

# FP1507R

## High current power inductors



### Product features

- Magnetically shielded
- 15.1 x 8.5 mm footprint surface mount package in a 6.7 mm height
- Ferrite core material

### Applications

- Compatible with Picor® Cool-Power® ZVS Buck and Buck-Boost Regulator Families

### 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> (nH) $\pm 10\%$	FLL <sup>2</sup> (nH) minimum	I <sub>rms</sub> <sup>3</sup> (A)	I <sub>sat</sub> <sup>4</sup> (A)	DCR (m $\Omega$ ) @ +20 °C $\pm 10\%$
FP1507R1-R185-R	185	163	45	40	0.52

1. Open Circuit Inductance (OCL) Test Parameters: 1.0 MHz, 0.1 Vrms, 0.0 Adc, +25 °C

2. Full Load Inductance (FLL) Test Parameters: 1.0 MHz, 0.1 Vrms, I<sub>sat</sub>, +25 °C

3. I<sub>sat</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.

4. I<sub>sat</sub>: Peak current for approximately 2% rolloff @ +25 °C

5. Part Number Definition: FP1507Rx-Ryyy-R

FP1507R = Product code and size

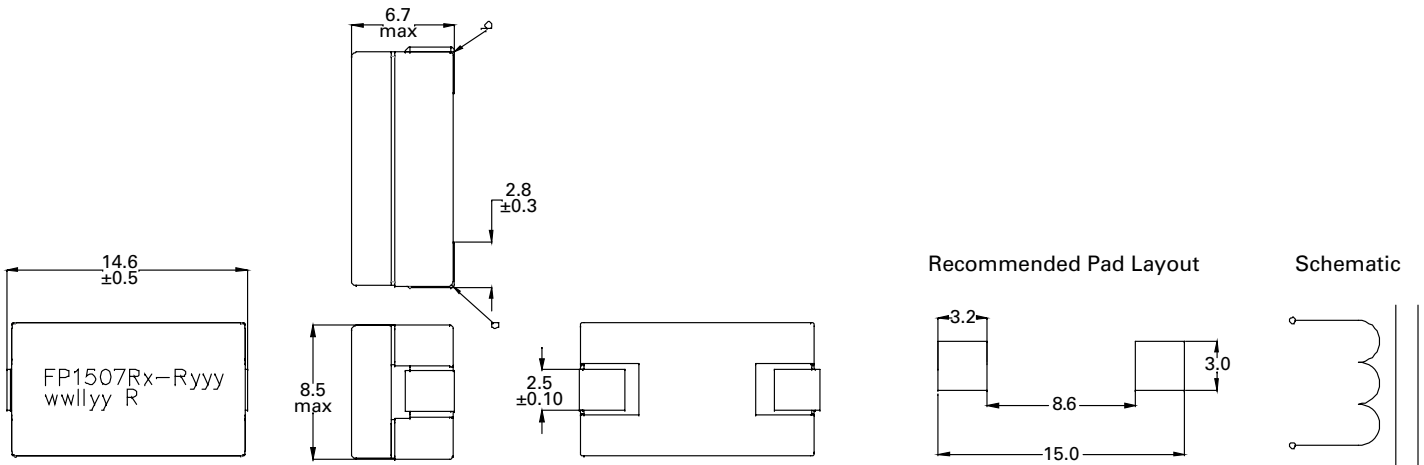
x = DCR indicator

Ryyy = yyy = inductance value in  $\mu$ H, R = decimal point

-R suffix = RoHS compliant

Note: Hipot: 250Vdc minimum for 2 seconds, 1.0mA, conductor to core

## Dimensions (mm)



Part marking: FP1507Rx (x=DCR indicator), -Ryyy= (inductance value in  $\mu$ H, R=decimal point)

wwllyy= date code, R=revision level

Tolerances are  $\pm 0.25$  unless stated otherwise

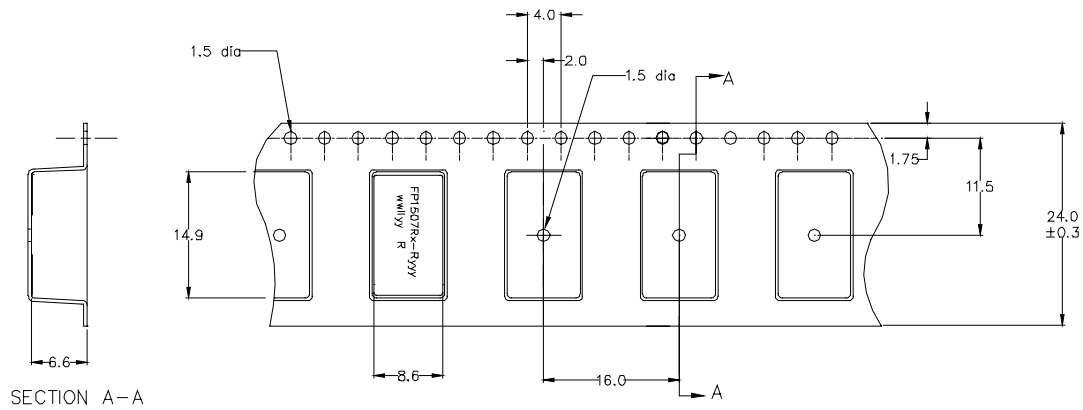
Soldering surfaces to be coplanar within 0.1 millimeters

DCR measured from point "a" to point "b"

Do not route traces or vias underneath the inductor.

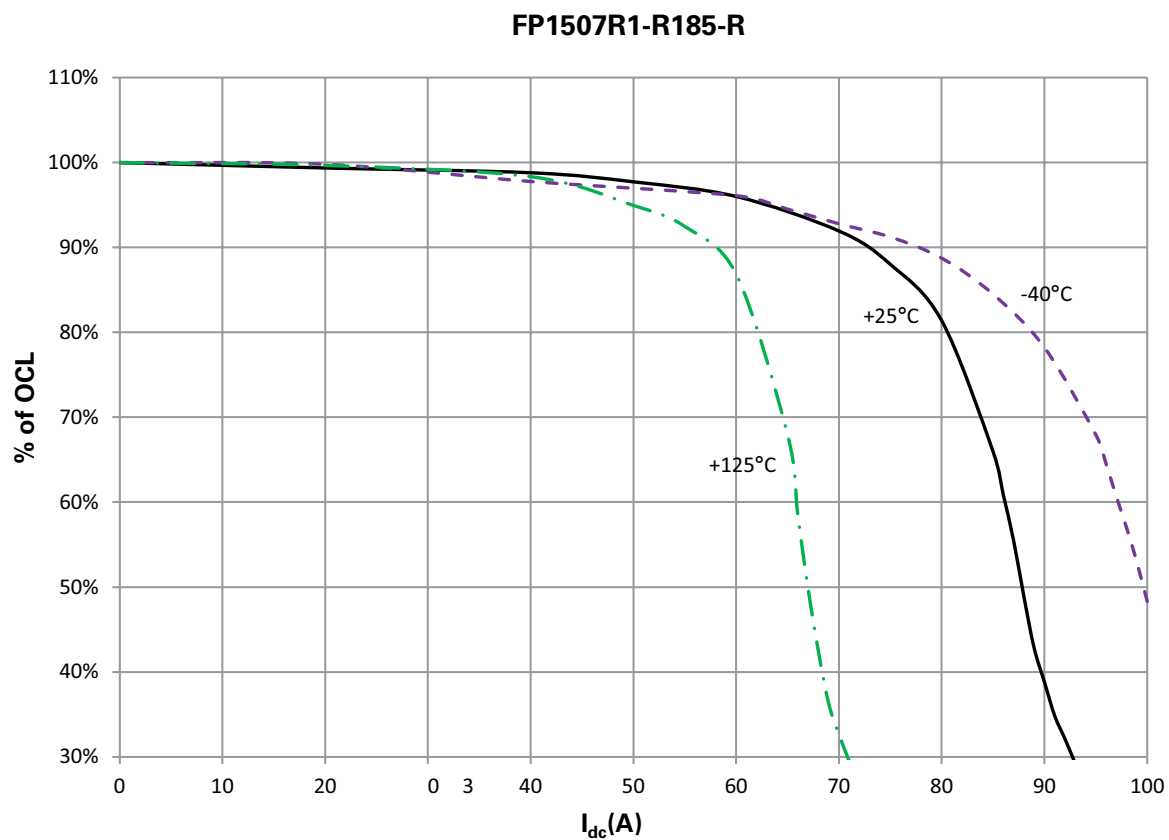
## Packaging information (mm)

Supplied in tape and reel packaging, 600 parts per 13" diameter reel



User direction of feed →

Inductance characteristics



## Solder reflow profile

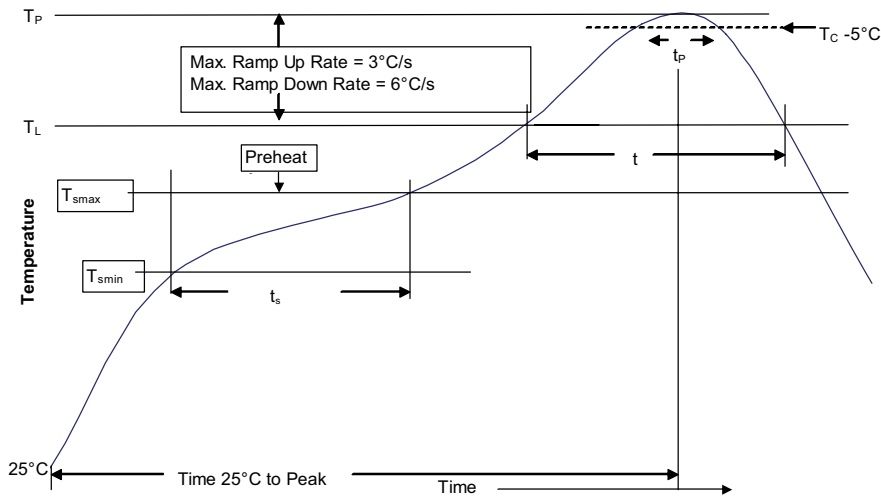


Table 1 - Standard SnPb Solder ( $T_C$ )

Package Thickness	Volume $\text{mm}^3$ <350	Volume $\text{mm}^3$ $\geq 350$
<2.5mm	235°C	220°C
$\geq 2.5\text{mm}$	220°C	220°C

Table 2 - Lead (Pb) Free Solder ( $T_C$ )

Package Thickness	Volume $\text{mm}^3$ <350	Volume $\text{mm}^3$ 350 - 2000	Volume $\text{mm}^3$ >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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