HIGH CURRENT POWER INDUCTORS

SDL1108 SERIES

1. PART NO. EXPRESSION :

S D L 1 1 0 8 - R 4 7 M F

(a) (b) (c) (d)(e)

(a) Series code

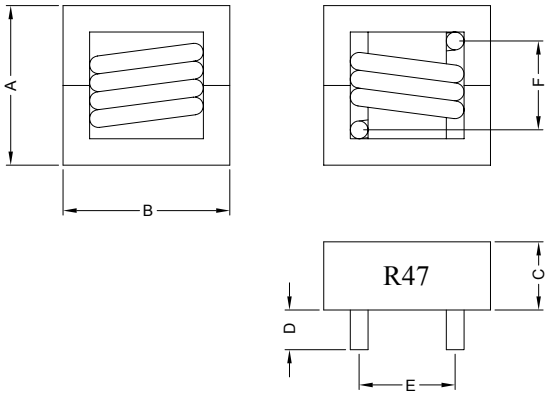
(b) Dimension code

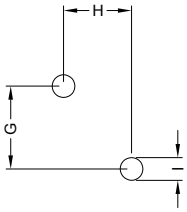
(c) Inductance code : R47 = 0.47uH

(d) Tolerance code : M = ±20%

(e) F : Lead Free

2. CONFIGURATION & DIMENSIONS :

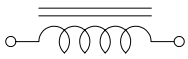




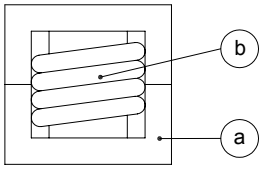
PCB Pattern

Part No.	A mm	B mm	C mm	D mm	E mm	F mm	G mm	H mm	I mm
SDL1108-R47MF	12.0 Max.	12.0 Max.	8.5 Max.	3.4±0.5	5.6±0.5	6.7±0.5	5.6±0.5	6.7±0.5	$1.8^{-0}_{+0.2}$
SDL1108-R60MF	12.0 Max.	12.0 Max.	8.5 Max.	3.4±0.5	5.6±0.5	6.7±0.5	5.6±0.5	6.7±0.5	$1.8^{-0}_{+0.2}$
SDL1108-1R0MF	12.0 Max.	12.0 Max.	8.5 Max.	3.4±0.5	6.6±0.5	6.2±0.5	6.6±0.5	6.2±0.5	$1.5^{-0}_{+0.2}$
SDL1108-1R2MF	12.5 Max.	12.0 Max.	8.5 Max.	3.4±0.5	6.6±0.5	6.2±0.5	6.6±0.5	6.2±0.5	$1.5^{-0}_{+0.2}$
SDL1108-1R5MF	12.0 Max.	12.0 Max.	8.5 Max.	3.4±0.5	7.2±0.5	6.2±0.5	7.2±0.5	6.2±0.5	$1.4^{-0}_{+0.2}$
SDL1108-2R0MF	12.0 Max.	12.0 Max.	8.5 Max.	3.4±0.5	6.5±0.5	6.4±0.5	6.5±0.5	6.4±0.5	$1.2^{-0}_{+0.2}$

3. SCHEMATIC :



4. MATERIALS :



(a) Core : Ferrite Core

(b) Wire : Enamelled Copper Wire

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SUPERWORLD ELECTRONICS (S) PTE LTD

5. GENERAL SPECIFICATION :

a) Operating temp. : -55°C to +125°C

b) Storage temp. : -55°C to +125°C

c) Ambient temp. : 20°C

d) Irms (A) : Will cause the coil temperature rise approximately ΔT=40°C without core loss

e) Isat (A) : Will cause L_0 to drop approximately 20% typical

f) Part temperature (ambient + temp. rise) : Should not exceed 125°C under worst case operating conditions

6. ELECTRICAL CHARACTERISTICS :

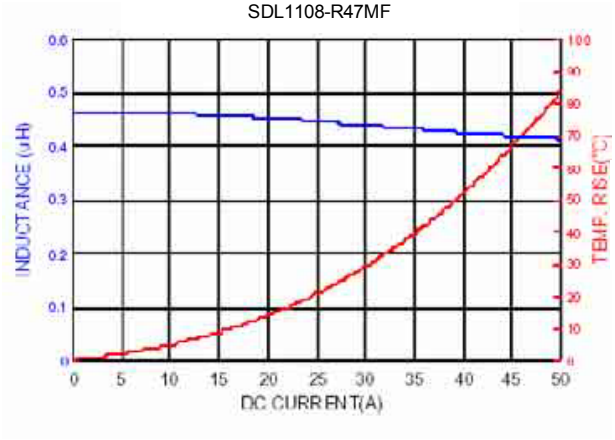
Part No.	Inductance L_0 (μH)	Test Frequency (Hz)	DCR (mΩ) ±8%	Irms (A) Max.	Isat (A) Max.
SDL1108-R47MF	0.47±20%	0.25V / 100K	0.8	40	50
SDL1108-R60MF	0.60±20%	0.25V / 100K	0.8	38	45
SDL1108-1R0MF	1.00±20%	0.25V / 100K	1.7	30	40
SDL1108-1R2MF	1.20±20%	0.25V / 100K	2.0	27	34
SDL1108-1R5MF	1.50±20%	0.25V / 100K	2.4	25	30
SDL1108-2R0MF	2.00±20%	0.25V / 100K	3.5	20	25

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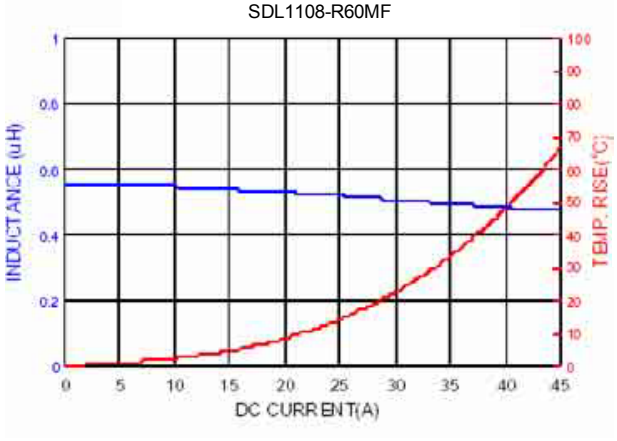
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7. CHARACTERISTICS CURVES :

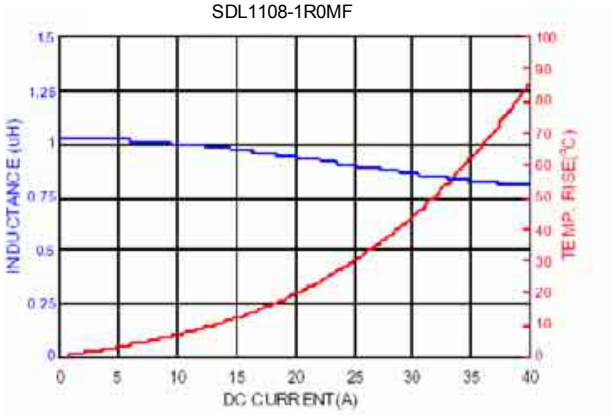
SDL1108-R47MF



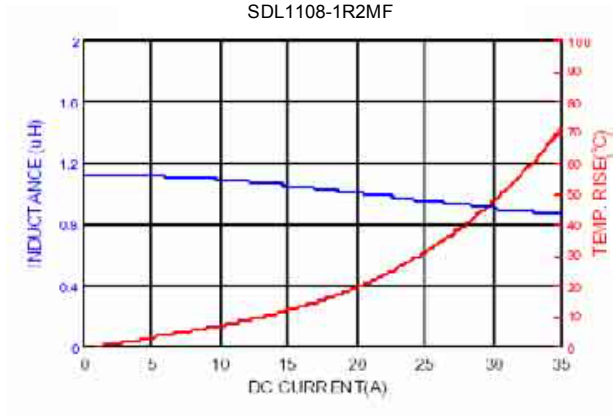
SDL1108-R60MF



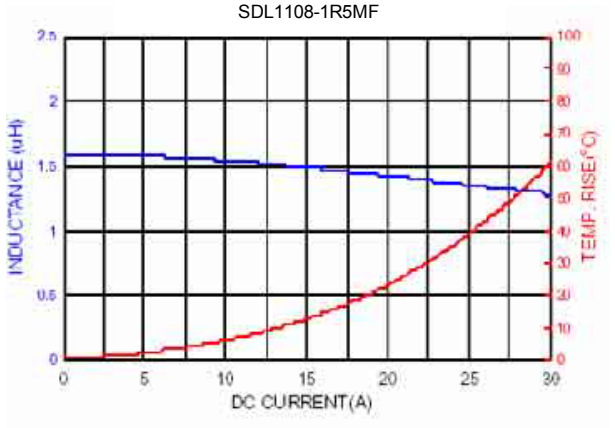
SDL1108-1R0MF



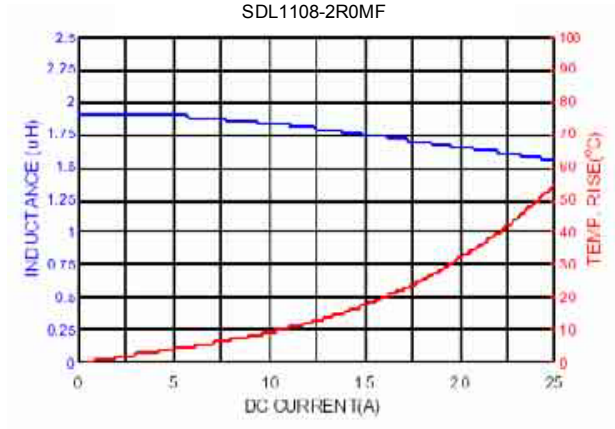
SDL1108-1R2MF



SDL1108-1R5MF



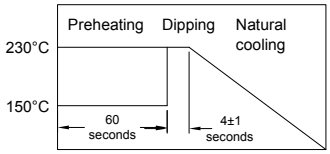
SDL1108-2R0MF

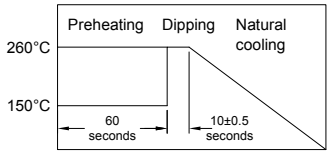


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8. RELIABILITY AND TEST CONDITION :

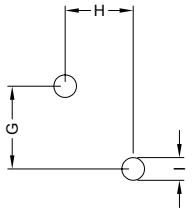
<table>
<tr><th>ITEM</th><th>PERFORMANCE</th><th>TEST CONDITION</th></tr>
<tr><td colspan="3">Electrical Characteristics Test</td></tr>
<tr><td>Inductance</td><td rowspan="2">Refer to standard electrical characteristics list</td><td>HP4284A, CH11025, CH3302, CH1320, CH1320S
LCR meter.</td></tr>
<tr><td>DCR</td><td>CH16502, Agilent33420A Micro-Ohm Meter.</td></tr>
<tr><td>Heat Rated Current (Irms)</td><td></td><td>Irms(A) will cause the coil temperature rise
approximately ΔT=40°C without core loss</td></tr>
<tr><td>Saturation Current (Isat)</td><td></td><td>Isat(A) will cause Lo to drop approximately 20%.</td></tr>
<tr><td colspan="3">Mechanical Performance Test</td></tr>
<tr><td>Solderability Test</td><td>More than 90% of the terminal electrode
should be covered with solder.</td><td>

After fluxing components shall be dipped in a melted solder bath at 230±5°C for 4 seconds.</td></tr>
<tr><td>Solder Heat Resistance</td><td>1. Components should have no evidence of electrical & mechanical damage.
2. Inductance : Within ±20% of initial value.</td><td>Preheat : 150°C, 60sec.
Solder : Sn-Ag3.0-Cu0.5
Solder Temperature : 260±5°C
Flux for lead free : rosin
Dip Time : 10±0.5sec.

</td></tr>
<tr><td colspan="3">Reliability Test</td></tr>
<tr><td>High Temperature
Life Test</td><td rowspan="3">1. Appearance : No damage
2. Inductance : Within ±20% of initial value.
No disconnection or short circuit.</td><td>Temperature : 125±5°C
Time : 500±12 hours
Measure at room temperature after placing for 2 to 3 hrs.</td></tr>
<tr><td>Low Temperature
Life Test</td><td>Temperature : -40±5°C
Time : 500±12 hours
Measure at room temperature after placing for 2 to 3 hrs.</td></tr>
<tr><td>Thermal Shock</td><td>Conditions of 1 cycle.
<table>
<tr><th>Step</th><th>Temperature (°C)</th><th>Times (min.)</th></tr>
<tr><td>1</td><td>-55±3</td><td>30±3</td></tr>
<tr><td>2</td><td>Room Temperature</td><td>Within 3</td></tr>
<tr><td>3</td><td>125±3</td><td>30±3</td></tr>
<tr><td>4</td><td>Room Temperature</td><td>Within 3</td></tr>
</table>
Total : 5 cycles
Measure at room temperature after placing for 2 to 3 hrs.</td></tr>
<tr><td>Humidity Resistance</td><td>1. Appearance : No damage
2. Inductance : Within ±20% of initial value.
No disconnection or short circuit.</td><td>Temperature : 40±5°C
Humidity : 90% to 95%
Applied Current : Rated Curent
Time : 500±12 hours
Measure at room temperature after placing for 2 to 3 hrs.</td></tr>
</table>

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9. SOLDERIND AND MOUNTING :



Part No.	G mm	H mm	I mm
SDL1108-R47MF	5.6±0.5	6.7±0.5	$1.8^{-0}_{+0.2}$
SDL1108-R60MF	5.6±0.5	6.7±0.5	$1.8^{-0}_{+0.2}$
SDL1108-1R0MF	6.6±0.5	6.2±0.5	$1.5^{-0}_{+0.2}$
SDL1108-1R2MF	6.6±0.5	6.2±0.5	$1.5^{-0}_{+0.2}$
SDL1108-1R5MF	7.2±0.5	6.2±0.5	$1.4^{-0}_{+0.2}$
SDL1108-2R0MF	6.5±0.5	6.4±0.5	$1.2^{-0}_{+0.2}$

9-2. Soldering

Mildly activated rosin fluxes are preferred. The minimum amount of solder can lead to damage from the stresses caused by the difference in coefficients of expansion between solder, chip and substrate. Our terminations are suitable for all wave and re-flow soldering systems. If hand soldering cannot be avoided, the preferred technique is the utilization of hot air soldering tools.

9-2.1 Solder Re-flow :

Recommended temperature profiles for re-flow soldering in Figure 1.

9-2.2 Soldering Iron (Figure 2) :

Products attachment with soldering iron is discouraged due to the inherent process control limitations. In the event that a soldering iron must be employed the following precautions are recommended.

Note :

a) Preheat circuit and products to 150°C.
b) 280°C tip temperature (max)
c) Never contact the ceramic with the iron tip
d) 1.0mm tip diameter (max)
e) Use a 20 watt soldering iron with tip diameter of 1.0mm
f) Limit soldering time to 3 secs.

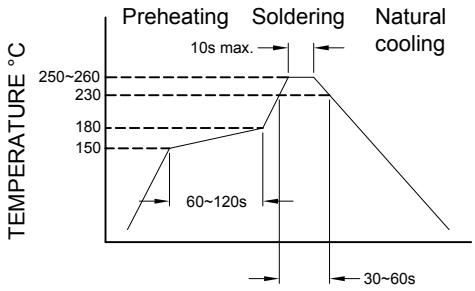


Figure 1. Re-flow Soldering

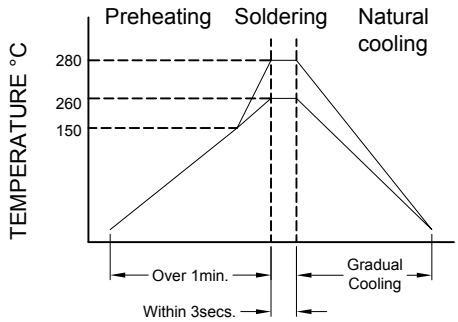


Figure 2. Iron Soldering

10. PACKING AND QUANTITY :

Size	SDL1108
Styrofoam	210
Inner box	420
Carton	2100

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