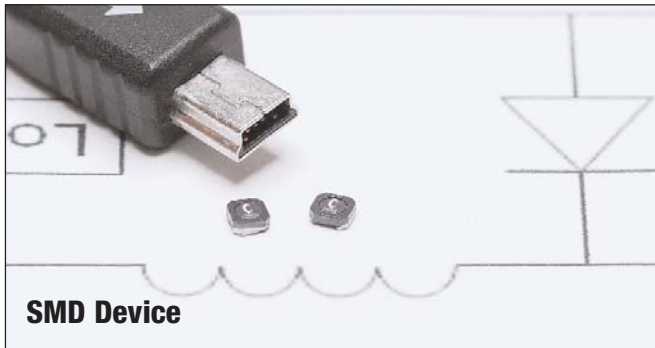


# Low Profile, High Power, Shielded Drum Inductors

## SDH2812 Series



**SMD Device**

### Description

- Halogen Free
- 125°C maximum total temperature operation
- 3.2 x 3.0 x 1.2mm maximum shielded drum core
- Ferrite core material
- High power density, ultra-compact footprint
- Inductance range from 1.02μH to 97.7μH
- Current range from 0.217 to 1.95 Amps
- Magnetically shielded, low EMI
- RoHS compliant

### Applications

- Buck or boost inductor
- Cellular phones/ PDAs
- LED Photo flash
- LCD Displays
- Handheld/Mobile devices
- GPS Systems
- Digital cameras
- MP3 Players

### Environmental Data

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

### Packaging

- Supplied in tape and reel packaging, 4,500 parts per reel 13" diameter reel

### Product Specifications

Part Number <sup>5</sup>	OCL <sup>1</sup> (μH)	Part Marking Designator	I <sub>rms</sub> <sup>2</sup> (Amps)	I <sub>sat</sub> <sup>3</sup> @ 25°C (Amps)	DCR (Ω) @ 20°C (Typical)	DCR (Ω) @ 20°C (Maximum)	K-factor <sup>4</sup>
SDH2812-1R0-R	1.02±30%	O	1.45	1.95	0.062	0.083	1212
SDH2812-1R5-R	1.50±30%	A	1.33	1.71	0.082	0.102	1070
SDH2812-2R2-R	2.20±20%	B	1.26	1.53	0.095	0.114	866
SDH2812-3R3-R	3.20±20%	C	1.08	1.16	0.138	0.154	673
SDH2812-4R7-R	4.20±20%	D	0.900	1.000	0.200	0.224	587
SDH2812-6R8-R	6.60±20%	E	0.730	0.830	0.270	0.336	466
SDH2812-8R2-R	8.17±20%	F	0.660	0.780	0.380	0.417	404
SDH2812-100-R	9.67±20%	G	0.620	0.710	0.389	0.467	387
SDH2812-150-R	14.7±20%	H	0.500	0.570	0.620	0.721	308
SDH2812-220-R	21.6±20%	I	0.440	0.460	0.870	0.922	264
SDH2812-330-R	33.2±20%	J	0.350	0.380	1.37	1.43	209
SDH2812-470-R	46.7±20%	K	0.300	0.320	1.72	1.99	173
SDH2812-680-R	68.0±20%	L	0.270	0.270	2.46	2.70	148
SDH2812-820-R	82.2±20%	M	0.230	0.240	3.15	3.47	135
SDH2812-101-R	97.7±20%	N	0.217	0.218	3.61	3.97	122

1 Open Circuit Inductance (OCL) Test Parameters: 100kHz, 0.10V<sub>rms</sub>, 0.0Adc

2 I<sub>rms</sub>: DC current for an approximate temperature rise of 40°C without core loss. Derating is necessary for AC currents. PCB pad 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.

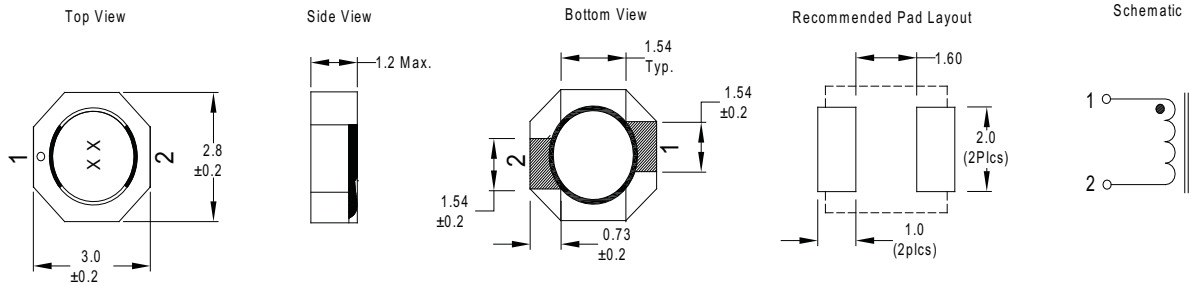
3 I<sub>sat</sub>: Peak current for approximately 30% rolloff at +25°C.

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).

5 Part Number Definition: SDH2812-xxx-R

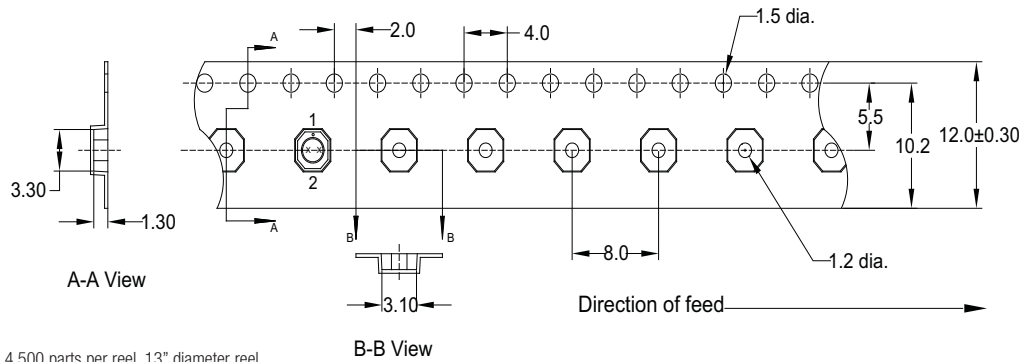
- SDH2812 = Product code and size
- xxx= Inductance value in μH, R = decimal point, If no R is present then 3<sup>rd</sup> digit equals number of zeros.
- "-R" suffix = RoHS compliant

### Dimensions - mm



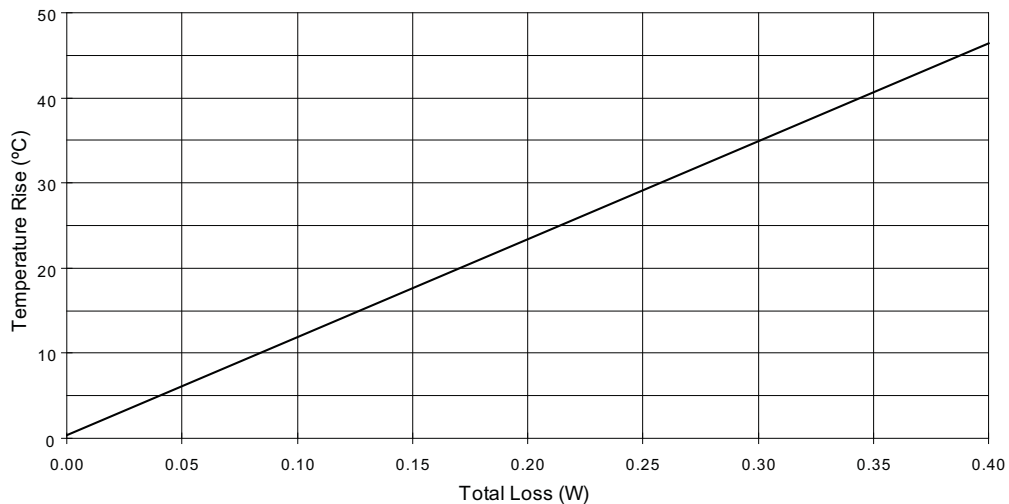
Two-digit (2) Part Marking:  
 1<sup>st</sup> Digit indicates inductance value per "Part Marking Designator" column in Product Specifications table  
 2<sup>nd</sup> Digit indicates bi-weekly production date code

### Packaging Information - mm

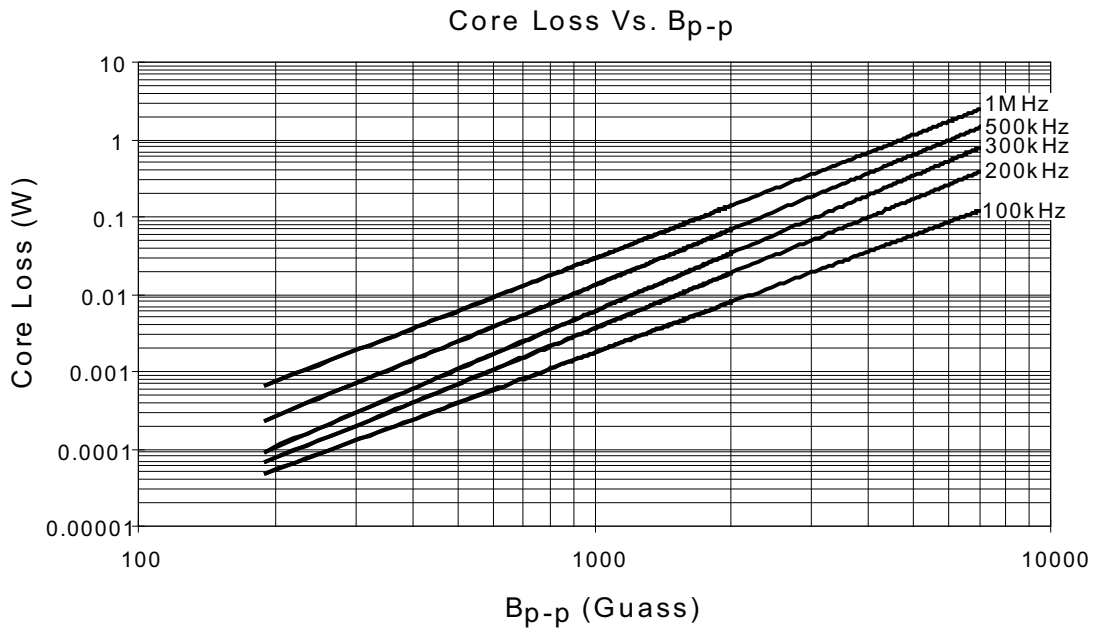


Supplied in tape-and-reel packaging, 4,500 parts per reel, 13" diameter reel.

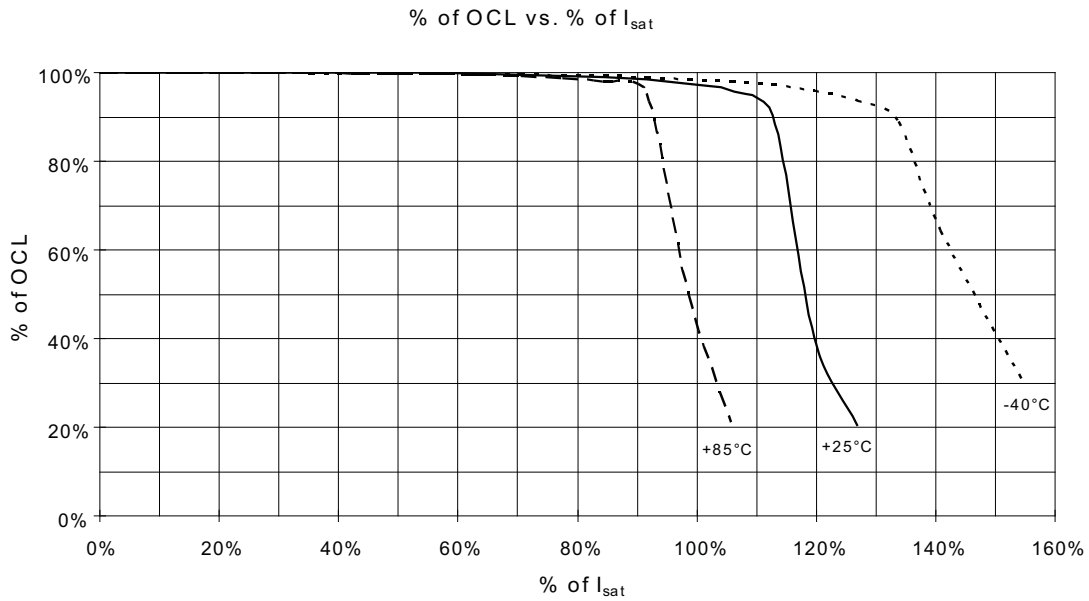
### Temperature Rise vs. Total Loss



## Core Loss



## Inductance Characteristics



## Solder Reflow Profile

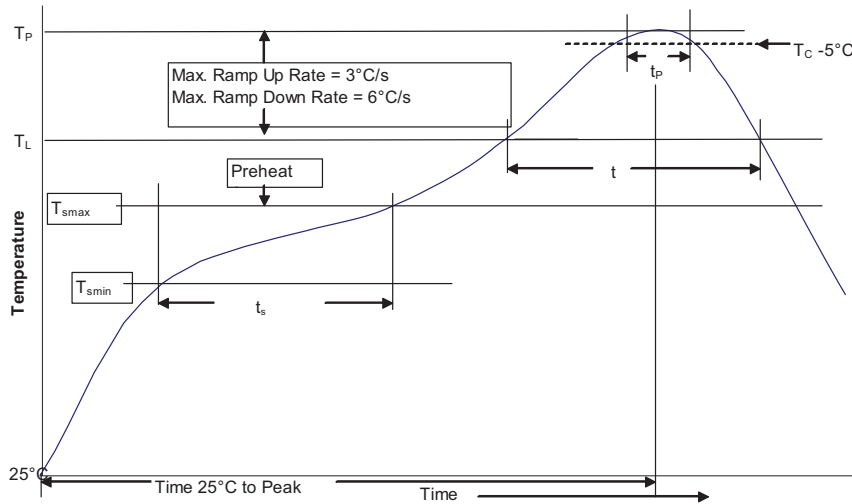


Table 1 - Standard SnPb Solder ( $T_C$ )

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.

### North America

Cooper Electronic Technologies  
1225 Broken Sound Parkway NW  
Suite F  
Boca Raton, FL 33487-3533  
Tel: 1-561-998-4100  
Fax: 1-561-241-6640  
Toll Free: 1-888-414-2645

Cooper Bussmann  
P.O. Box 14460  
St. Louis, MO 63178-4460  
Tel: 1-636-394-2877  
Fax: 1-636-527-1607

### Europe

Cooper Electronic Technologies  
Cooper (UK) Limited  
Burton-on-the-Wolds  
Leicestershire • LE12 5TH UK  
Tel: +44 (0) 1509 882 737  
Fax: +44 (0) 1509 882 786

Cooper Electronic Technologies  
Avda. Santa Eulalia, 290  
08223  
Terrassa, (Barcelona), Spain  
Tel: +34 937 362 812  
+34 937 362 813  
Fax: +34 937 362 719

### Asia Pacific

Cooper Electronic Technologies  
1 Jalan Kilang Timor  
#06-01 Pacific Tech Centre  
Singapore 159303  
Tel: +65 278 6151  
Fax: +65 270 4160

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