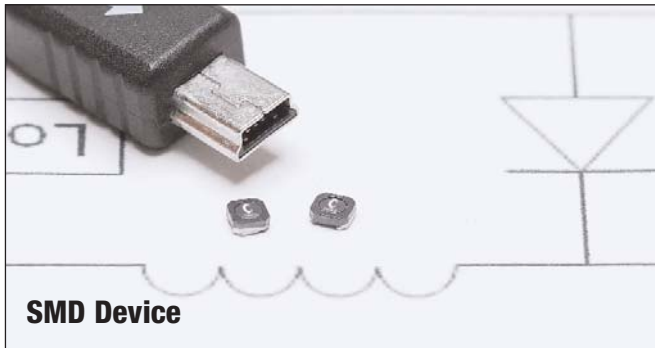


Low Profile, High Power, Shielded Drum Inductors

SDH2812 Series



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 ⁵ | OCL ¹ (μH) | Part Marking Designator | I _{rms} ² (Amps) | I _{sat} ³ @ 25°C (Amps) | DCR (Ω) @ 20°C (Typical) | DCR (Ω) @ 20°C (Maximum) | K-factor ⁴ |
|--------------------------|-----------------------|-------------------------|--------------------------------------|---|--------------------------|--------------------------|-----------------------|
| 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_{rms}, 0.0Adc

2 I_{rms}: 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.

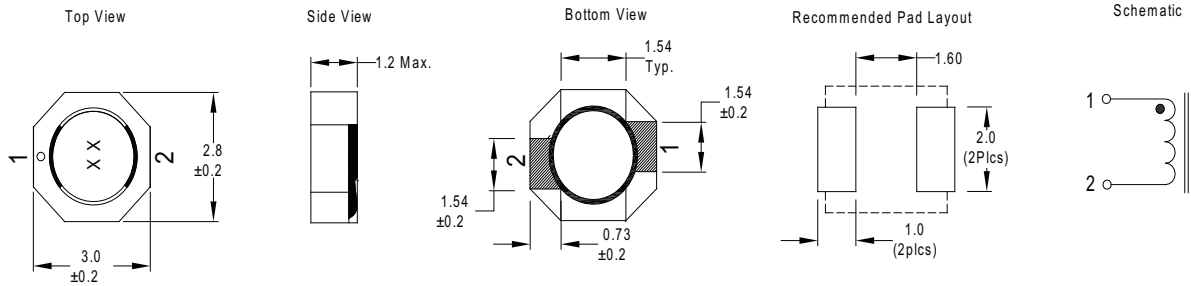
3 I_{sat}: Peak current for approximately 30% rolloff at +25°C.

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).

5 Part Number Definition: SDH2812-xxx-R

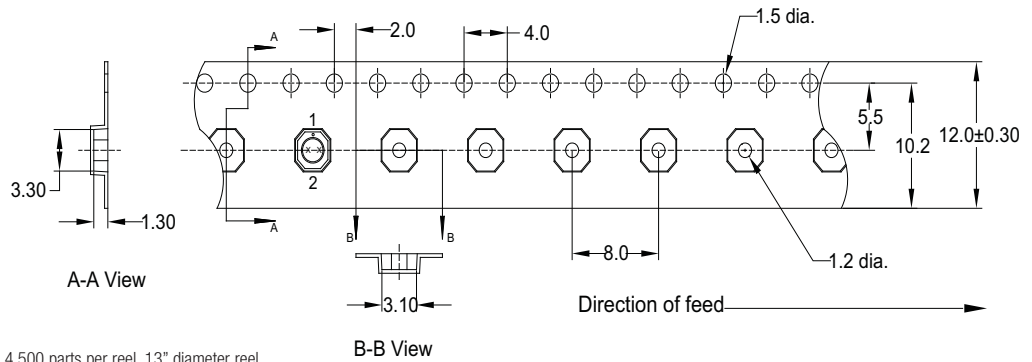
- SDH2812 = Product code and size
- xxx= Inductance value in μH, R = decimal point, If no R is present then 3rd digit equals number of zeros.
- "-R" suffix = RoHS compliant

Dimensions - mm



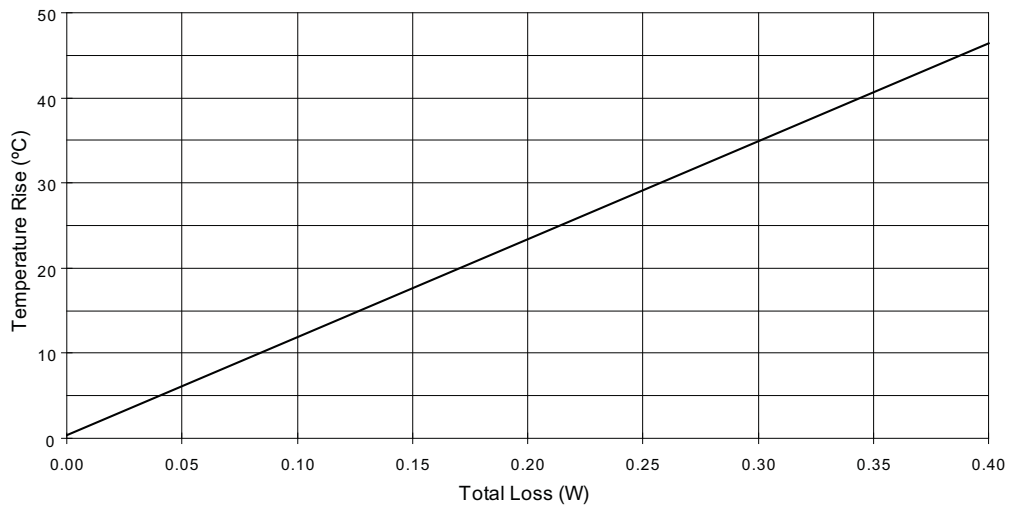
Two-digit (2) Part Marking:
 1st Digit indicates inductance value per "Part Marking Designator" column in Product Specifications table
 2nd Digit indicates bi-weekly production date code

Packaging Information - mm

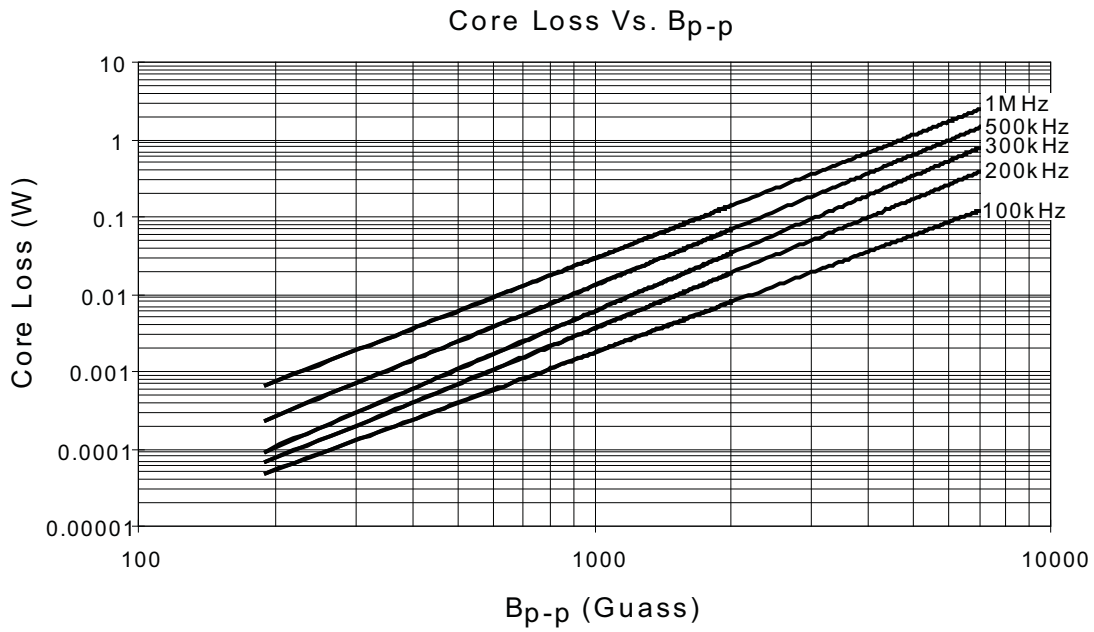


Supplied in tape-and-reel packaging, 4,500 parts per reel, 13" diameter reel.

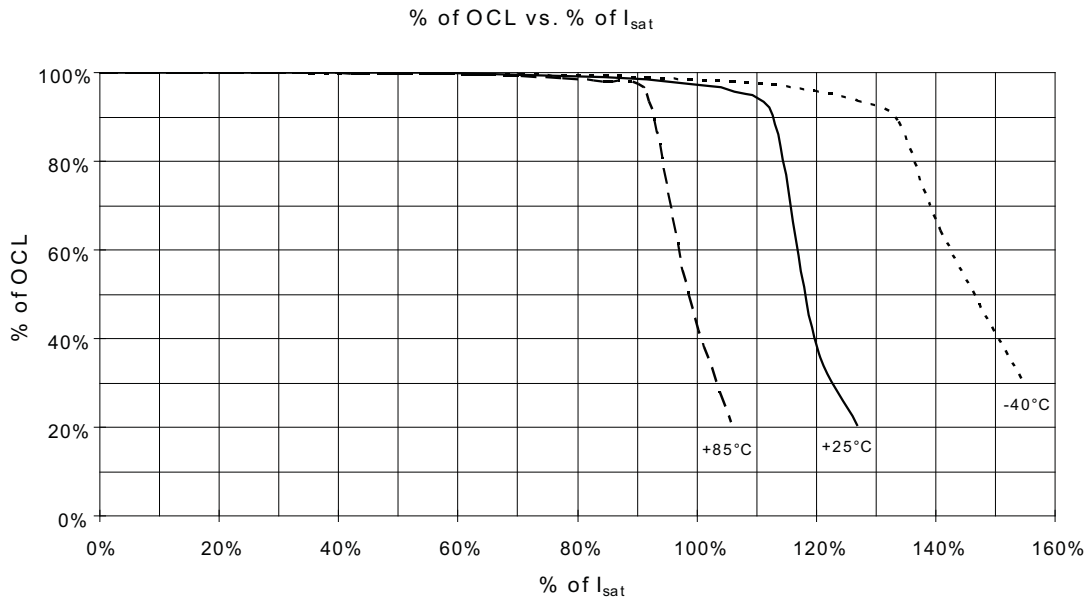
Temperature Rise vs. Total Loss



Core Loss



Inductance Characteristics



Solder Reflow Profile

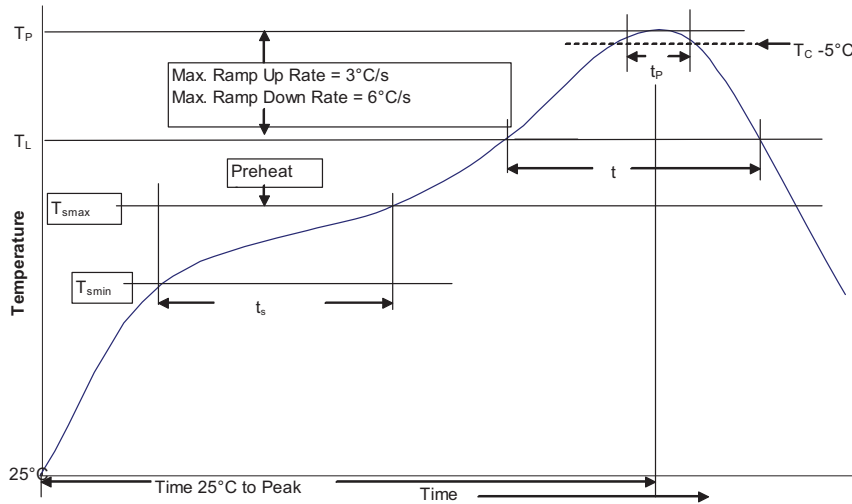


Table 1 - Standard SnPb Solder (T_c)

| Package Thickness | Volume 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 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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