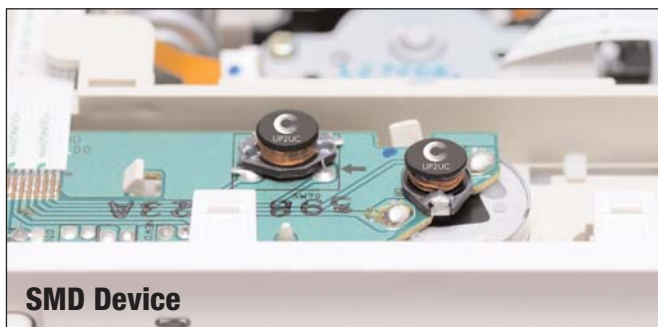


# High Power, Drum Inductors

## UNI-PAC™ UP2UC Series



**SMD Device**

### Description

- Halogen Free
- 125°C maximum total temperature operation
- 9.5 x 12.7 x 5.21mm drum core
- Ferrite core material
- Inductance range from 1.0μH to 1000μH
- Current range from 0.30 to 9.0 amps
- RoHS compliant

### Applications

- Buck or boost inductor
- PDAs
- Desktop computer
- DVD players
- Portable power devices
- Output filter chokes
- Test equipment instrumentation

### Environmental Data

- Storage temperature range: -40°C to +125°C
- Operating temperature range: -40°C to +125°C (with derated current)
- Solder reflow temperature: J-STD-020D compliant

### Packaging

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

### Product Specifications

Part Number <sup>5</sup>	OCL <sup>1</sup> μH ± 20%	I <sub>rms</sub> <sup>2</sup> Amps	I <sub>sat</sub> <sup>3</sup> Amps@25°C	SRF MHz Typical	DCR mΩ@20°C Typical	DCR mΩ@20°C Maximum	K-factor <sup>4</sup>
UP2UC-1R0-R	1.0	6.8	9.0	100	4.0	9.0	216
UP2UC-1R5-R	1.5	6.4	8.0	90.0	4.4	10.0	177
UP2UC-2R2-R	2.2	6.1	7.0	80.0	5.8	12.0	130
UP2UC-3R3-R	3.3	5.4	6.4	65.0	9.9	15.0	114
UP2UC-4R7-R	4.7	4.8	5.4	45.0	12.0	18.0	92.52
UP2UC-6R8-R	6.8	4.4	4.6	38.0	25.8	27.0	77.72
UP2UC-100-R	10.0	3.9	3.8	30.0	25.9	38.0	62.68
UP2UC-150-R	15.0	3.1	3.0	27.0	35.4	46.0	49.82
UP2UC-220-R	22.0	2.7	2.6	19.0	55.9	85.0	41.34
UP2UC-330-R	33.0	2.1	2.0	15.0	81.6	100	34.09
UP2UC-470-R	47.0	1.8	1.6	12.0	120	140	29.00
UP2UC-680-R	68.0	1.5	1.4	10.0	145	200	24.59
UP2UC-101-R	100	1.3	1.2	9.0	211	280	20.89
UP2UC-151-R	150	1.0	1.0	6.0	347	400	15.80
UP2UC-221-R	220	0.80	0.80	5.0	491	610	13.04
UP2UC-331-R	330	0.60	0.60	4.5	750	1020	10.85
UP2UC-471-R	470	0.50	0.50	3.5	1188	1270	9.39
UP2UC-681-R	680	0.40	0.40	2.5	1811	2020	7.56
UP2UC-102-R	1000	0.30	0.30	2.0	2757	3000	6.13

1 Open Circuit Inductance (OCL) Test Parameters: 100kHz, 0.25V<sub>rms</sub>, 0.0Adc

2 I<sub>rms</sub>: 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<sub>sat</sub>: Peak current for approximately 7.5% rolloff at 25°C.

4 K-factor: Used to determine B<sub>p-p</sub> for core loss (see graph). B<sub>p-p</sub> = K \* L \* ΔI, B<sub>p-p</sub>: (Gauss), K: (K-factor from table), L: (inductance in μH), ΔI (peak-to-peak ripple current in amps).

6 Part Number Definition: UP2CU-xxx-R

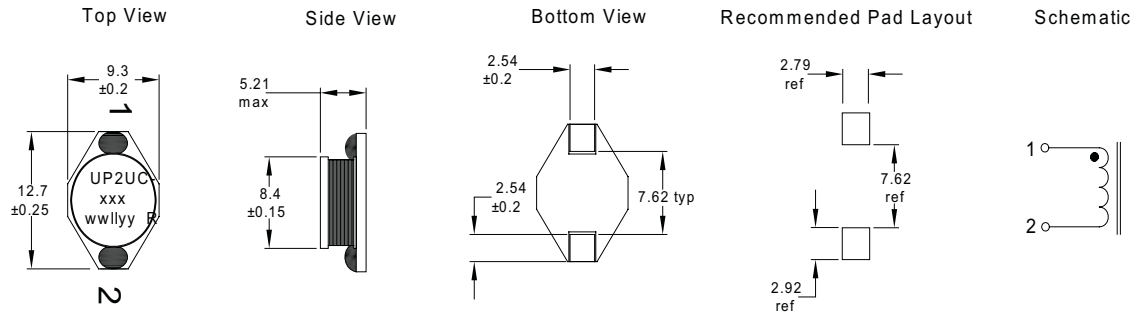
• UP2CU = Product code and size

• 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

Tolerances are  $\pm 0.0254$ mm unless otherwise specified.



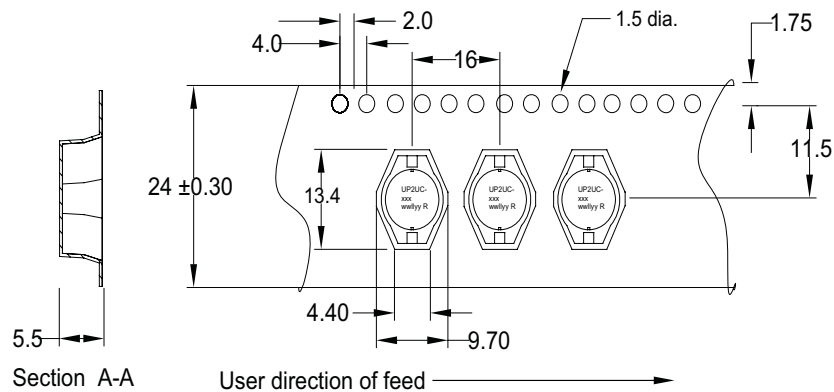
Part Marking: UP2UC

xxx = Inductance value in  $\mu$ H (R = Decimal point). If no "R" is present, then the third digit equals the number of zeros.

wwlyy = Date code

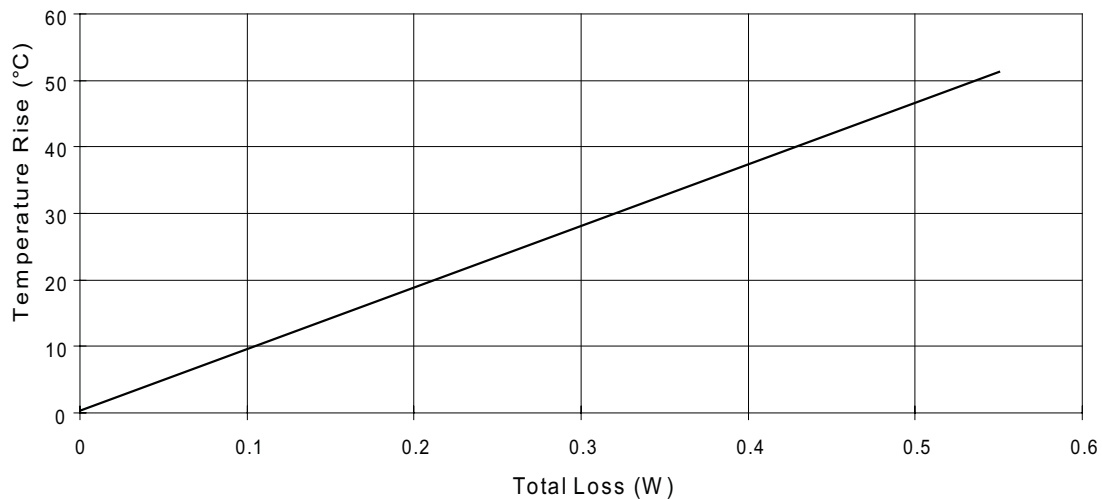
R = Revision level

## Packaging Information - mm

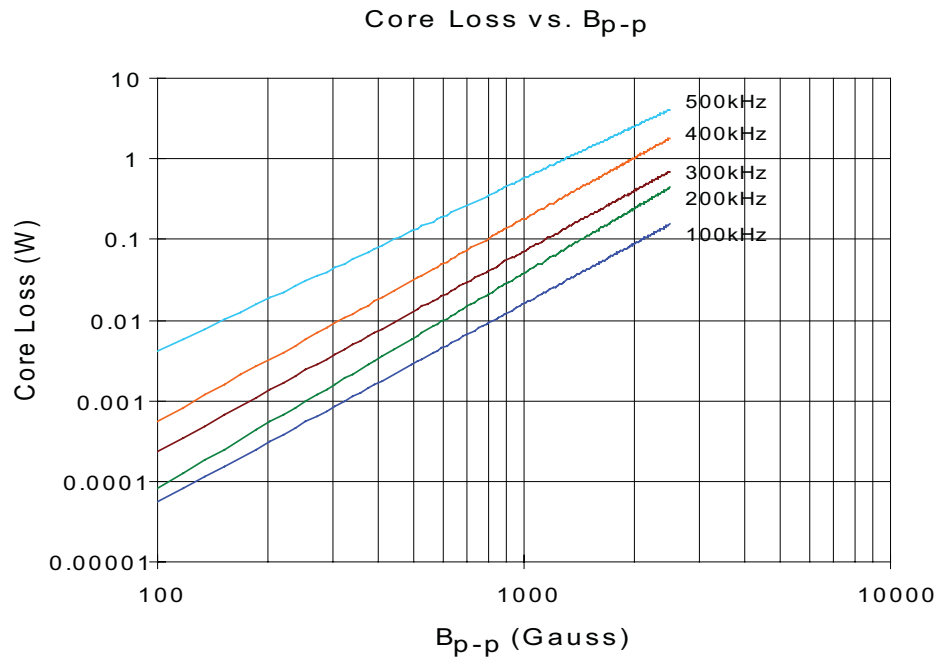


Supplied in tape-and-reel packaging, 600 parts per reel, 13" diameter reel.

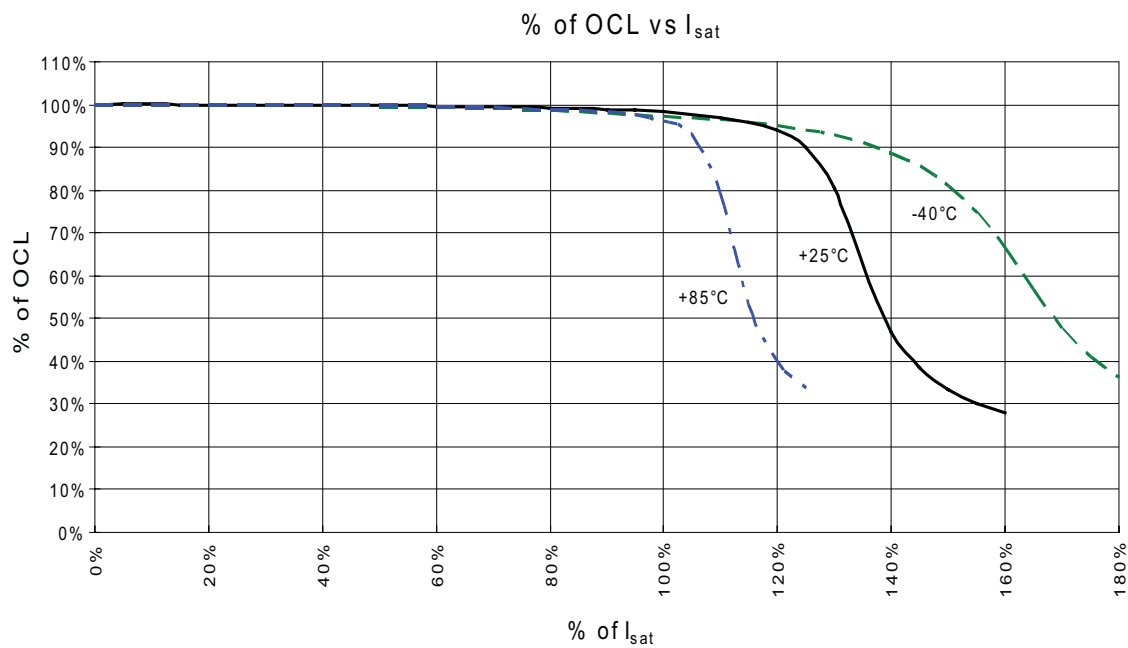
## Temperature Rise vs. Total Loss



## Core Loss



## Inductance Characteristics



## Solder Reflow Profile

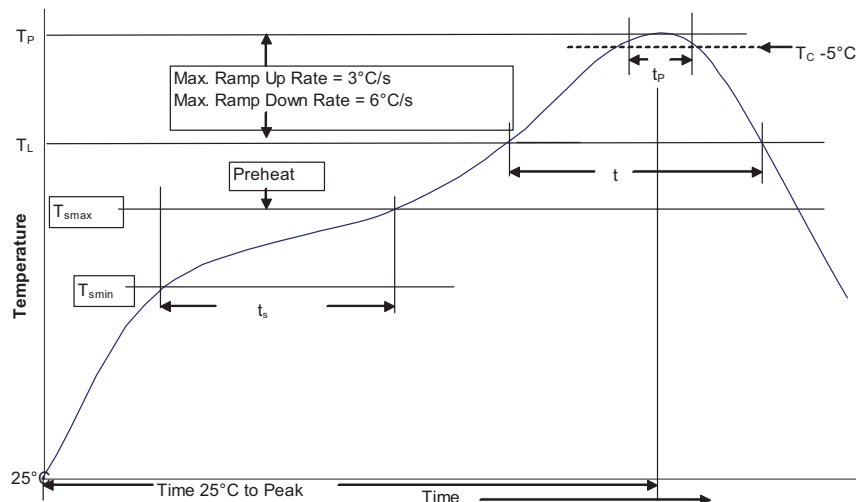


Table 1 - Standard SnPb Solder ( $T_C$ )

Package Thickness	Volume $\text{mm}^3$ <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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