necessary for AC currents. 5. Part Number Definition: FPT705-xxx-R 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.  $I_{\rm sat}$  Peak current for approximately 2% rolloff @ +25  $^{\circ}{\rm C}$ 

7.8

±0.5

×××

7.0

±0.3

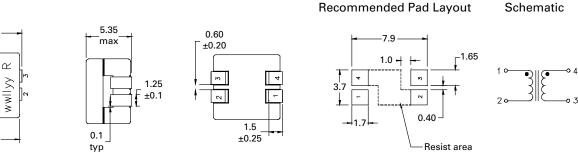
FPT70

7.2

±0.3

Δ

#### **Dimensions (mm)**



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

4. DCR tested from pins (1-2) and pins (4-3)

FPT705 = Product code and size

xxx= Inductance value in nH,

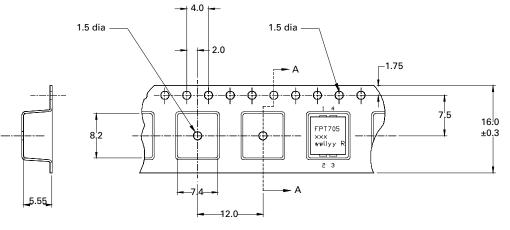
-R suffix = RoHS compliant



Packaging information (mm)

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

B

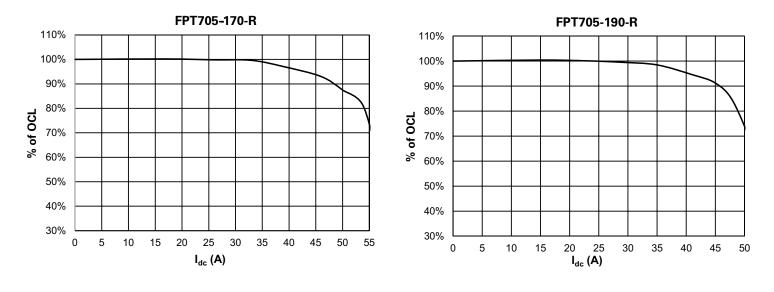


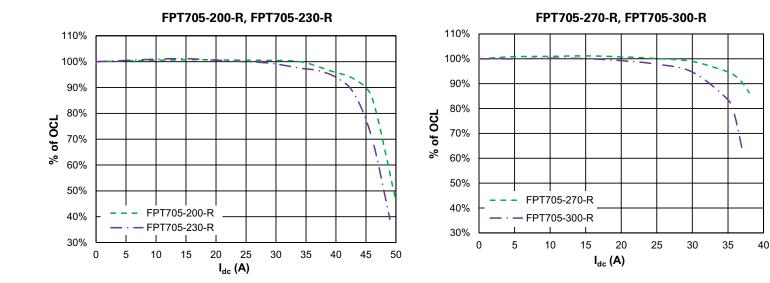
Section A-A

Direction of Feed

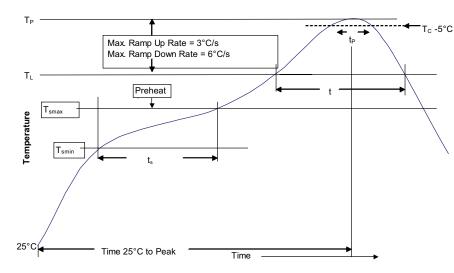
### FPT705 Dual conductor, high current power inductors

#### Inductance characteristics





#### Solder reflow profile



## $-_{T_c - 5^{\circ}C}$ Table 1 - Standard SnPb Solder (T<sub>c</sub>)

Package Thickness	Volume mm <sup>3</sup> <350	Volume mm³ ≥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	
<ul> <li>Temperature max. (T<sub>smax</sub>)</li> </ul>	150°C	200°C	
<ul> <li>Time (T<sub>smin</sub> to T<sub>smax</sub>) (t<sub>s</sub>)</li> </ul>	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 (TL) Time at liquidous (tL)	183°C 60-150 Seconds	217°C 60-150 Seconds	
Peak package body temperature (T <sub>P</sub> )*	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 <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>n</sub>) is defined as a supplier minimum and a user maximum.

\*\* Tolerance for time at peak profile temperature (tp) 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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