

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 ⁵	OCL ¹ (nH) $\pm 10\%$	I _{rms} ² (A)	I _{sat} ³ (A)	DCR (m Ω) @ +20 °C ± 0.15 m Ω
FPT705-170-R	170 ($\pm 12\%$)	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_{rms}: 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)

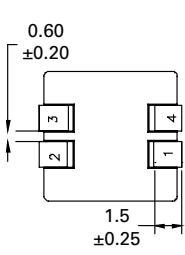
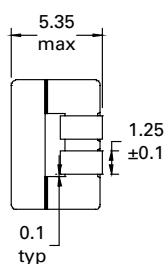
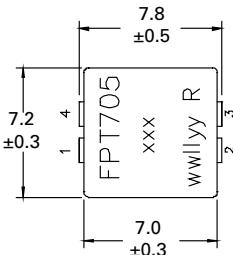
5. Part Number Definition: FPT705-xxx-R

FPT705 = Product code and size

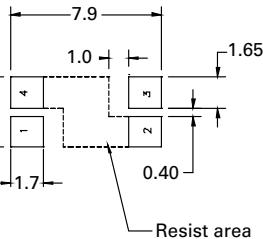
xxx = Inductance value in nH,

-R suffix = RoHS compliant

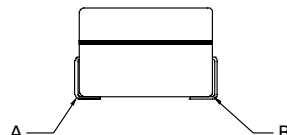
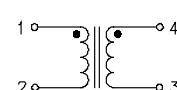
Dimensions (mm)



Recommended Pad Layout



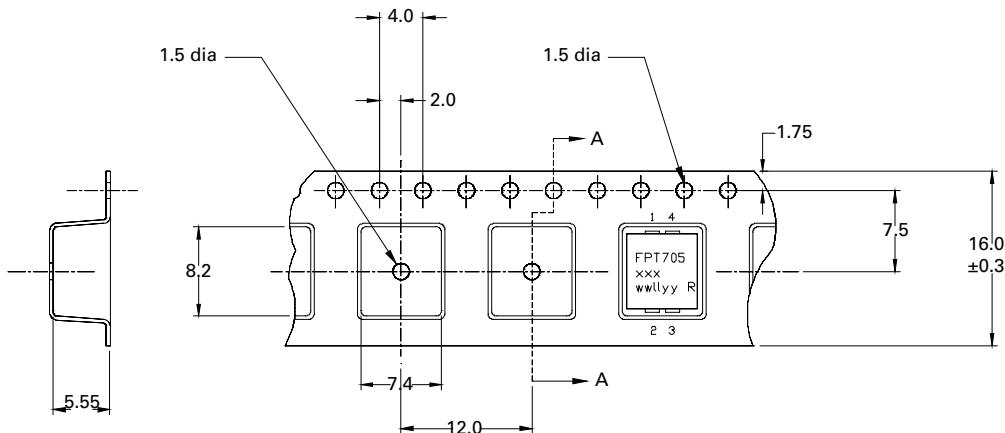
Schematic



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

Packaging information (mm)

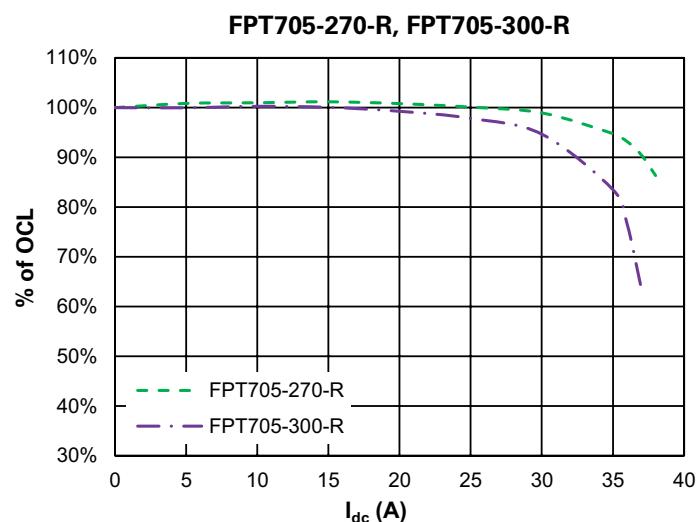
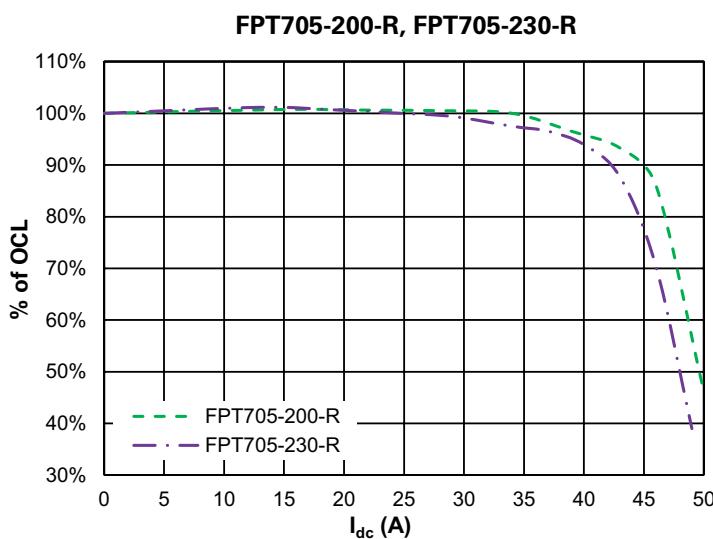
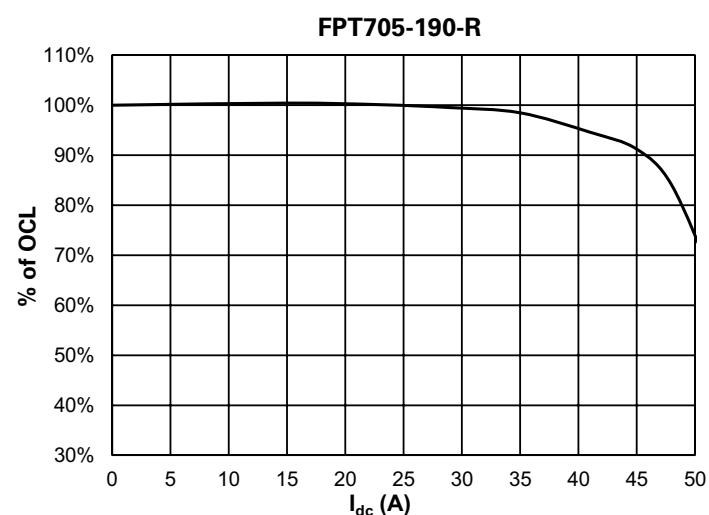
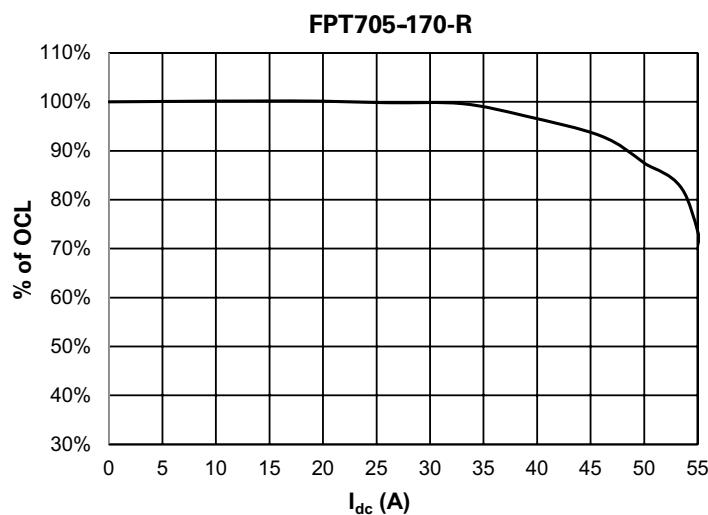
Supplied in tape and reel packaging, 1,000 parts per 13" diameter reel



Section A-A

Direction of Feed →

Inductance characteristics



Solder reflow profile

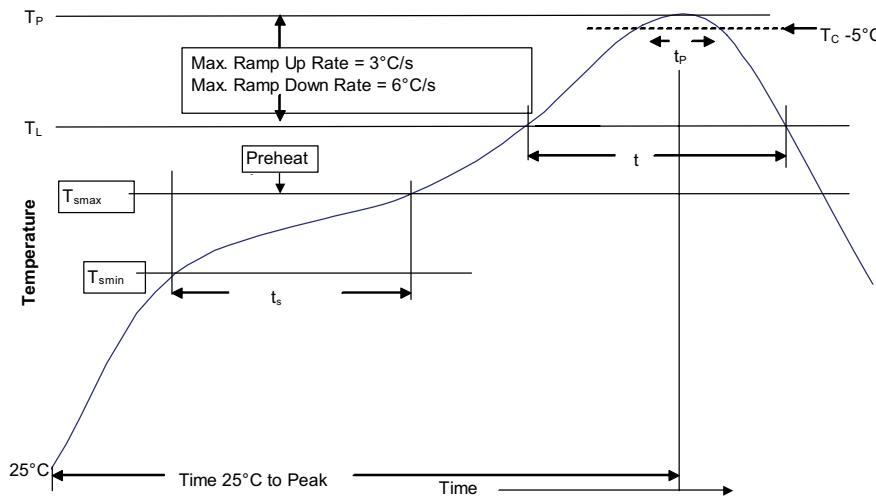


Table 1 - Standard SnPb Solder (T_c)

Package Thickness	Volume mm ³ <350	Volume mm ³ ≥350
<2.5mm)	235°C	220°C
≥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	<ul style="list-style-type: none"> Temperature min. (T_{smin}) Temperature max. (T_{smax}) Time (T_{smin} to T_{smax}) / (t_s) 	100°C 150°C 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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