

Product Specifications

Part Number ⁵	OCL ¹ (nH) ±15%	FLL ² (nH) minimum	I _{avg} ³ (A)	I _{avg} ¹⁴ (A)	I _{avg} ²⁵ (A)	I _{avg} ³⁶ (A)	DCR (mΩ) @ +20 °C ±25%	K-factor ⁷
FP0404R1-R022-R	22 ±20%	15	19	40	34	32	0.32 ± 15%	2351
FP0404R1-R065-R	65	44	19	24	22	20	0.32	2248
FP0404R1-R080-R	80	54	19	20	18	16	0.32	2248
FP0404R1-R100-R	100	68	19	16	14	13	0.32	2248
FP0404R1-R110-R	110	74	19	14	13	12	0.32	2248

1. Open Circuit Inductance (OCL) Test Parameters: 100 kHz (1 MHz for R022), 0.1 Vrms, 0.0 Adc, +25 °C

2. Full Load Inductance (FLL) Test Parameters: 100 kHz (1 MHz for R022), 0.1 Vrms, I_{avg}1, +25 °C

3. I_{avg}: 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_{avg}1: Peak current for approximately 20% rolloff @ +25 °C

5. I_{avg}2: Peak current for approximately 20% rolloff @ +100 °C

6. I_{avg}3: Peak current for approximately 20% rolloff @ +125 °C

7. K-factor: Used to determine Bp-p for core loss (see graph). Bp-p = K * L * ΔI * 10⁻³. Bp-p (Gauss), K: (K-factor from table), L: (Inductance in nH), ΔI (Peak to peak ripple current in Amps).

8. Part Number Definition: FP0404-Rxxx-R

FP0404 = Product code and size

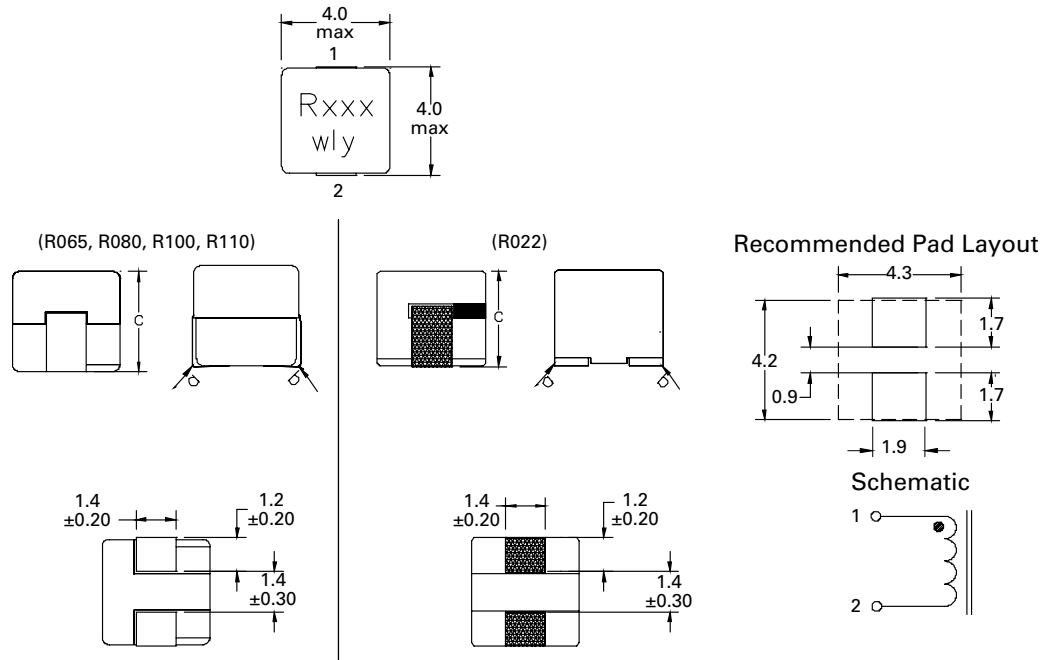
Rx= DCR indicator

Rxxx=Inductance value in μH, R=decimal point

-R suffix = RoHS compliant

Dimensions (mm)

Part Number	C max
R022-R	3.0
R065-R	4.0
R080-R	4.0
R100-R	4.0
R110-R	4.0



Part marking: Rxxx xxx=inductance value in μH, R=decimal point, wly= date code

All soldering surfaces to be coplanar within 0.1 millimeters

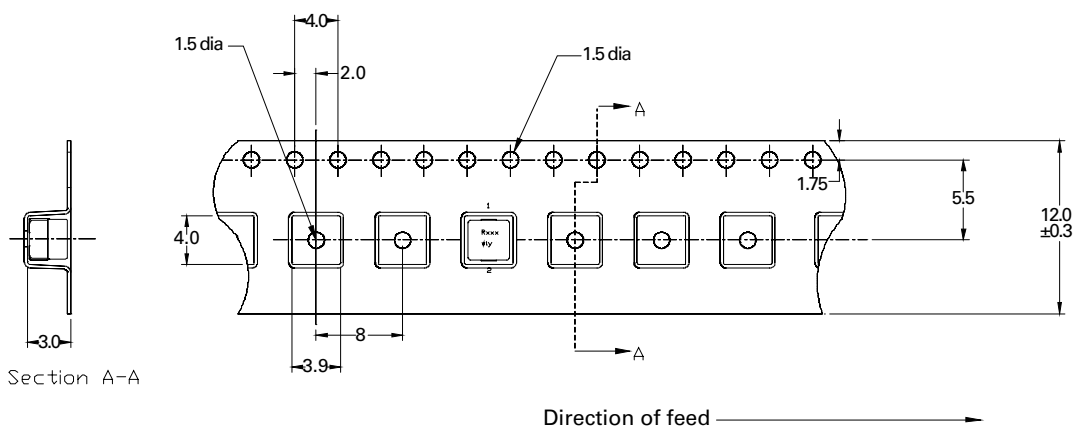
DCR is measured from point "a" to point "b"

Do not route traces or vias underneath the inductor

Packaging information (mm)

FP0404R1-R022-R

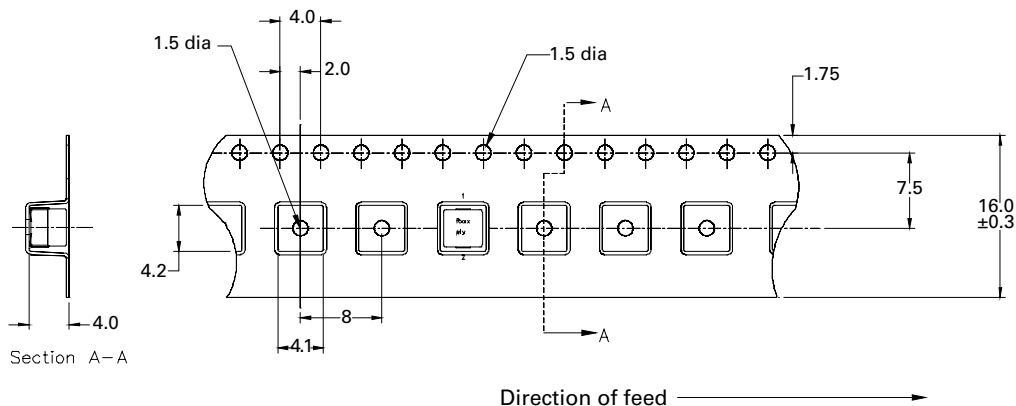
Supplied in tape and reel packaging, 1,800 parts per 13" diameter reel



Packaging information (mm)

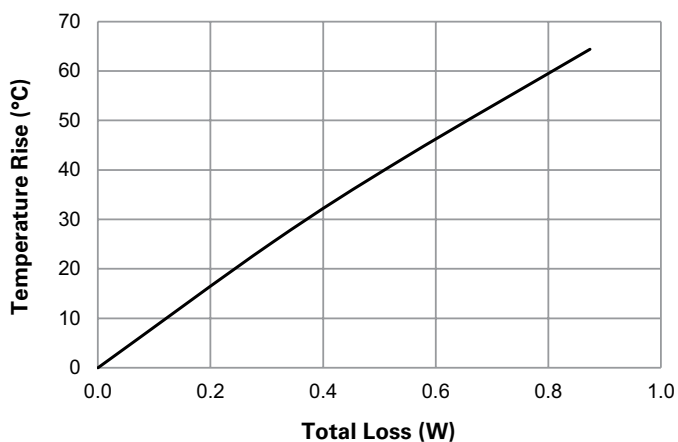
FP0404R1-R065-R, R080-R, R100-R, R110-R

Supplied in tape and reel packaging, 1,800 parts per 13" diameter reel

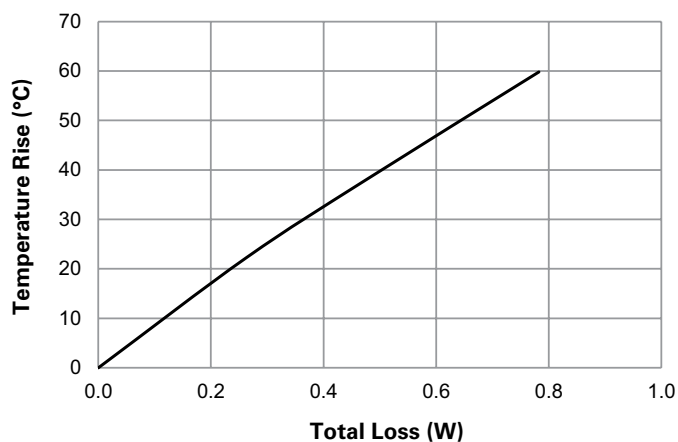


Temperature rise vs. total loss

FP0404R1-R022-R

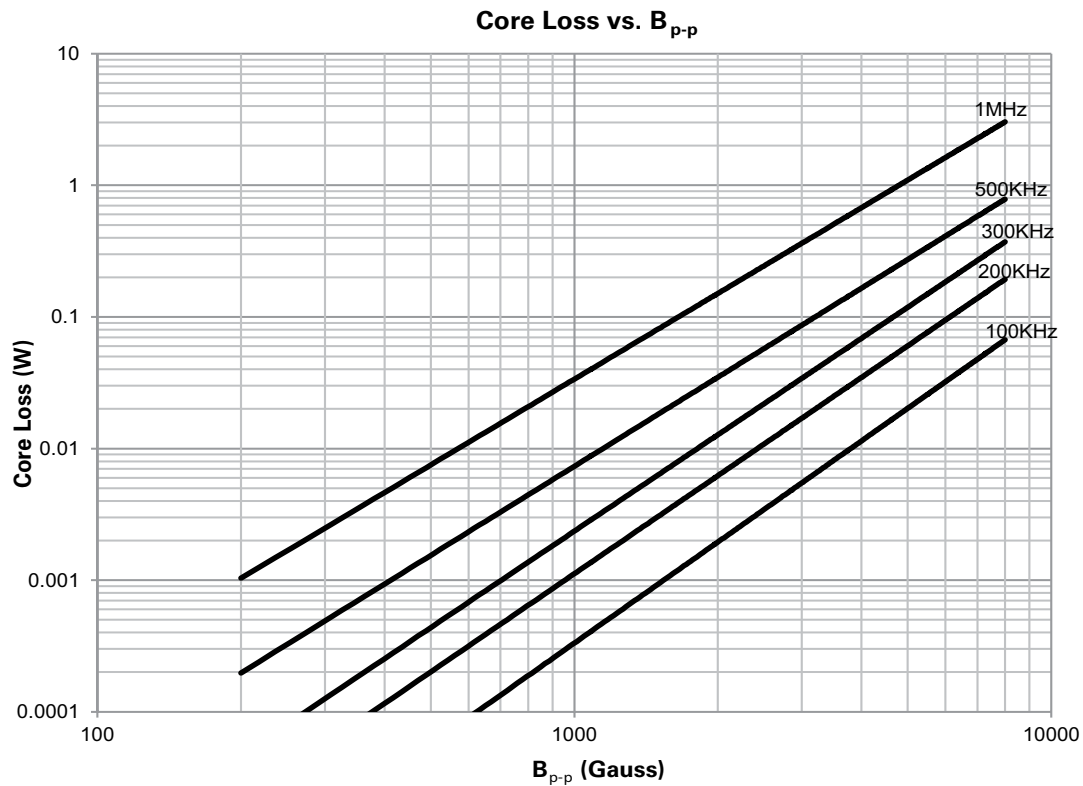


FP0404R1-R065-R, R080, R100-R, R110-R

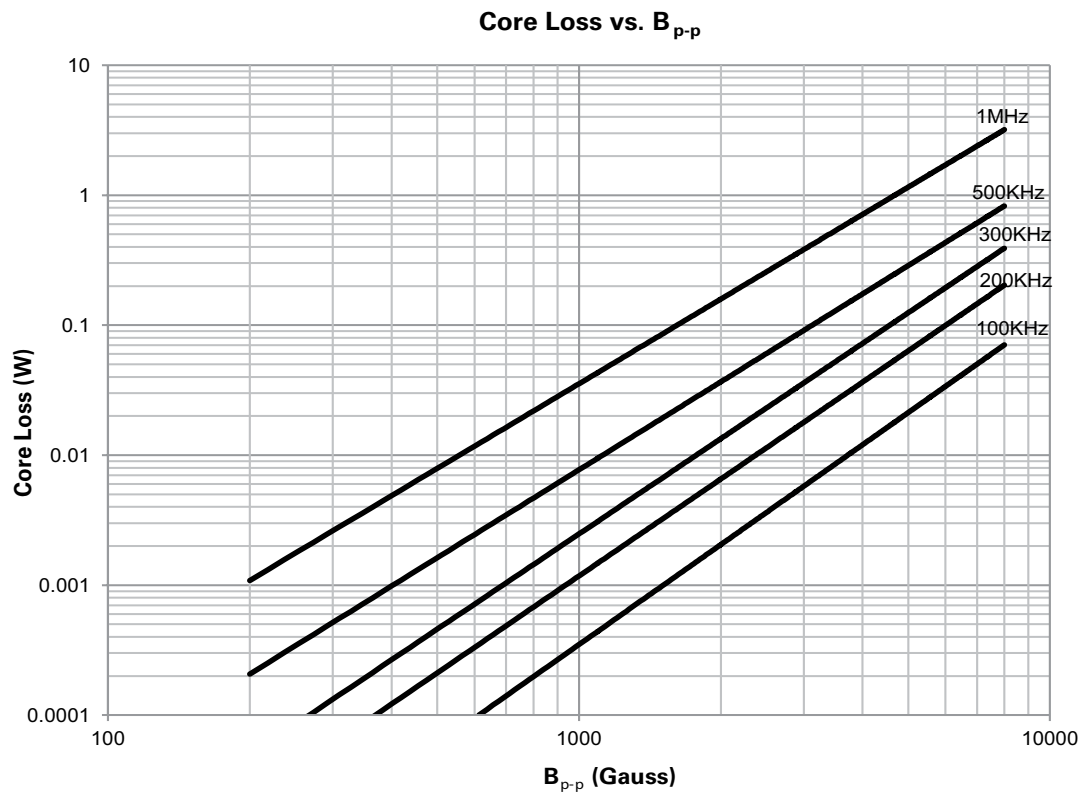


Core loss

FP0404R1-R022-R

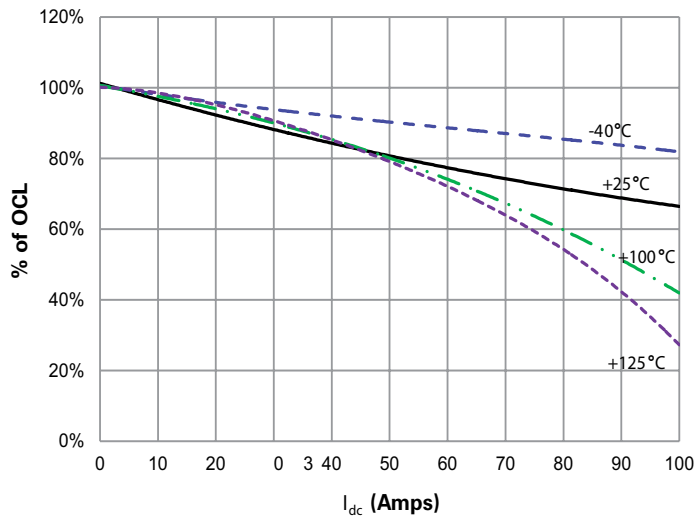


FP0404R1-R065-R, R080-R, R100-R, R110-R

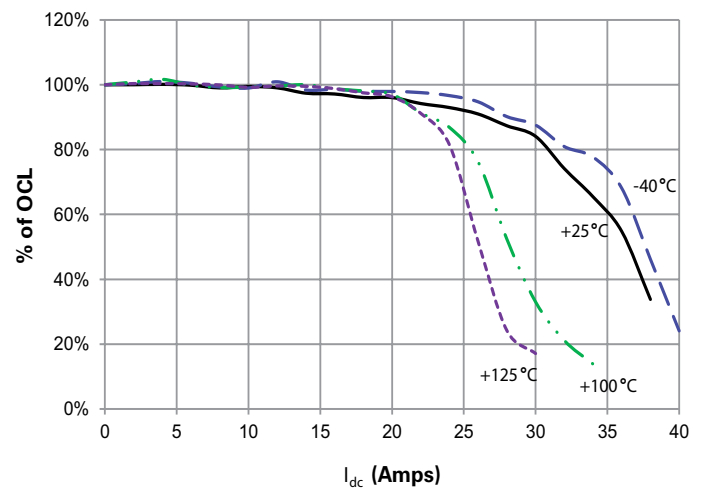


Inductance characteristics

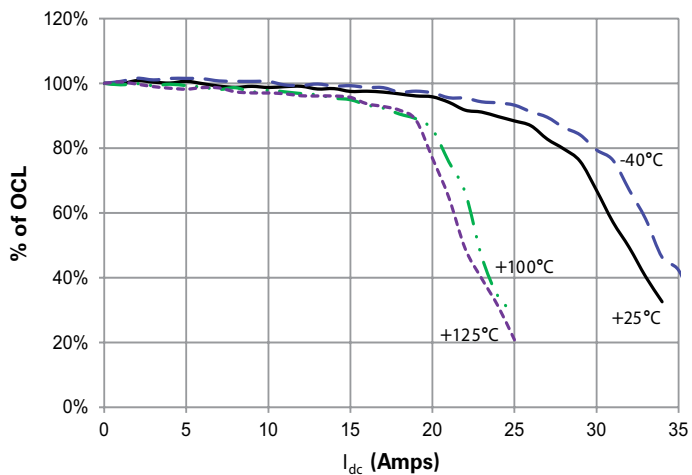
FP0404R1-R022-R



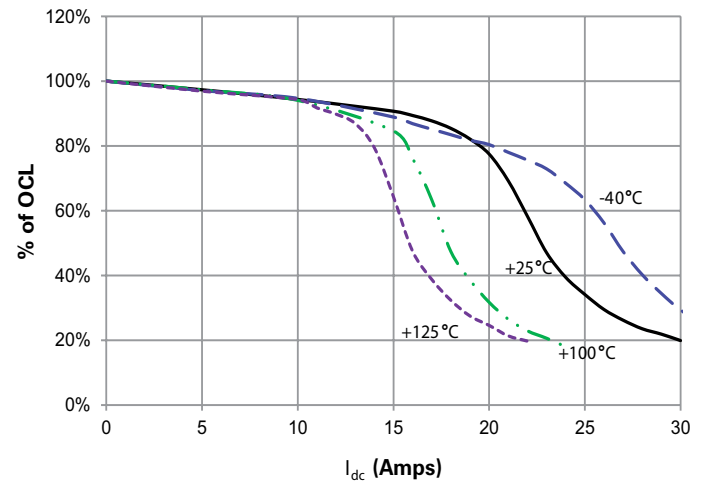
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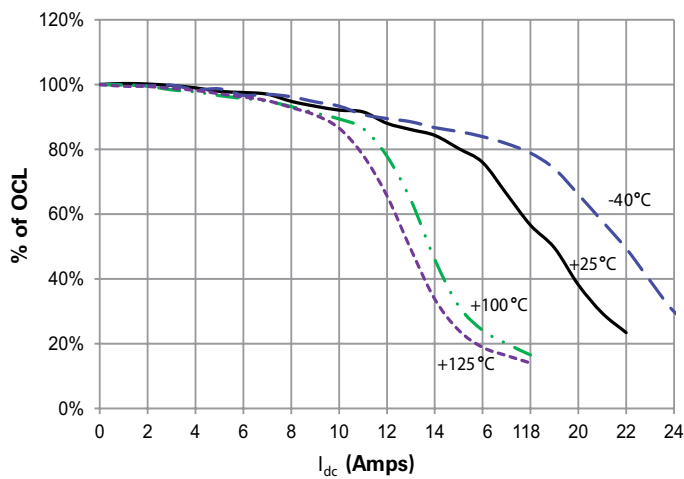
FP0404R1-R080-R



FP0404R1-R100-R



FP0404R1-R110-R



Solder reflow profile

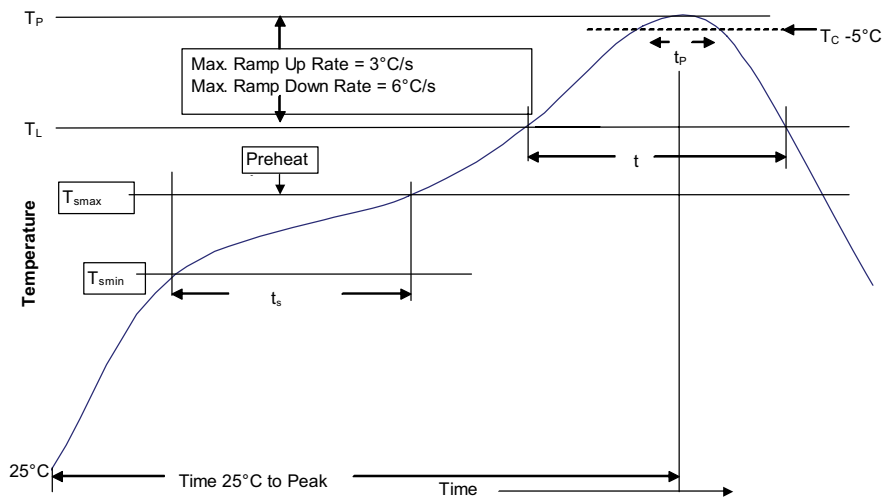


Table 1 - Standard SnPb Solder (T_C)

Package Thickness	Volume mm^3 <350	Volume mm^3 ≥ 350
<2.5mm)	235°C	220°C
$\geq 2.5\text{mm}$	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 JEDEC J-STD-020

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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