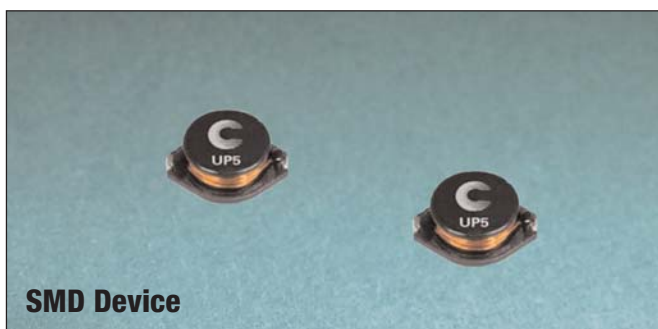


High Power, Drum Inductors

UNI-PAC™ UP5 Series



Description

- Halogen free
- 125°C Maximum total temperature operation
- 18.54 x 15.24 x 7.11mm maximum surface mount package
- Ferrite core material
- Inductance range from 1.0μH to 1000μH
- Current range from 0.56 to 20 Amps
- Frequency range up to 1MHz
- RoHS compliant

Applications

- Buck or boost inductor
- Desktop computer
- Workstations/servers
- DVD Players
- Portable power devices
- Base stations
- Industrial power supplies
- Output filter chokes
- Test equipment instrumentation

Environmental Data

- Storage temperature range: -40°C to +125 °C
- Operating temperature range: -40°C to +125°C (ambient + self-temperature rise)
- Solder reflow temperature: J-STD-020D compliant

Packaging

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

Product Specifications

Part Number ⁵	OCL ¹	I _{rms} ²	I _{sat} ³	SRF MHz	DCR mΩ@20°C	K-factor ⁴
	μH ± 20%	Amps	Amps@25°C	Typical	Maximum	
UP5-1R0-R	1.0	8.6	20.0	140	9.0	73.61
UP5-1R5-R	1.5	7.5	18.0	110	12.0	60.22
UP5-2R2-R	2.2	7.1	16.0	75.0	14.0	50.96
UP5-3R3-R	3.3	6.2	14.0	70.0	18.0	44.16
UP5-5R6-R	5.6	5.3	12.0	45.0	20.0	31.55
UP5-100-R	10.0	4.3	10.0	21.0	31.0	24.54
UP5-150-R	15.0	4.0	8.0	16.0	36.0	20.07
UP5-220-R	22.0	3.5	7.0	13.0	47.0	16.99
UP5-330-R	33.0	3.0	5.5	11.0	66.0	14.09
UP5-470-R	47.0	2.6	4.5	9.0	86.0	11.62
UP5-680-R	68.0	2.3	3.5	6.5	130	9.60
UP5-101-R	100	1.8	3.0	5.7	190	7.98
UP5-151-R	150	1.5	2.6	4.5	250	6.56
UP5-221-R	220	1.2	2.4	3.7	380	5.39
UP5-331-R	330	1.0	1.9	3.0	560	4.39
UP5-471-R	470	0.82	1.4	2.7	850	3.70
UP5-681-R	680	0.72	1.2	2.2	1100	3.08
UP5-102-R	1000	0.56	1.0	2.0	1800	2.54

1 Open Circuit Inductance (OCL) Test Parameters: 100kHz, 1.0V_{rms}, 0.0A_{dc}

2 I_{rms}: DC current for an approximate ΔT 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 the part temperature not exceed 125°C under worst case operating conditions verified in the end application.

3 I_{sat}: Peak current for approximately 10% rolloff at 25°C.

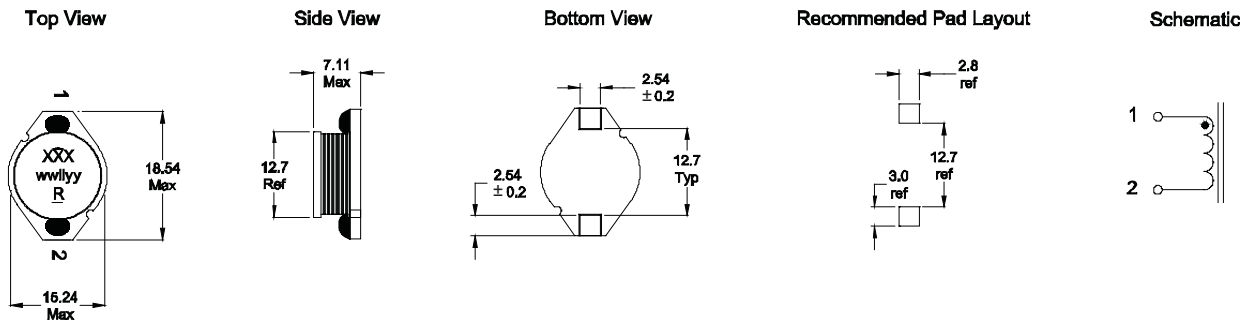
4 K-factor: Used to determine B_{p-p} for core loss (see graph). B_{p-p} = K * L * ΔI, B_{p-p}: (Gauss),

K: (K-factor from table), L: (inductance in μH), ΔI (peak-to-peak ripple current in amps).

6 Part Number Definition: UP5-xxx-R

- UP5 = Product code and size
- xxx= Inductance value in μH, R = decimal point. If no R is present, then third digit equals the number of zeros.
- *-R" suffix = RoHS compliant

Dimensions - mm

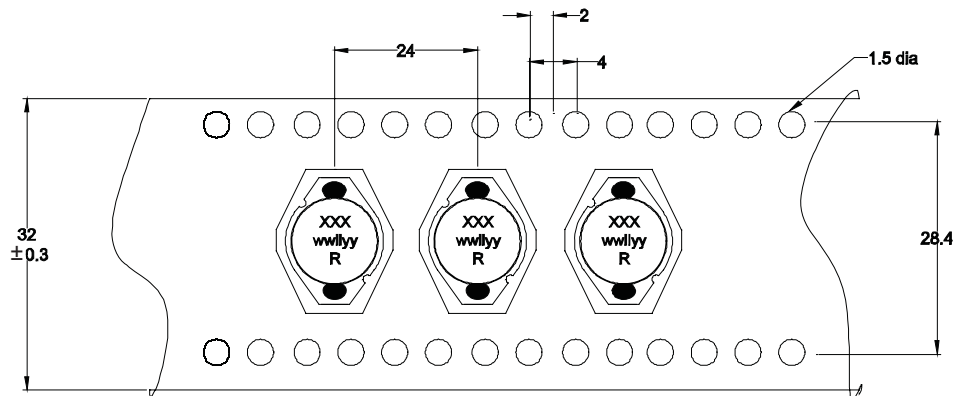


Part Marking: xxx = Inductance value in μH (R = Decimal point). If no "R" is present, then the third digit equals the number of zeros.

wwlyy = Date code

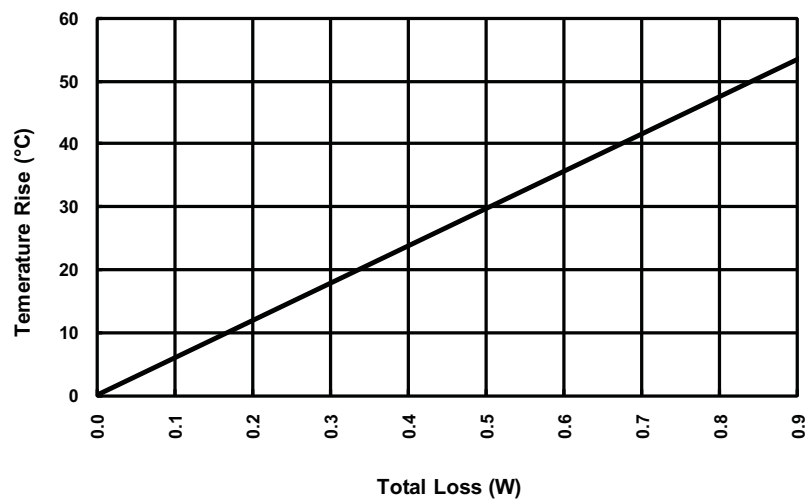
R = Revision level

Packaging Information - mm

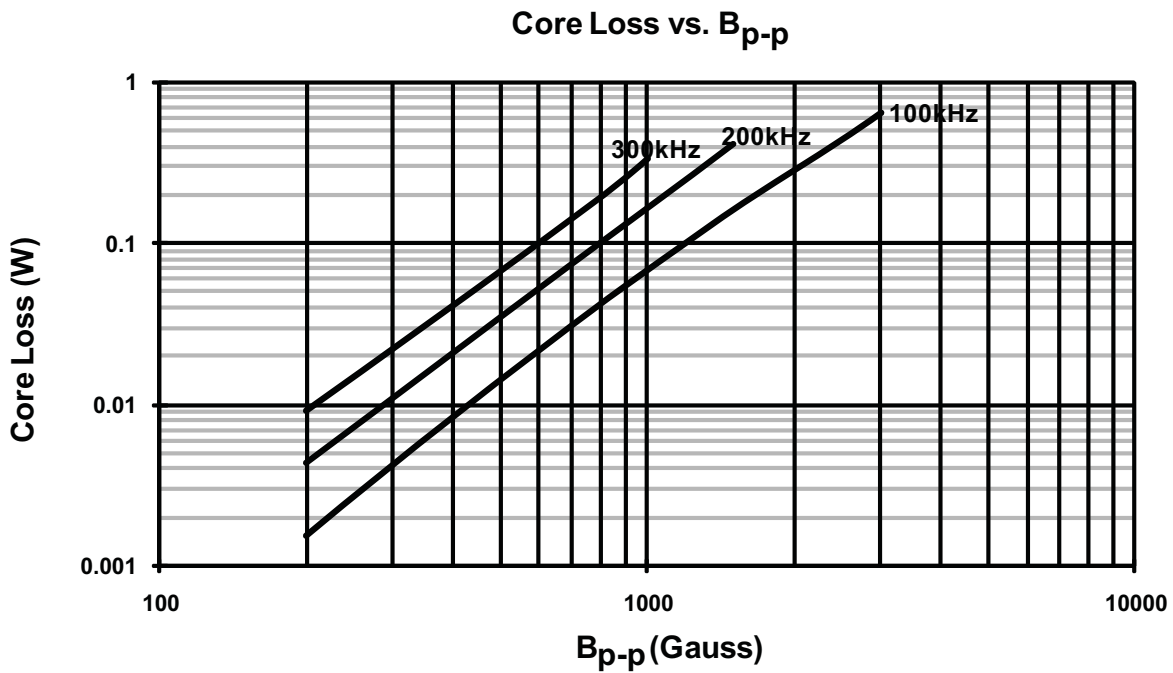


Supplied in tape-and-reel packaging, 250 parts per reel, 13" diameter reel.

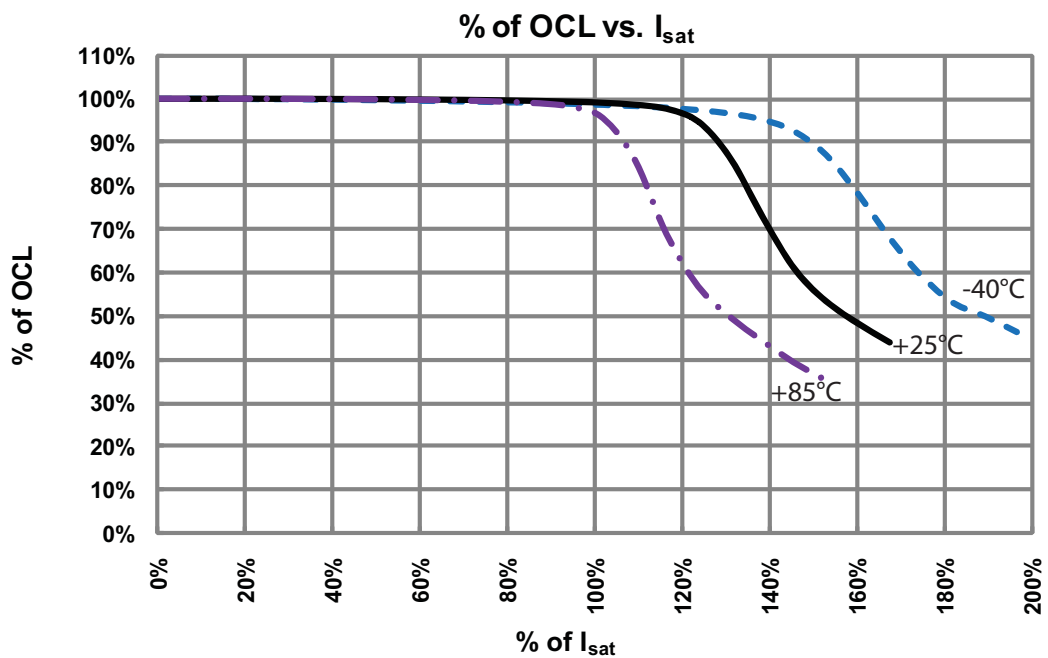
Temperature Rise vs. Total Loss



Core Loss



inductance Characteristics



Solder Reflow Profile

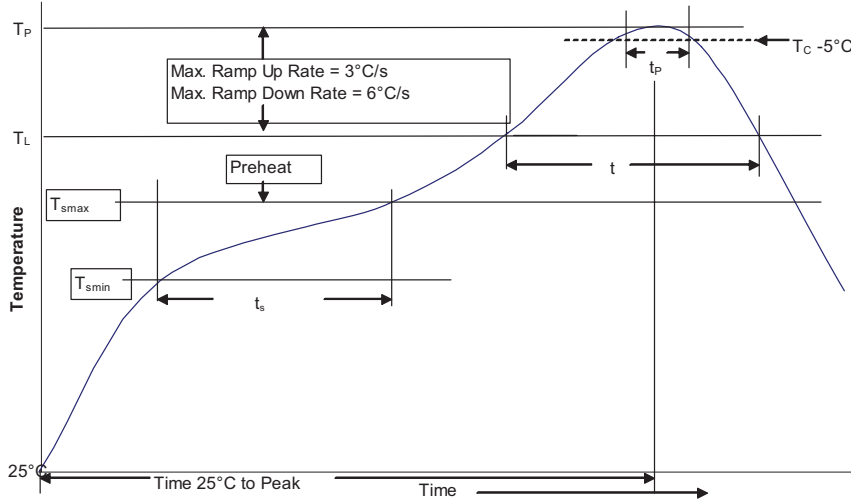


Table 1 - Standard SnPb Solder (T_c)

Package Thickness	Volume ≤ 350 mm ³	Volume ≥ 350 mm ³
<2.5mm	235°C	220°C
≥ 2.5 mm	220°C	220°C

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

Package Thickness	Volume ≤ 350 mm ³	Volume 350 - 2000 mm ³	Volume >2000 mm ³
<1.6mm	260°C	260°C	260°C
1.6 - 2.5mm	260°C	250°C	245°C
>2.5 mm	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
	• Temperature max. (T_{smax})	150°C
	• Time (T_{smin} to T_{smax}) (t_s)	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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