

# Wire-wound Type Power Inductor

## SCWL252010XXXXQ Series

### Features

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

### Applications

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

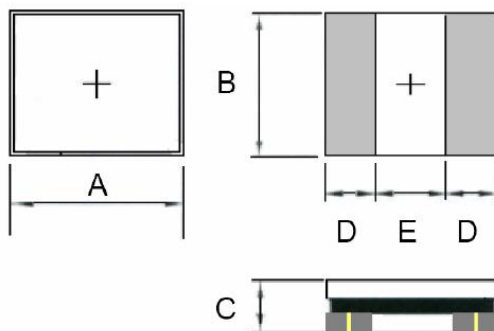
- u Mobile phones
- u HDDs
- u DSCs
- u PADs
- u LCD, LED display, etc.

### Part Numbering

<b>SCWL</b>	<b>2520</b>	<b>10</b>	<b>2R2</b>	<b>M</b>	<b>T</b>	<b>F</b>	<b>Q</b>
(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 ( $\mu\text{H}$ ), eg. 2R2=2.2 $\mu\text{H}$ : R47=0.47 $\mu\text{H}$
- 5 Inductance tolerance, M:  $\pm 20\%$ ; Y:  $\pm 30\%$
- 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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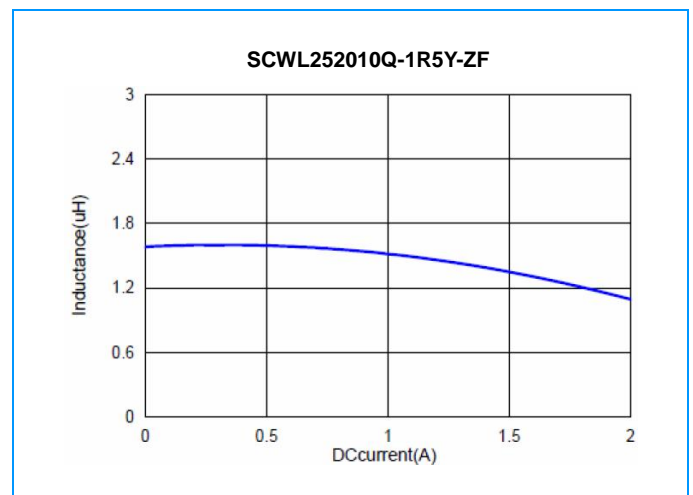
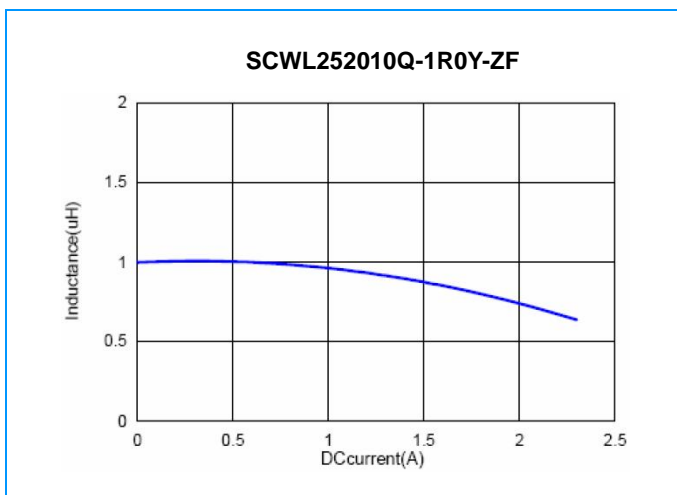
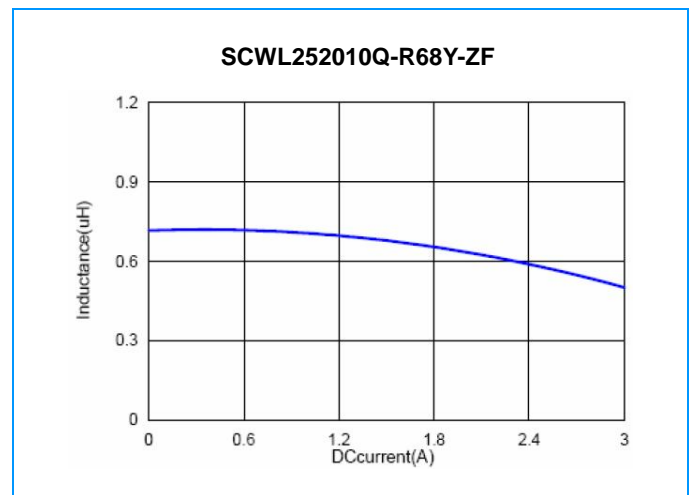
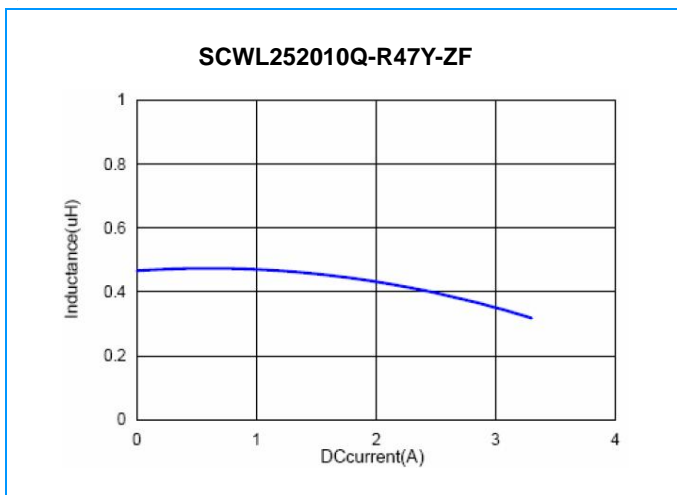
### Electrical Characteristics

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 ( $\Delta L/L_0: \leq -30\%$ ) @ ambient temp. 25°C
2. Irms: Based on temperature rise ( $\Delta T: 40^\circ\text{C typ.}$ )

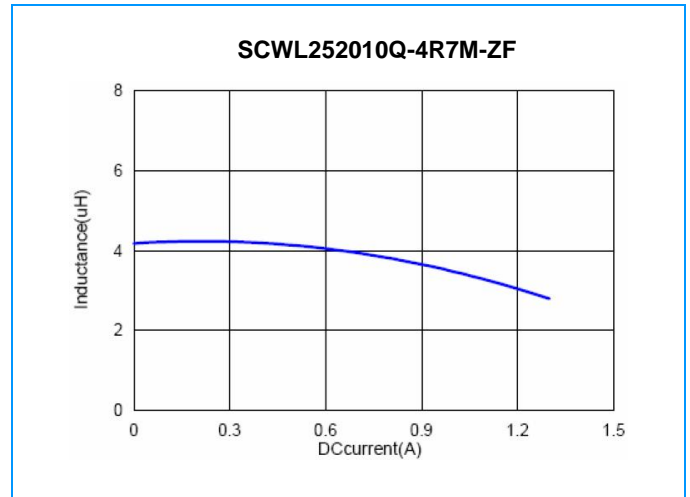
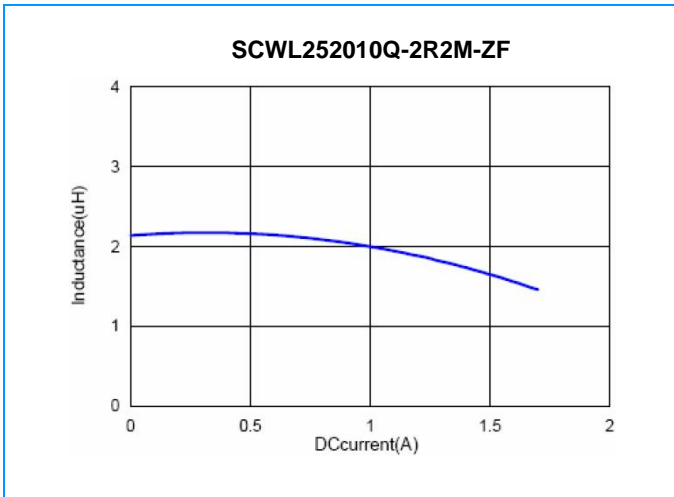
### Current Characteristics



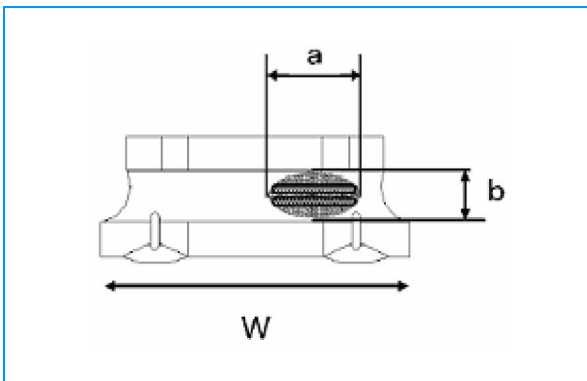
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## SCWL252010XXXQ Series

### Current Characteristics



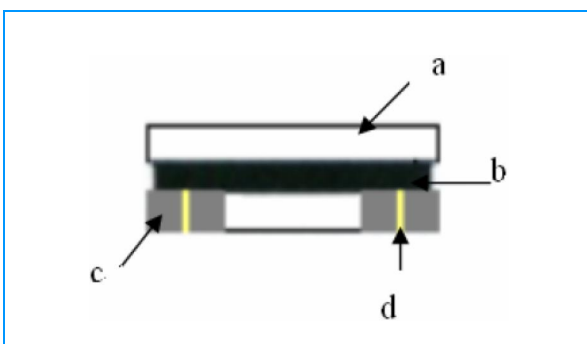
### Appearance



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  $a \leq w/2$   
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

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### 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.

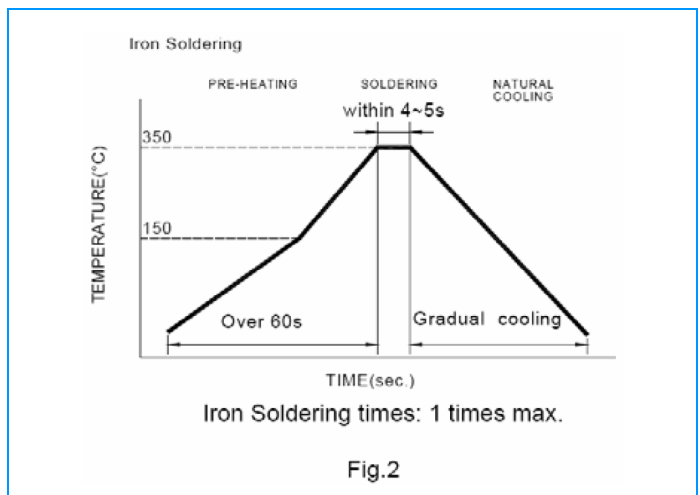
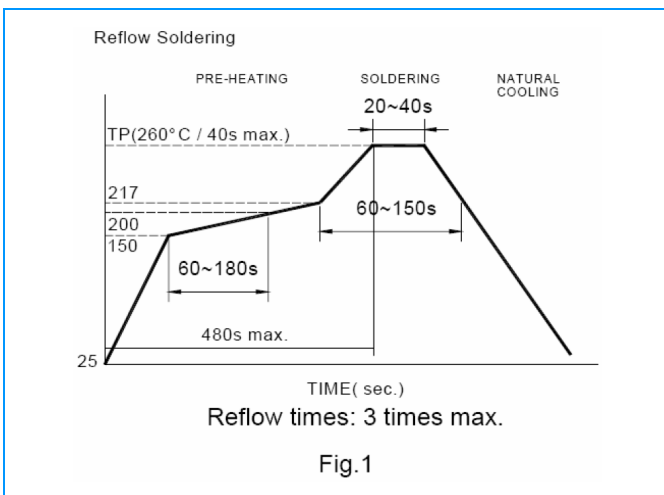
#### Solder re-flow

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

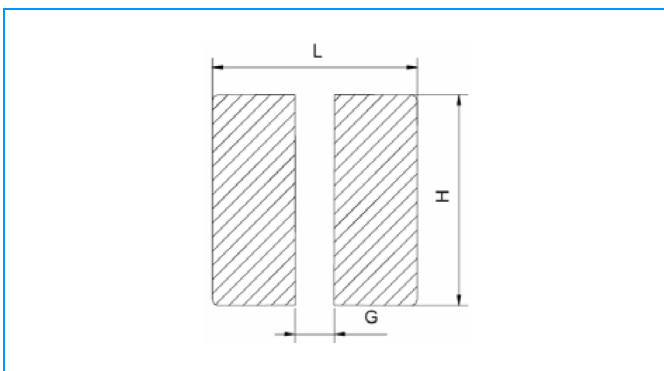
#### Solder Iron (Figure 2):

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 °C
- u Never contact the ceramic with the iron tip
- u Use a 20 watt soldering iron with tip diameter of 1.0mm
- u 355 °C tip temperature (max)
- u 1.0mm tip diameter (max)
- u Limit soldering time to 4~5 sec.



### Recommended PCB Board Pattern



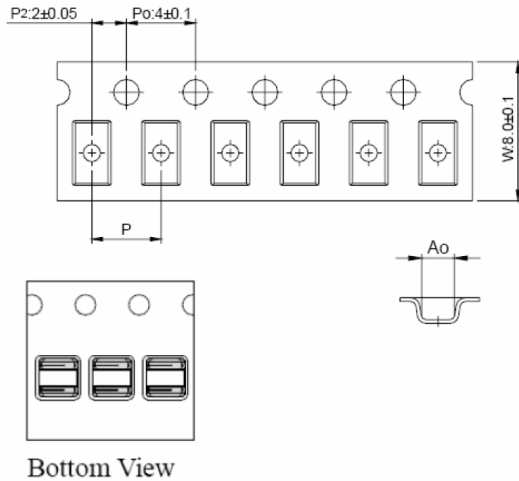
L (mm)	G (mm)	H (mm)
2.9	0.8	2.4

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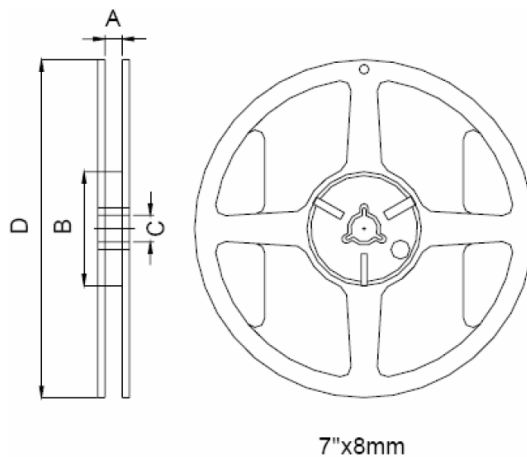
### Packaging Information

#### Tape Dimension



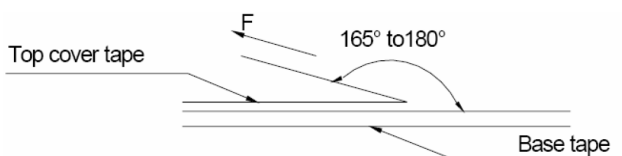
Symbol	252010
A0 (mm)	2.85±0.1
B0 (mm)	2.45±0.1
K0 (mm)	1.40±0.1
P (mm)	4.00±0.1
t (mm)	0.23±0.05

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

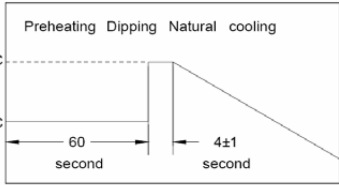
#### Packaging Quantity

Type	PCS / Reel
SCWL252010XXXXQ	2,000

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### Reliability and Test Condition

Test Item	Performance	Test Method and Remarks			
<b>Operating Temperature</b>	-55 ~ +125°C (For products in unopened tape package, less than 40 °C)				
<b>Electrical Performance Test</b>					
<b>Inductance L</b>	Refer to standard electrical characteristic list	Agilent-4291, Agilent-4287			
<b>Q</b>		Agilent-4192, Agilent-4285			
<b>SRF</b>		Agilent-4192			
<b>DC Resistance</b>		Agilent-4338			
<b>Rated Current</b>	Base on temp. rise & $\Delta L/L0A \leq 30\%$	Saturation DC Current (Isat) will cause L0 to drop approximately $\Delta L(\%)$			
<b>Mechanical Performance Test</b>					
<b>Solder Heat Resistance</b>	Appearance: No damage Temperature Inductance: within $\pm 10\%$ of initial value Q: Shall not exceed the specification value RDC: within $\pm 15\%$ of initial value and shall not exceed the specification value	<b>Temperature (°C)</b>	<b>Time (s)</b>	<b>Temperature ramp/immersion and emersion rate</b>	<b>Number of heat cycles</b>
		260 $\pm$ 5 (Solder Temp)	10 $\pm$ 1	25mm/s $\pm$ 6mm/s	1
		Depth: completely cover the termination			
<b>Solderability Test</b>	More than 95% of terminal electrode should be covered with solder	 <p>After fluxing, component shall be dipped in a melted solder bath at 235 <math>\pm</math> 25° C for 4 <math>\pm</math> 1 seconds</p>			
<b>Reliability Test</b>					
<b>Life Test</b>	Appearance: No damage Inductance: within $\pm 10\%$ of initial value Q: shall not exceed the specification value. RDC: within $\pm 15\%$ of initial value and shall not exceed the specification value	Preconditioning: Run through IR reflow for 2 times. IPC/JEDEC J-STD-020D Classification Reflow Profiles Temperature: 125 $\pm$ 2°C (Bead) Temperature: 85 $\pm$ 2°C (Inductor) Applied current: rated current Duration: 1000 $\pm$ 12 hrs Measured at room temperature after placing for 24 $\pm$ 2 hrs			
<b>Thermal shock</b>		Preconditioning: Run through IR reflow for 2 times. IPC/JEDEC J-STD-020D Classification Reflow Profiles Step1: -40 $\pm$ 2°C 30 $\pm$ 5 min Step2: 25 $\pm$ 2°C $\leq$ 0.5 min Step3: 105 $\pm$ 2°C 30 $\pm$ 5 min Number of cycles: 500 Measured at room temperature after placing for 24 $\pm$ 2 hrs			
<b>Humidity Resistance Test</b>		Preconditioning: Run through IR reflow for 2 times. IPC/JEDEC J-STD-020D Classification Reflow Profiles Humidity: 85 $\pm$ 2 % R.H., Temperature: 85°C $\pm$ 2°C Duration: 1000 hrs Min. with 100% rated current Measured at room temperature after placing for 24 $\pm$ 2 hrs			
<b>Vibration Test</b>		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 $\pm$ 10% Testing Time: 12 hours (20 minutes, 12 cycles each of 3 orientations)			