

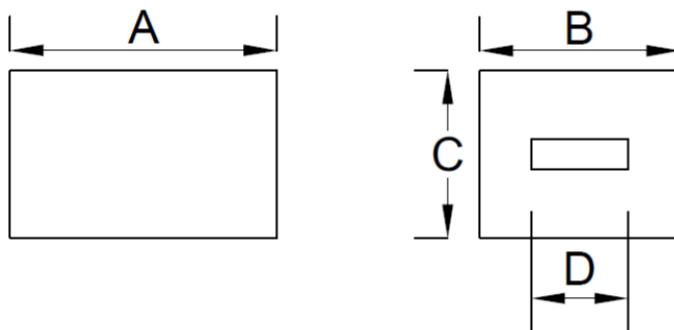
High Current Chip Perforation Bead

◆ PRODUCT IDENTIFICATION

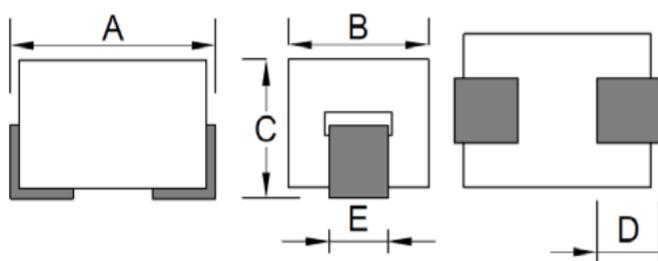
SBH 4030 S 470 M T T
 (1) (2) (3) (4) (5) (6) (7)

- 1: Series Type
- 2: Chip Size (mm): Length X Width
- 3: Material Code
- 4: Nominal Impedance: $470=47\Omega$
- 5: Impedance Tolerance: $M=\pm 20\%$
- 6: Company Code
- 7: Packaging: Tape Carrier Package

◆ DIMENSION (:mm)



CORE SIZE			
A(mm)	B(mm)	C(mm)	D(mm)
4.00 ± 0.25	3.10 ± 0.15	2.50 ± 0.15	1.50 ± 0.15



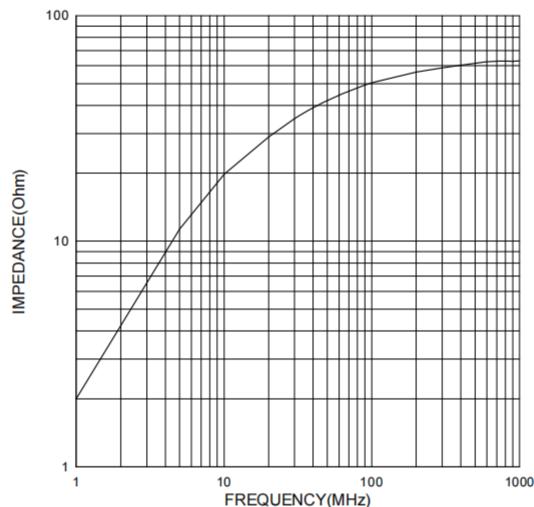
PRODUCT SIZE				
A(mm)	B(mm)	C(mm)	D(mm)	E(mm)
$4.30 \sim 5.10$	3.1 ± 0.15	$2.70 \sim 3.1$	1.35 ± 0.20	1.35 ± 0.15

◆ ELECTRICAL SPECIFICATION

Part Number	ELECTRICAL REQUIREMENTS 1			ELECTRICAL REQUIREMENTS 2			DCR (mΩ) Max.	Rated Current	
	Impedance (Ω)	Tolerance	Test Frequency (MHz)	Impedance (Ω)	Tolerance (%)	Test Frequency (MHz)		△T=40°C TYP.	Test Frequency (MHz)
SBH4030S470MTT	25	min	25	47	±20	100	0.60	15.0	1

Note: COIL SPEC : FLAT.TCW(1.25W X 0.20T)m/m

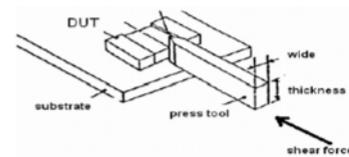
Typical Impedance v.s. Frequency Curve



◆ RELIABILITY AND TEST CONDITION

Item	Performance		Test Condition
Operating temperature	-40~+125°C (Including self - temperature rise)		
Storage temperature	-40~+125°C (on board)		
Electrical Performance Test			
Z(Impedance)	Refer to standard electrical characteristics list.	CH3302,CH1320,CHA113009,Agilent E4991 A ,Agilent 16197A LCR Meter.	
DCR		CH16502,Agilent33420A Micro-Ohm Meter.	
Heat Rated Current (Irms)	Approximately $\Delta T \leq 40^\circ\text{C}$	Heat Rated Current (Irms) will cause the coil temperature rise ΔT (°C) without core loss. 1. Applied the allowed DC current(keep 1 min.). 2. Temperature measured by digital surface thermometer	

Reliability Test	
Life Test	<p>Preconditioning: Run through IR reflow for 2 times. (IPC/JEDEC J-STD-020DClassification Reflow Profiles)</p> <p>Temperature : $125\pm2^\circ\text{C}$ (Inductor)</p> <p>Applied current : rated current</p> <p>Duration : $1000\pm12\text{hrs}$</p> <p>Measured at room temperature after placing for $24\pm2\text{ hrs}$</p>
Load Humidity	<p>Preconditioning: Run through IR reflow for 2 times. (IPC/JEDEC J-STD-020DClassification Reflow Profiles)</p> <p>Humidity : $85\pm2\text{R.H.}$,</p> <p>Temperature : $85^\circ\text{C}\pm2$</p> <p>Duration : 1000hrs Min. with 100% rated current</p> <p>Measured at room temperature after placing for $24\pm2\text{ hrs}$</p>
Moisture Resistance	<p>Appearance : No damage.</p> <p>Inductance : within $\pm10\%$ of initial value</p> <p>Q : Shall not exceed the specification value.</p> <p>RDC : within $\pm15\%$ of initial value and shall not exceed the specification value</p> <p>Preconditioning: Run through IR reflow for 2 times. (IPC/JEDEC J-STD-020DClassification Reflow Profiles)</p> <ol style="list-style-type: none"> 1. Baked at 50°C for 25hrs, measured at room temperature after placing for 4 hrs. 2. Raise temperature to $65\pm2^\circ\text{C}$ 90-100%RH in 2.5hrs, and keep 3 hours, cool down to 25°C in 2.5hrs. 3. Raise temperature to $65^\circ\text{C}\pm2^\circ\text{C}$ 90-100%RH in 2.5hrs, and keep 3 hours, cool down to 25°C in 2.5hrs. keep at 25°C for 2 hrs then keep at -10°C for 3 hrs 4. Keep at 25°C 80-100%RH for 15min and vibrate at the frequency of 10 to 55 Hz to 10 Hz, measure at room temperature after placing for 1~2 hrs
Thermal shock	<p>Preconditioning: Run through IR reflow for 2 times. (IPC/JEDEC J-STD-020DClassification Reflow Profiles)</p> <p>Condition for 1 cycle</p> <p>Step1 : $-40\pm2^\circ\text{C}$ $30\pm5\text{min}$</p> <p>Step2 : $25\pm2^\circ\text{C}$ $\leq0.5\text{min}$</p> <p>Step3 : $125\pm2^\circ\text{C}$ $30\pm5\text{min}$</p> <p>Number of cycles : 500</p> <p>Measured at room temperature after placing for $24\pm2\text{ hrs}$</p>
Vibration	<p>Oscillation Frequency: 10 ~ 2K ~ 10Hz for 20 minutes</p> <p>Equipment : Vibration checker</p> <p>Total Amplitude: $1.52\text{mm}\pm10\%$</p> <p>Testing Time : 12 hours(20 minutes, 12 cycles each of 3 orientations).</p>

Item	Performance	Test Condition															
Shock	<p>Appearance : No damage.</p> <p>Inductance : within$\pm 10\%$ of initial value</p> <p>Q : Shall not exceed the specification value.</p> <p>RDC : within $\pm 15\%$ of initial value and shall not exceed the specification value</p>	<table border="1"> <thead> <tr> <th>Type</th><th>Peak value(g·s)</th><th>Normal duration (D) (ms)</th><th>Wave form</th><th>Velocity change (Vi)ft/sec</th></tr> </thead> <tbody> <tr> <td>SMD</td><td>50</td><td>11</td><td>Half-sine</td><td>11.3</td></tr> <tr> <td>Lead</td><td>50</td><td>11</td><td>Half-sine</td><td>11.3</td></tr> </tbody> </table> <p>shocks in each direction along 3 perpendicular axes.</p>	Type	Peak value(g·s)	Normal duration (D) (ms)	Wave form	Velocity change (Vi)ft/sec	SMD	50	11	Half-sine	11.3	Lead	50	11	Half-sine	11.3
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SMD	50	11	Half-sine	11.3													
Lead	50	11	Half-sine	11.3													
Bending		<p>Shall be mounted on a FR4 substrate of the following dimensions: $>0805:40 \times 100 \times 1.2\text{mm}$ $<0805:40 \times 100 \times 0.8\text{mm}$</p> <p>Bending depth: $\geq 0805\text{inch}(2012\text{mm}):1.2\text{mm}$ $<0805\text{ inch}(2012\text{mm}):0.8\text{mm}$ duration of 10 sec.</p>															
Solderability	<p>More than 95% of the terminal electrode should be covered with solder.</p>	<p>Preheat: 150°C, 60sec..</p> <p>Solder: Sn96.5% Ag3% Cu0.5%</p> <p>Temperature: $245 \pm 5^\circ\text{C}$.</p> <p>Flux for lead free: Rosin. 9.5%.</p> <p>Dip time: $4 \pm 1\text{sec}$.</p> <p>Depth: completely cover the termination</p>															
Resistance to Soldering Heat		<p>Number of heat cycles: 1</p> <table border="1"> <thead> <tr> <th>Temperature ($^\circ\text{C}$)</th><th>Time(s)</th><th>Temperature ramp/immersion and emersion rate</th></tr> </thead> <tbody> <tr> <td>260 ± 5(solder temp)</td><td>10 ± 1</td><td>$25\text{mm/s} \pm 6\text{ mm/s}$</td></tr> </tbody> </table>	Temperature ($^\circ\text{C}$)	Time(s)	Temperature ramp/immersion and emersion rate	260 ± 5 (solder temp)	10 ± 1	$25\text{mm/s} \pm 6\text{ mm/s}$									
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260 ± 5 (solder temp)	10 ± 1	$25\text{mm/s} \pm 6\text{ mm/s}$															
Terminal Strength	<p>Appearance : No damage.</p> <p>Inductance : within$\pm 10\%$ of initial value</p> <p>Q : Shall not exceed the specification value.</p> <p>RDC : within $\pm 15\%$ of initial value and shall not exceed the specification value</p>	<p>Preconditioning: Run through IR reflow for 2 times. (IPC/JEDEC J-STD-020D Classification Reflow Profiles</p> <p>With the component mounted on a PCB with the device to be tested, apply a force ($>0805\text{ inch}(2012\text{mm}):1\text{kg}$, $\leq 0805\text{ inch}(2012\text{mm}):0.5\text{kg}$) to the side of a device being tested.</p> <p>This force shall be applied for $60 + 1$ seconds. Also the force shall be applied gradually as not to apply a shock to the component being tested.</p> 															

◆ SOLDERING AND MOUNTING

Soldering

Mildly activated rosin fluxes are preferred. SBH4030S470MTT 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.

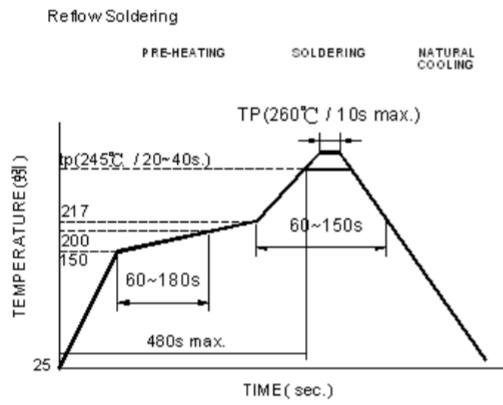
Solder re-flow:

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

Soldering 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.

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



Reflow times: 3 times max.

Fig.1

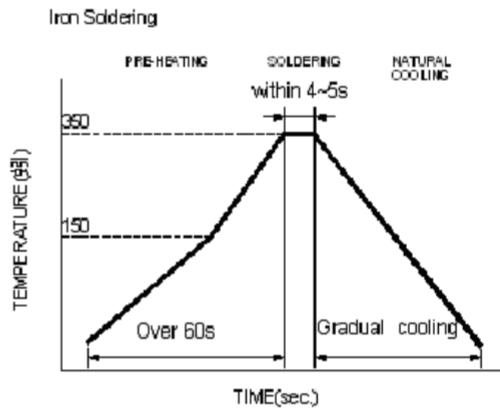
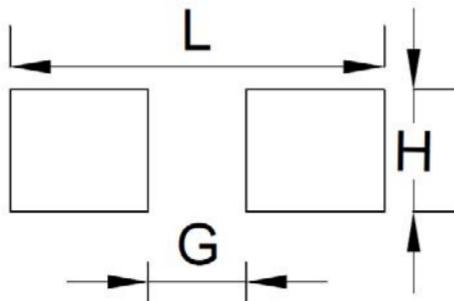


Fig.2

Recommended PC Board Pattern

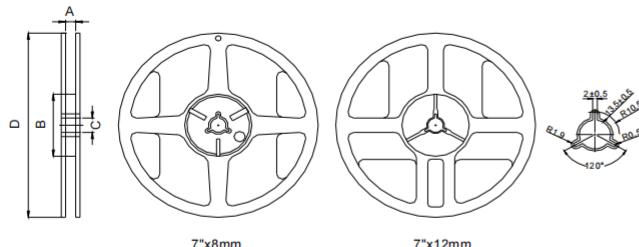
Fig.1



L(mm)	G(mm)	H(mm)
4.8	1.4	1.5

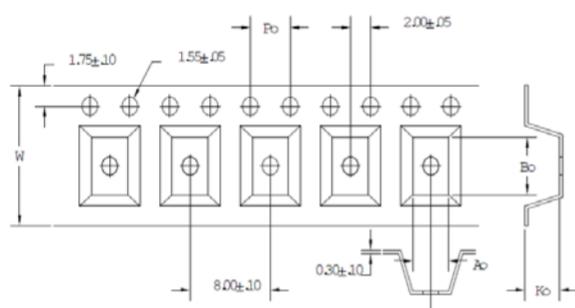
◆ PACKAGING INFORMATION

Reel Dimension



Type	A(mm)	B(mm)	C(mm)	D(mm)
7"x12mm	13.5±0.5	60±2	13.5±0.5	178±2

Tape Dimension /12mm

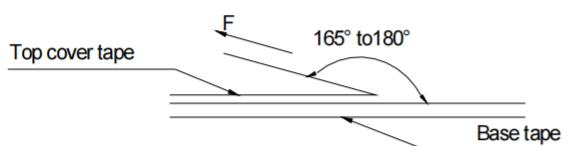


W(mm)	Po(mm)	Ao(mm)	Bo(mm)	Ko(mm)
12.0±0.30	4.0±0.10	3.60±0.10	4.9±0.10	3.5±0.10

Packaging Quantity

Chip size	Chip / Reel	Inner box	Middle box	Carton
SBH4030S470MTT	500	2000	10000	20000

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