Wire-wound Type Power Inductor

SCWL252010XXXXQ Series

Features

- This specification applies Low Profile Power Inductors
- Halogen free, Lead Free, RoHS Compliance

Applications

SCWL252010XXXXQ series is generic applied in portable DC to DC converter line.

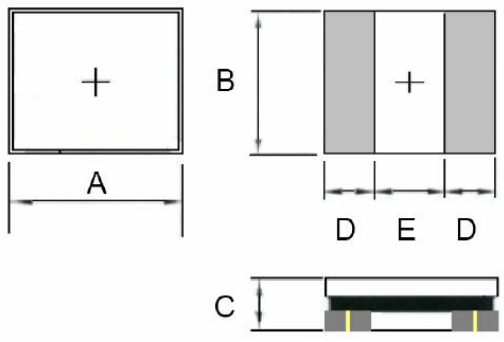
- Mobile phones
- HDDs
- DSCs
- PADs
- LCD, LED display, etc.

Part Numbering

SCWL	2520	10	2R2	M	T	F	Q
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)

1 Product Series
2 Size Code: the first two digitals : length(mm), the last two digitals : width(mm)
3 Thickness (mm)
4 Inductance (μH), eg. 2R2=2.2μH；R47=0.47μH
5 Inductance tolerance, M: ±20%; Y: ±30%
6 Packaging: T - Embossed plastic tape, 7" reel.
7 Soldering : Green Parts, F - Lead-Free for whole chip
8 Model Code

Construction & Dimensions



Symbol	252010
A	2.5 -0.1/+0.2
B	2.0 -0.5/+0.35
C	1.02 Max
D	0.85 REF
E	0.80 REF

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Electrical Characteristics

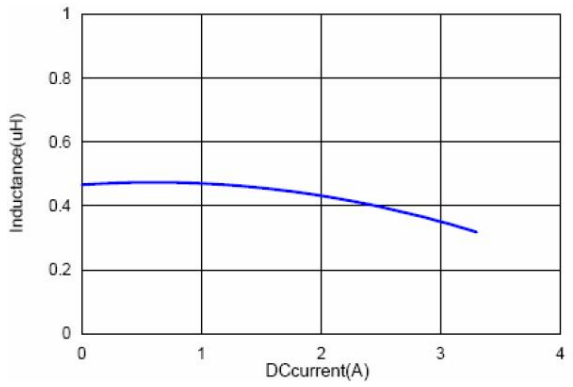
Part Number	Inductance (μH)	Tolerance (%)	Test Frequency (Hz)	DCR (Ω) ±20%	I sat (A)		I rms (A)	
					Typ.	Max.	Typ.	Max.
SCWL252010R47YTFQ	0.47	±30%	0.1V / 1M	0.030	2.85	2.57	2.80	2.50
SCWL252010R68YTFQ	0.68	±30%	0.1V / 1M	0.039	2.70	2.45	2.45	2.20
SCWL2520101R0YTFQ	1.0	±30%	0.1V / 1M	0.055	2.45	2.05	2.20	1.80
SCWL2520101R5YTFQ	1.5	±30%	0.1V / 1M	0.090	1.80	1.70	1.70	1.55
SCWL2520102R2MTFQ	2.2	±20%	0.1V / 1M	0.125	1.60	1.55	1.55	1.40
SCWL2520104R7MTFQ	4.7	±20%	0.1V / 1M	0.250	1.10	0.95	1.05	0.92

Note:

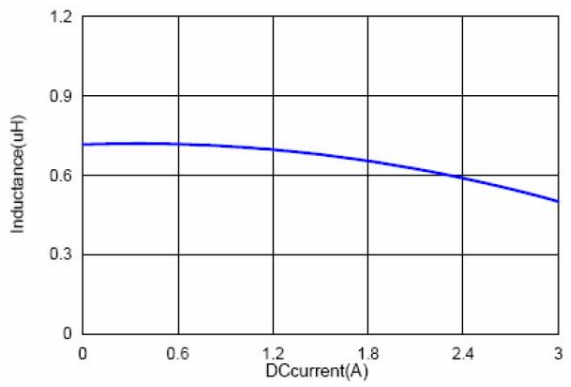
1. Isat: Based on inductance change (△L/L0：≦-30%) @ ambient temp. 25ºC
2. Irms: Based on temperature rise (△T: 40ºC typ.)

Current Characteristics

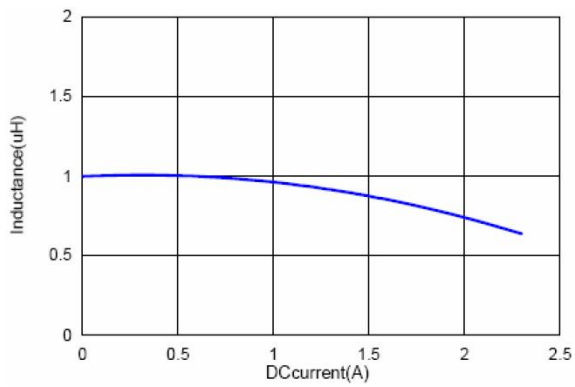
SCWL252010Q-R47Y-ZF



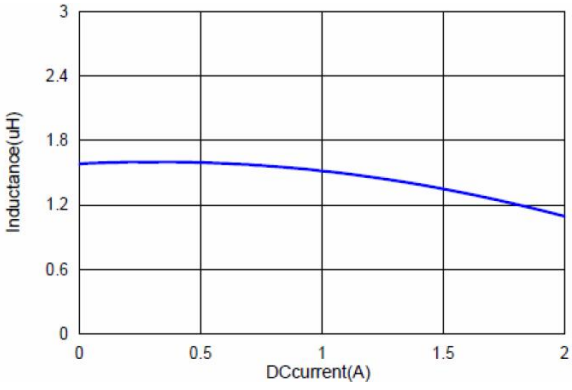
SCWL252010Q-R68Y-ZF



SCWL252010Q-1R0Y-ZF



SCWL252010Q-1R5Y-ZF



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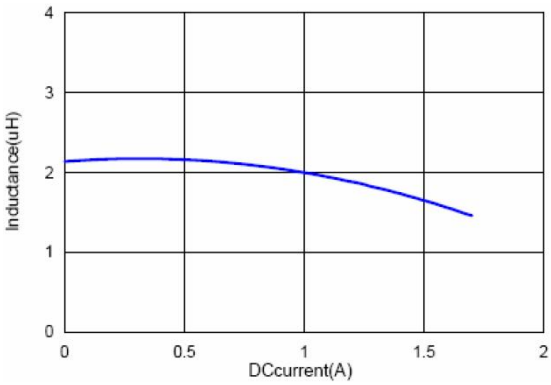
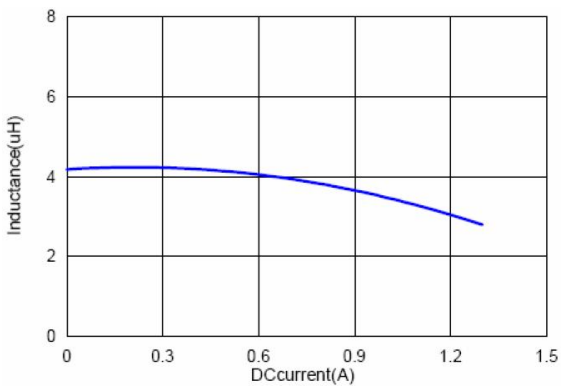
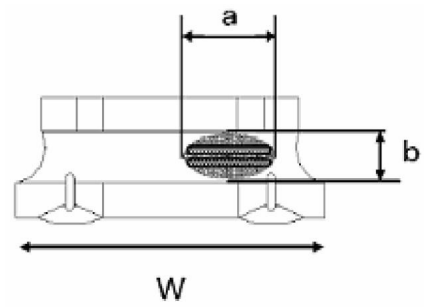
Current Characteristics





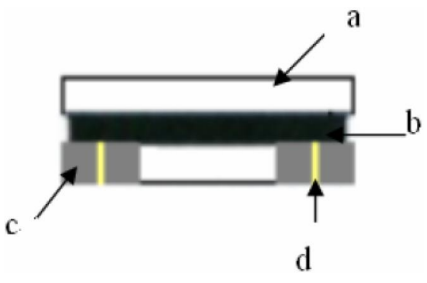
Appearance



Exposed wire tolerance limit of coating resin part on product side. Size of exposed wire occurring to coating resin is specified below.

1. Width direction (dimension a): Acceptable when a≤w/2
   Nonconforming when a>w/2
2. Length direction (dimension b): Dimension b is not specified.
3. The total area of exposed wire occurring to each sides is not greater than 50% of coating resin area, and is acceptable.

Material Lists



No.	Item	Material
a	Core	Ferrite Core
b	Coating	Epoxy with magnetic powder
c	Termination	Tin (Pb-Free)
d	Wire	Enameled Copper Wire

Soldering and Mounting

Soldering

Mildly activated rosin fluxes are preferred. SOCAY 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.

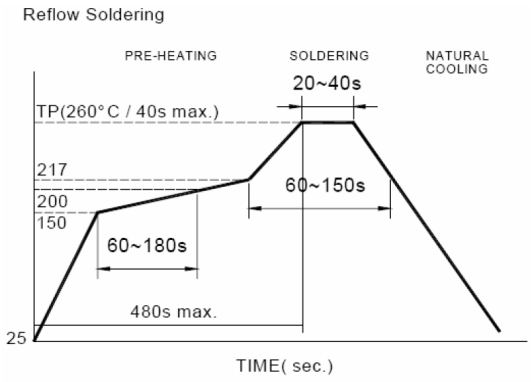
Solder re-flow

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

Solder Iron (Figure 2):

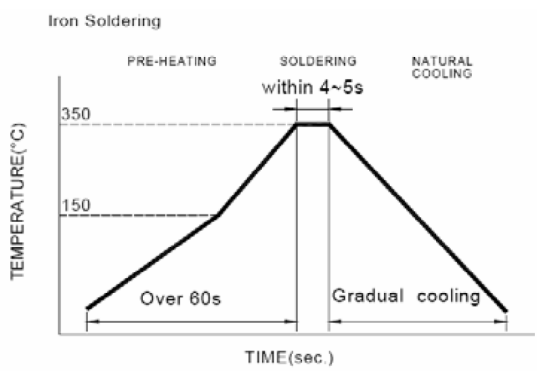
Products attachment with a soldering iron is discouraged due to the inherent process control limitations. In the event that a soldering iron must be employed the following precautions are recommended.

- u Preheat circuit and products to 150 ℃
- u 355 ℃ tip temperature (max)
- u Never contact the ceramic with the iron tip
- u 1.0mm tip diameter (max)
- u Use a 20 watt soldering iron with tip diam eter of 1.0mm
- u Limit soldering time to 4~5 sec.



Reflow times: 3 times max.

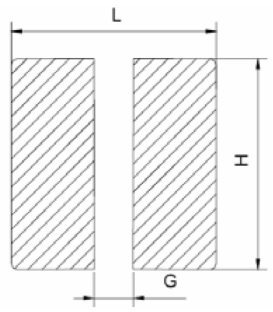
Fig.1



Iron Soldering times: 1 times max.

Fig.2

Recommended PCB Board Pattern



L (mm)	G (mm)	H (mm)
2.9	0.8	2.4

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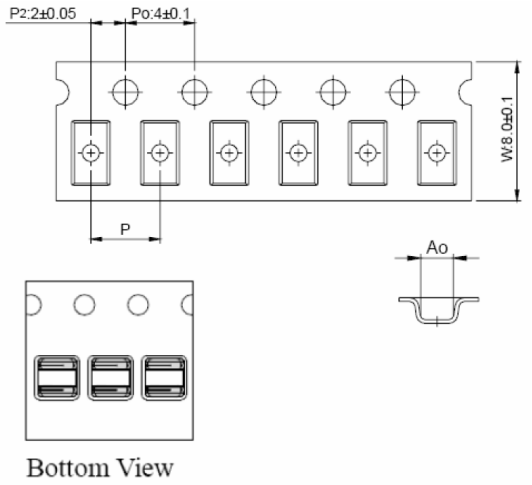
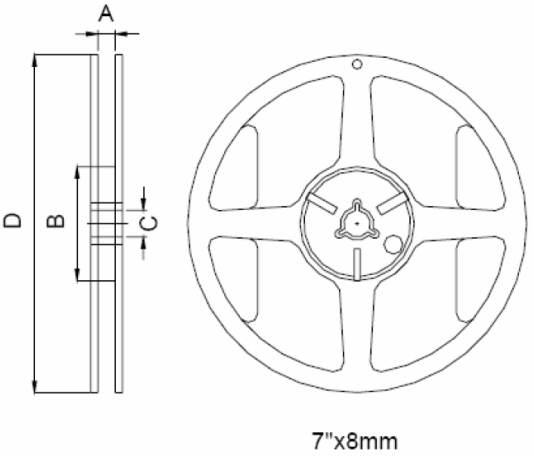
Packaging Information

Tape Dimension



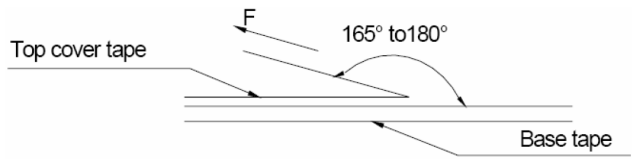
Symbol	252010
A0 (mm)	2.85±0.1
B0 (mm)	2.45±0.1
K0 (mm)	1.40±0.1
P (mm)	4.00±0.1
t (mm)	0.23±0.05

Reel Dimension



Symbol	7″ ×8 mm
A (mm)	8.4±1.0
B (mm)	50 min
C (mm)	13±0.8
D (mm)	178±2

Tearing off force



The force for tearing off cover tape is 15 to 80 grams in the arrow direction under the following conditions.

Room Temp. (ºC)	Room Humidity (%)	Room atm (hPa)	Tearing Speed mm/min
5~35	45~85	860~1060	300

Packaging Quantity

Type	PCS / Reel
SCWL252010XXXXQ	2,000

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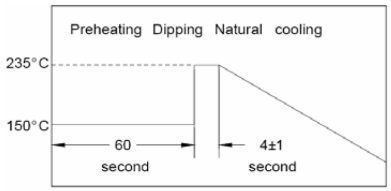
Reliability and Test Condition

<table>
<tr><th>Test Item</th><th>Performance</th><th>Test Method and Remarks</th></tr>
<tr><td>Operating Temperature</td><td>-55 ~ +125ºC (For products in unopened tape package, less than 40 ºC)</td><td></td></tr>
<tr><td colspan="3">Electrical Performance Test</td></tr>
<tr><td>Inductance L</td><td rowspan="4">Refer to standard electrical characteristic list</td><td>Agilent-4291, Agilent-4287</td></tr>
<tr><td>Q</td><td>Agilent-4192, Agilent-4285</td></tr>
<tr><td>SRF</td><td>Agilent-4192</td></tr>
<tr><td>DC Resistance</td><td>Agilent-4338</td></tr>
<tr><td>Rated Current</td><td>Base on temp. rise & △L/L0A ≤30%</td><td>Saturation DC Current (Isat) will cause L0 to drop approximately △L(%)</td></tr>
<tr><td colspan="3">Mechanical Performance Test</td></tr>
<tr><td>Solder Heat Resistance</td><td>Appearance：No damage Temperature
Inductance：within±10% of initial value
Q：Shall not exceed the specification value
RDC：within ±15% of initial value and shall not exceed the specification value</td><td><table><tr><th>Temperature (ºC)</th><th>Time (s)</th><th>Temperature ramp/immersion and emersion rate</th><th>Number of heat cycles</th></tr><tr><td>260±5 (Solder Temp)</td><td>10±1</td><td>25mm/s±6mm/s</td><td>1</td></tr></table>Depth: completely cover the termination</td></tr>
<tr><td>Solderability Test</td><td>More than 95% of terminal electrode should be covered with solder</td><td> 

After fluxing, component shall be dipped in a melted solder bath at 235±25°C for 4±1seconds</td></tr>
<tr><td colspan="3">Reliability Test</td></tr>
<tr><td>Life Test</td><td rowspan="4">Appearance: No damage
Inductance: within±10% of initial value
Q: shall not exceed the specification value.
RDC: within ±15% of initial value and shall not exceed the specification value</td><td>Preconditioning: Run through IR reflow for 2 times.
IPC/JEDEC J-STD-020D Classification Reflow Profiles
Temperature: 125±2ºC(Bead)
Temperature: 85±2ºC(Inductor)
Applied current: rated current
Duration: 1000±12hrs
Measured at room temperature after placing for 24±2 hrs</td></tr>
<tr><td>Thermal shock</td><td>Preconditioning: Run through IR reflow for 2 times.
IPC/JEDEC J-STD-020D Classification Reflow Profiles
Step1: -40±2ºC 30±5min
Step2: 25±2ºC ≤0.5min
Step3: 105±2ºC 30±5min Number of cycles: 500
Measured at room temperature after placing for 24±2 hrs</td></tr>
<tr><td>Humidity Resistance Test</td><td>Preconditioning: Run through IR reflow for 2 times.
IPC/JEDEC J-STD-020D Classification Reflow Profiles
Humidity: 85±2％R.H,
Temperature: 85ºC±2ºC
Duration: 1000hrs Min. with 100% rated current
Measured at room temperature after placing for 24±2 hrs</td></tr>
<tr><td>Vibration Test</td><td>Preconditioning: Run through IR reflow for 2 times.
IPC/JEDEC J-STD-020D Classification Reflow Profiles
Oscillation Frequency: 10~2K~10Hz for 20 minutes
Equipment： Vibration checker
Total Amplitude: 0.15mm±10%
Testing Time: 12 hours(20 minutes, 12 cycles each of 3 orientations)</td></tr>
</table>