#### **Product specifications**

Part number⁵	OCL¹ (nH) ±10%	FLL <sup>2</sup> (nH) minimum	I з (А)	I <sub>sat</sub> 1 <sup>4</sup> (A)	I <sub>sa</sub> ,2 <sup>5</sup> (Å)	(Å)	DCR (mΩ) @ +20 °C ±10%	K-factor <sup>7</sup>
FP1012V2-R100-R	100	72	84	125	105	100	0.125	305
FP1012V2-R120-R	120	86	84	105	88	81	0.125	305
FP1012V2-R150-R	150	108	84	83	70	66	0.125	305
FP1012V2-R330-R	330	231	84	36	28	26	0.125	305

- 1. Open Circuit Inductance (OCL) Test parameters: 100 kHz, 0.1 Vrms, 0.0 Adc, +25  $^{\circ}\text{C}$
- 2. Full Load Inductance (FLL) Test parameters: 100 kHz, 0.1 Vrms,  $I_{\rm sat}$ 1, +25 °C
- 3. I<sub>mac</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 underworst case operating conditions verified in the end application.
- 4.  $I_{sat}1$  : Peak current for approximately 20% rolloff @ +25  $^{\circ}\text{C}$
- 5. I<sub>sat</sub>2 : Peak current for approximately 20% rolloff @ +100 °C
- 6.  $I_{sat}3$  : 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<sup>-3</sup>. Bp-p:(Gauss), K: (K-factor from table), L: (Inductance in nH), ΔI (Peak to peak ripple current in Amps).
- 8. Part Number Definition: FP1012Vx-Rxxx-R

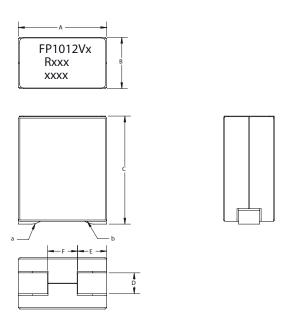
FP1012 = Product code and size

Vx= Version indicator

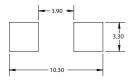
Rxxx=Inductance value in µH, R=decimal point

-R suffix = RoHS compliant

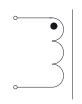
#### **Dimensiuons-mm**



#### Recommended pad layout



## Schematic



## Dimension

4	10 maximum
3	6.0 maximum
0	12 maximum
)	2.3 nominal
E	3.2 nominal
	3.3 nominal

Part marking: FP1012=Product code and size, Vx=Version indicator, Rxxx= inductance value in uH, R=decimal point, xxxx= lot code

Tolerances are ±0.15 millimeters unless stated otherwise

Tolerances are ±0.15 minimineters unless stated otherwise

All soldering surfaces to be coplanar within 0.1 millimeters

Pad layout tolerances are ±0.1 millimeters unless stated otherwise

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

Do not route traces or vias underneath the inductor

24.00

11.50

1.75

4.00

20.00

2.00

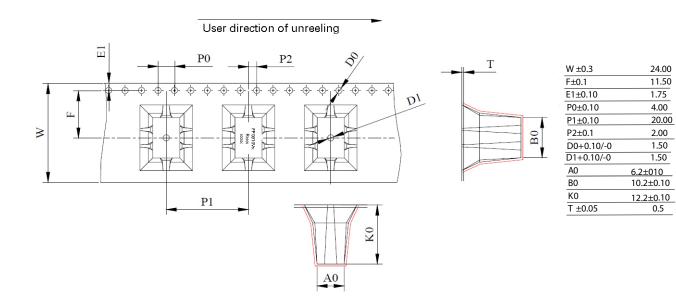
1.50

1.50

0.5

# Packaging information- mm

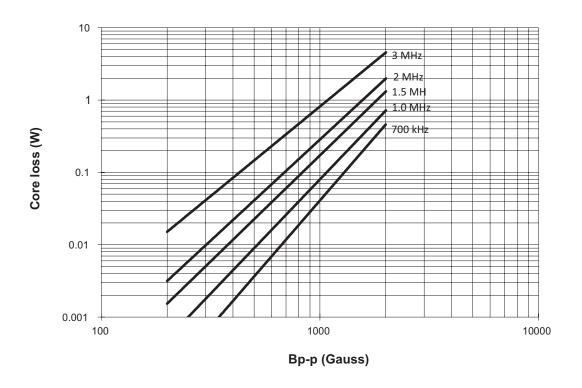
Supplied in tape and reel packaging, 250 parts per 13" diameter reel



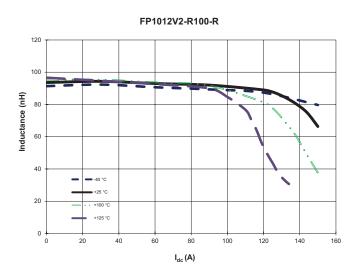
## Temperature rise vs. total loss

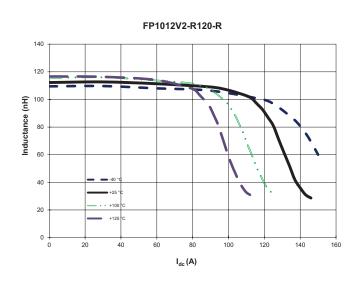


# Core loss vs Bp-p

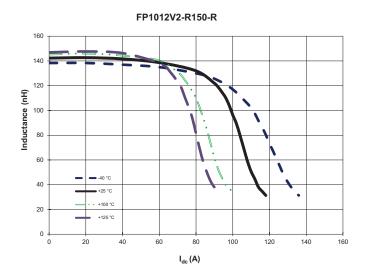


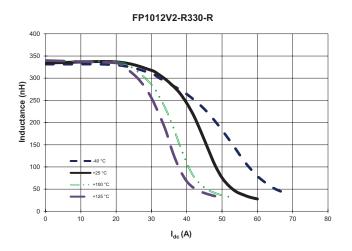
## Inductance characteristics





# Inductance characteristics





### Solder reflow profile

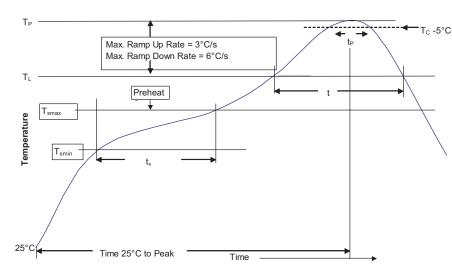


Table 1 - Standard SnPb solder (T<sub>C</sub>)

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

Table 2 - Lead (Pb) free solder (T<sub>C</sub>)

Package thickness	Volume mm³ <350	Volume mm³ 350 - 2000	Volume mm³ >2000
<1.6 mm	260 °C	260 °C	260 °C
1.6 – 2.5 mm	260 °C	250 °C	245 °C
>2.5 mm	250 °C	245 °C	245 °C

#### Reference J-STD-020

Profile feature	Standard SnPb solder	Lead (Pb) free solder
Preheat and soak • Temperature min. (T <sub>smin</sub> )	100 °C	150 °C
• Temperature max. (T <sub>smax</sub> )	150 °C	200 °C
• Time (T <sub>Smin</sub> to T <sub>Smax</sub> ) (t <sub>S</sub> )	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 <sub>p</sub> )** within 5 °C of the specified classification temperature (T <sub>C</sub> )	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.

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<sup>\*</sup> Tolerance for peak profile temperature  $(\mathsf{T}_p)$  is defined as a supplier minimum and a user maximum.

\*\* Tolerance for time at peak profile temperature  $(\mathsf{t}_p)$  is defined as a supplier minimum and a user maximum.