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.



Schematic

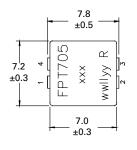
Product Specifications

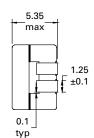
Part Number ⁵	OCL¹ (nH) ±10%	Irms² (A)	I _{sat} ³ (A)	DCR (m Ω) @ +20 °C ±0.15 m Ω	
FPT705-170-R	170 (±12%)	13	31	0.65	
FPT705-190-R	190	13	28	0.65	
FPT705-200-R	200	13	25	0.65	
FPT705-230-R	230	13	23	0.65	
FPT705-270-R	270	13	19	0.65	
FPT705-300-R	300	13	17	0.65	

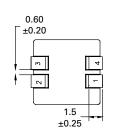
- 1. Open Circuit Inductance (OCL) Test Parameters: 1.0 MHz, 0.1 Vrms, 0.0 Adc, +25 °C
- 2. I_{mac} DC current for an approximate temperature rise of 40 °C without core loss. Derating is necessary for AC currents. PCB layout, trace thickness and width, air-flow, and proximity of other heat generating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

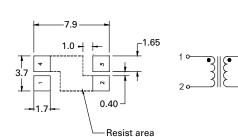
Dimensions (mm)







Do not route traces or vias underneath the inductor



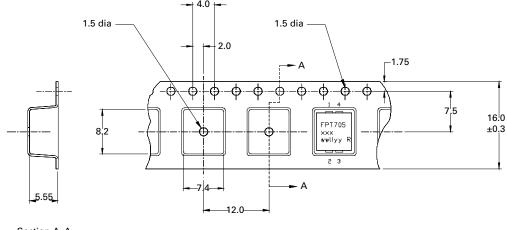
Recommended Pad Layout



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

Packaging information (mm)

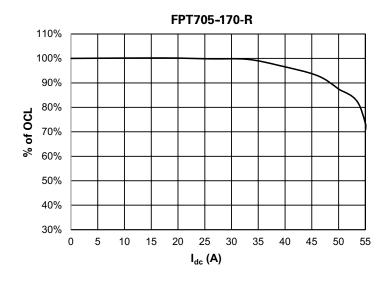
Supplied in tape and reel packaging, 1,000 parts per 13" diameter reel

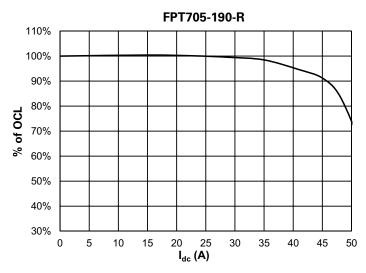


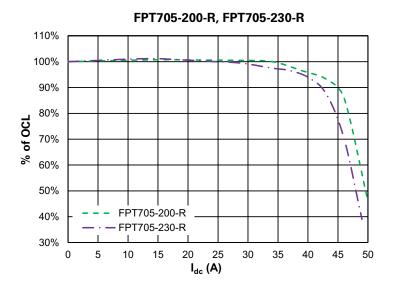
Section A-A

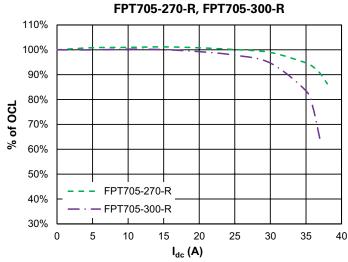
Direction of Feed _____

Inductance characteristics

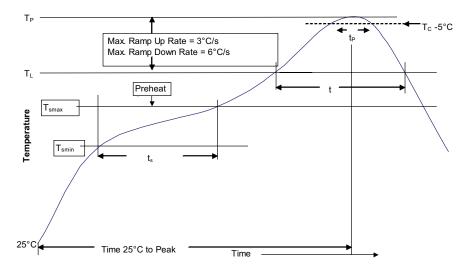








Solder reflow profile



-_{Tc}-5°C Table 1 - Standard SnPb Solder (T_C)

Package Thickness	Volume mm³ <350	Volume mm³ ≥350
<2.5mm)	235°C	220°C
≥2.5mm	220°C	220°C

Table 2 - Lead (Pb) Free Solder (Tc)

Package Thickness	Volume mm³ <350	Volume mm³ 350 - 2000	Volume mm³ >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 (TL) Time at liquidous (tL)	183°C 60-150 Seconds	217°C 60-150 Seconds
Peak package body temperature (Tp)*	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 (Tp) 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



^{**} Tolerance for time at peak profile temperature (t_p) is defined as a supplier minimum and a user maximum.

Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

Eaton:

FPT705-150-R FPT705-170-R FPT705-190-R FPT705-200-R FPT705-230-R FPT705-270-R FPT705-300-R