

Wire-wound Type Power Inductor

SCWL252012XXXXQ Series

Features

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

Applications

SCWL252012XXXXQ series is generic applied in portable DC to DC converter line.

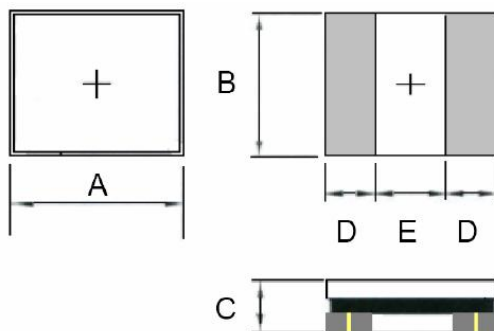
- u Mobile phones
- u HDDs
- u DSCs
- u PADs
- u LCD, LED display, etc.

Part Numbering

SCWL	2520	12	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=2.2 μH : R47=0.47 μH
- 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	252012
A	2.5 -0.1/+0.2
B	2.0 -0.5/+0.35
C	1.2 Max
D	0.85 REF
E	0.80 REF

Wire-wound Type Power Inductor

SCWL252012XXXXQ Series

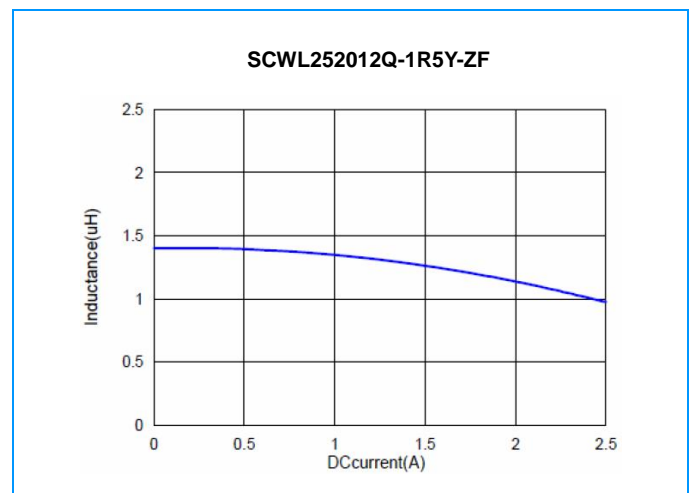
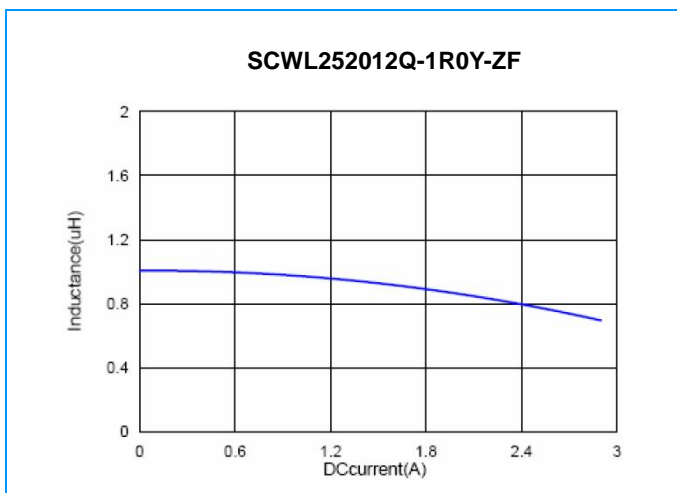
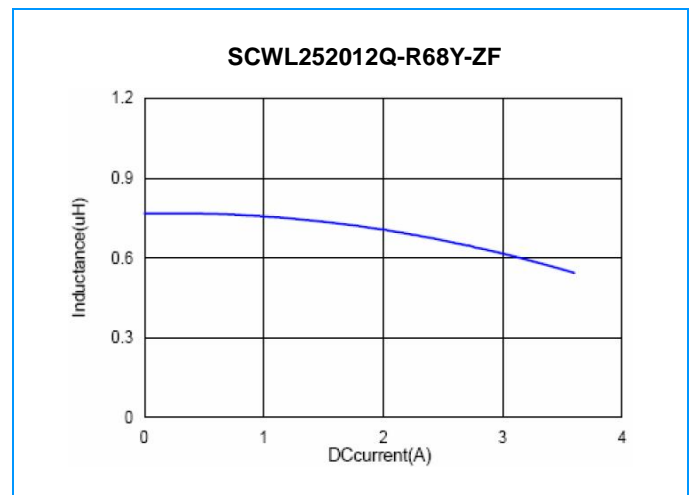
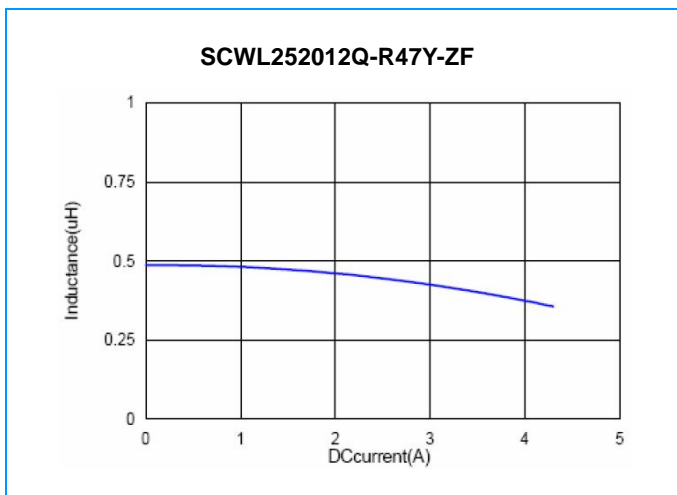
Electrical Characteristics

Part Number	Inductance (μH)	Tolerance (%)	Test Frequency (Hz)	DCR (Ω) ±20%	I sat (A)		I rms (A)	
					Typ.	Max.	Typ.	Max.
SCWL252012R47YTFQ	0.47	±30%	0.1V / 1M	0.028	4.00	3.60	3.70	3.35
SCWL252012R68YTFQ	0.68	±30%	0.1V / 1M	0.036	3.00	2.70	3.30	3.00
SCWL2520121R0YTFQ	1.0	±30%	0.1V / 1M	0.049	2.70	2.45	2.60	2.30
SCWL2520121R5YTFQ	1.5	±30%	0.1V / 1M	0.063	2.30	2.05	2.20	1.95
SCWL2520122R2MTFQ	2.2	±20%	0.1V / 1M	0.080	2.15	1.95	1.85	1.65
SCWL2520124R7MTFQ	4.7	±20%	0.1V / 1M	0.176	1.50	1.35	1.20	1.05

Note:

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

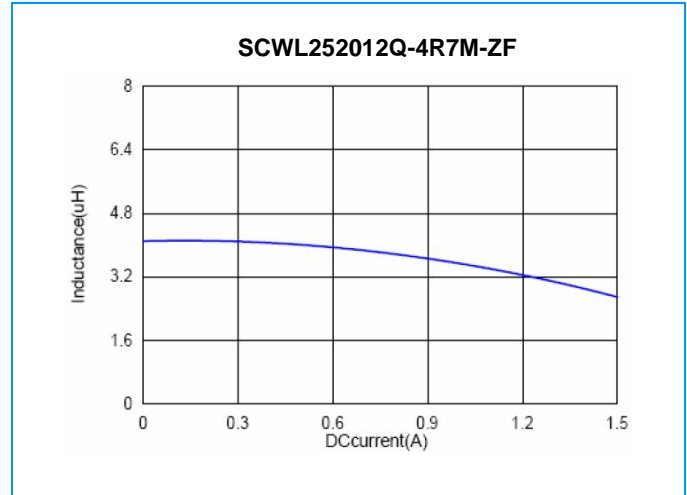
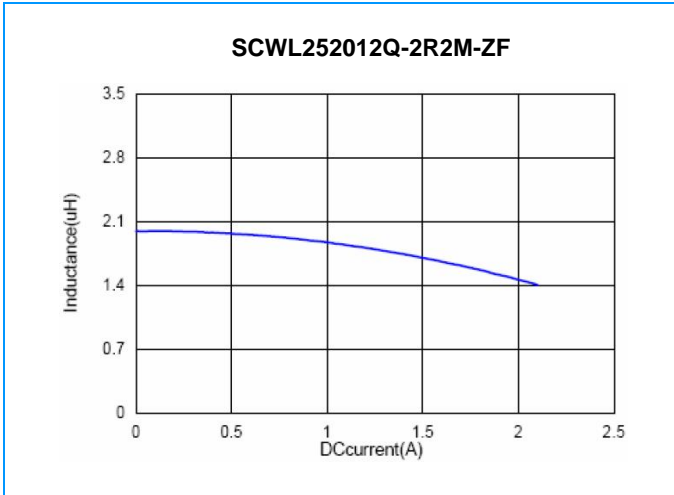
Current Characteristics



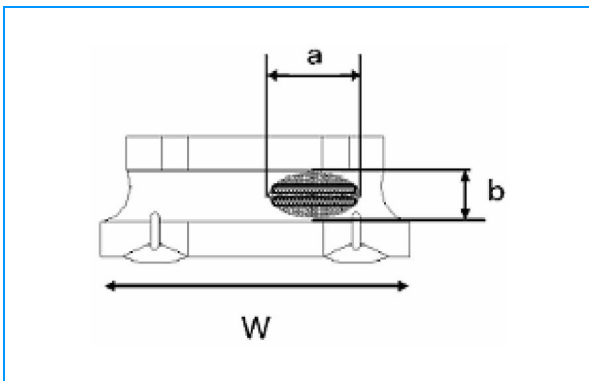
Wire-wound Type Power Inductor

SCWL252012XXXXQ Series

Current Characteristics



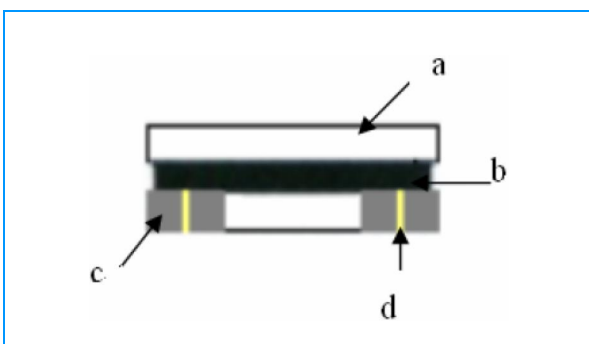
Appearance



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

Wire-wound Type Power Inductor

SCWL252012XXXXQ Series

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.

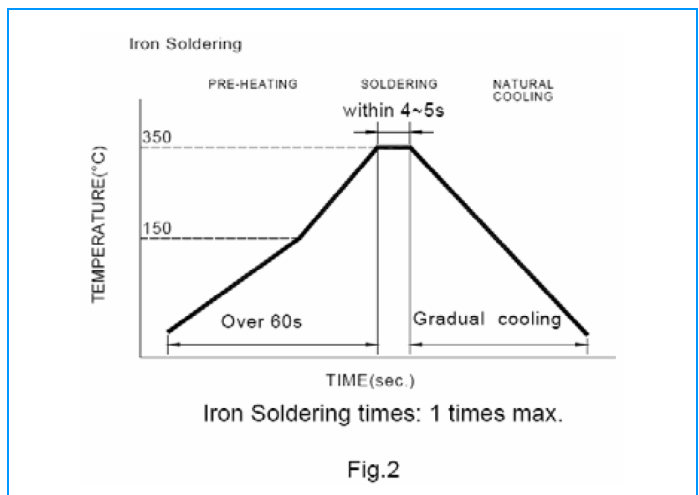
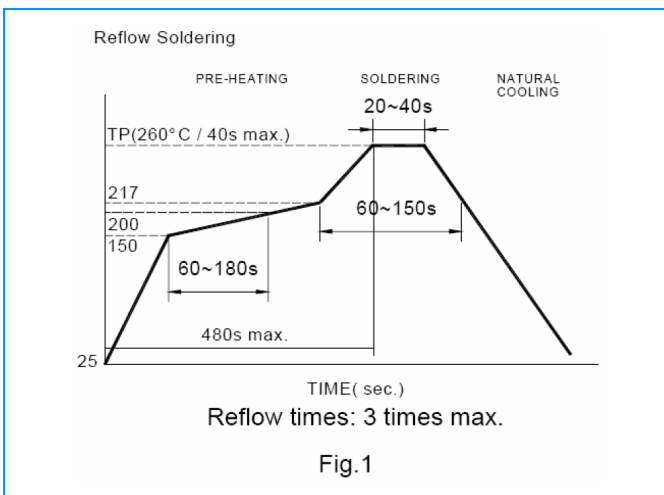
Solder re-flow

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

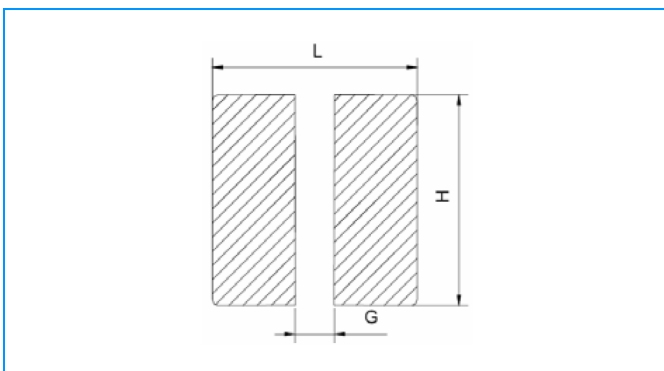
Solder Iron (Figure 2):

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



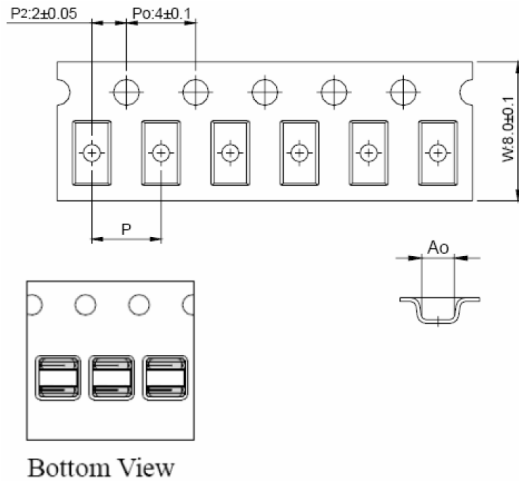
L (mm)	G (mm)	H (mm)
2.9	0.8	2.4

Wire-wound Type Power Inductor

SCWL252012XXXXQ Series

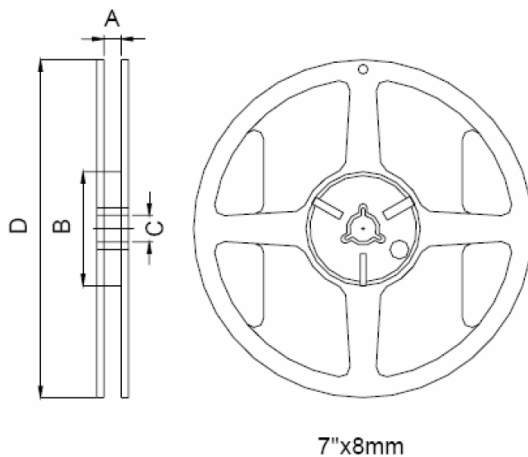
Packaging Information

Tape Dimension



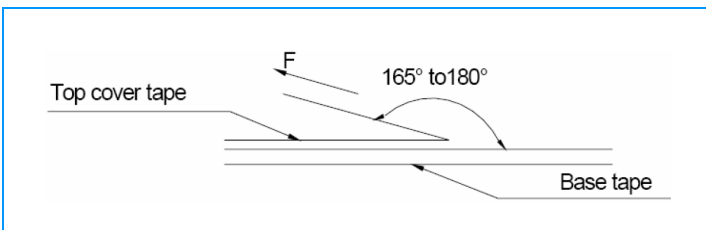
Symbol	252012Q
A0 (mm)	2.85±0.1
B0 (mm)	2.45±0.1
K0 (mm)	1.40±0.1
P (mm)	4.00±0.1
t (mm)	0.23±0.05

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

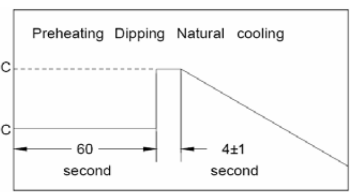
Packaging Quantity

Type	PCS / Reel
SCWL252012XXXXQ	2,000

Wire-wound Type Power Inductor

SCWL252012XXXXQ Series

Reliability and Test Condition

Test Item	Performance	Test Method and Remarks			
Operating Temperature	-55 ~ +125°C (For products in unopened tape package, less than 40 °C)				
Electrical Performance Test					
Inductance L	Refer to standard electrical characteristic list	Agilent-4291, Agilent-4287			
Q		Agilent-4192, Agilent-4285			
SRF		Agilent-4192			
DC Resistance		Agilent-4338			
Rated Current	Base on temp. rise & $\Delta L/L0A \leq 30\%$	Saturation DC Current (Isat) will cause L0 to drop approximately $\Delta L(\%)$			
Mechanical Performance Test					
Solder Heat Resistance	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	Temperature (°C)	Time (s)	Temperature ramp/immersion and emersion rate	Number of heat cycles
		260 \pm 5 (Solder Temp)	10 \pm 1	25mm/s \pm 6mm/s	1
		Depth: completely cover the termination			
Solderability Test	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 \pm 25° C for 4 \pm 1seconds</p>			
Reliability Test					
Life Test	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 12hrs Measured at room temperature after placing for 24 \pm 2 hrs			
Thermal shock		Preconditioning: Run through IR reflow for 2 times. IPC/JEDEC J-STD-020D Classification Reflow Profiles Step1: -40 \pm 2°C 30 \pm 5min Step2: 25 \pm 2°C \leq 0.5min Step3: 105 \pm 2°C 30 \pm 5min Number of cycles: 500 Measured at room temperature after placing for 24 \pm 2 hrs			
Humidity Resistance Test		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: 1000hrs Min. with 100% rated current Measured at room temperature after placing for 24 \pm 2 hrs			
Vibration Test		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)			