



PSE Technology Corporation

SPECIFICATION FOR APPROVAL

CUSTOMER _____

NOMINAL FREQUENCY _____ 32.768 KHz

PRODUCT TYPE _____ **TYPE G8 SMD CRYSTAL**

SPEC. NO. (P/N) _____ G83270022

CUSTOMER P/N _____

ISSUE DATE _____ Jun.16,2016

VERSION _____ A

APPROVED	PREPARED	QA
APPROVED BY CUSTOMER :		AVL Status

Please return one copy with approval to PSE-TW

PSE Technology Corporation

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TYPE G8 SMD CRYSTAL

G83270022

VER. A 16-Jun-16

VERSION HISTORY

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VER. A 16-Jun-16

ELECTRICAL SPECIFICATIONS

SRe Part Number : G83270022

Parameters	Symbol	Specifications	Units	Notes
Nominal Frequency	Fn	32.768	KHz	
Frequency Tolerance	FT	± 10	ppm	at 25 °C ± 5 °C
Load Capacitance	CL	12.5	pF	Typ.
Drive Level	DL	0.1 / 0.5	µW	Typ. / Max.
Equivalent Series Resistance	ESR	70	KΩ	Max.
Temperature Coefficient	K	-0.03	ppm/°C ²	± 0.01ppm/°C ²
Operating Temperature Range	TR	-40 to 85	°C	
Shunt Capacitance	C0	1.5	pF	Typ.
Motional Capacitance	C1	6.5	fF	Typ.
Quality Factor	Q	13	K	Min.
Aging		± 3	ppm	Max. 1st year
Storage Temperature Range		-40 to 85	°C	
Insulation Resistance		500	MΩ	Min.

Reliability (Mechanical and environmental performances)

No.	Test Items	Conditions	Requirements
1	Bending test	Apply pressure in the direction of the arrow at a rate of about 0.5mm/s until bent width reaches 5mm, and hold for 30 seconds.	<ul style="list-style-type: none">Without mechanical damage such as breaks and satisfy sealing specification.Frequency change: Within ±5ppmEquivalent series resistance(E.S.R) change: Within 5kΩ
2	Shear test	Apply 20N(2.04kgf) static load to the core of quartz crystal units in the direction of the arrow using a R0.5 scratch tool, then hold for 5 seconds.	
3	Core body strength	Apply 10N(1.02kgf) static load to the quartz crystal units center in the direction of the arrow using a R0.5 pushing tool, then hold for 10 seconds.	
4	Vibration	Frequency sweep method shall be applied as follows. Quartz crystal units shall be vibrated with the sweeping frequency from 10Hz to 55Hz and return to 10Hz in 1 minute, with 1.5mm amplitude. This vibration shall be applied for 2 hours in each 3 perpendicular axes. Other procedures conform to JIS C 60068-2-6.	
5	Shock	Quartz crystal units shall be accelerated at 9810m/s ² by 1ms pulse duration. This shock shall be applied 3 times in each 3 perpendicular axes. Other procedures conform to JIS C 60068-2-27.	

TYPE G8 SMD CRYSTAL

G83270022

VER. A 16-Jun-16

6	Cold	Quartz crystal units shall be stored in the $-40\pm3^{\circ}\text{C}$ atmosphere for 1000 hours. Other procedures conform to JIS C 60068-2-1.	<ul style="list-style-type: none"> Frequency change: Within $\pm 5\text{ppm}$ Equivalent series resistance(E.S.R) change: Within $5\text{k}\Omega$ After conditioning, quartz crystal units shall be subjected to standard atmospheric conditions for 1 hour, and measured. 														
7	Dry heat	Quartz crystal units shall be stored in the $100\pm2^{\circ}\text{C}$ atmosphere for 100 hours. Other procedures conform to JIS C 60068-2-2.															
8	Damp heat	Quartz crystal units shall be stored in the $40\pm2^{\circ}\text{C}$ atmosphere with 90 to 95% relative humidity for 1000 hours. Other procedures conform to JIS C 60068-2-3.															
9	Change of temperature	Quartz crystal units shall be subjected successively 100 cycles of temperature change shown below. Other procedures conform to JIS C 0025. <table border="1" data-bbox="452 786 944 965"> <thead> <tr> <th></th> <th>Temperature</th> <th>Duration</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>$-40\pm3^{\circ}\text{C}$</td> <td>30min.</td> </tr> <tr> <td>2</td> <td>Normal temperature</td> <td>Within 30 sec.</td> </tr> <tr> <td>3</td> <td>$100\pm2^{\circ}\text{C}$</td> <td>30min.</td> </tr> <tr> <td>4</td> <td>Normal temperature</td> <td>Within 30 sec.</td> </tr> </tbody> </table>			Temperature	Duration	1	$-40\pm3^{\circ}\text{C}$	30min.	2	Normal temperature	Within 30 sec.	3	$100\pm2^{\circ}\text{C}$	30min.	4	Normal temperature
	Temperature	Duration															
1	$-40\pm3^{\circ}\text{C}$	30min.															
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4	Normal temperature	Within 30 sec.															
10	Sealing	Both the test methods specified below shall be applied. Quartz crystal units shall be soaked in 90°C or higher temperature hot water for 5 minutes. Quartz crystal units shall be tested by Mass spectrometric leakage detector to measure the leakage rate of helium gas.	<ul style="list-style-type: none"> Without repetitive leaking bubbles from quartz crystal units. $1\times 10^{-9} \text{ Pa}\cdot\text{m}^3/\text{s}$ or less 														
11	Aging	Quartz crystal units shall be stored in the $85\pm3^{\circ}\text{C}$ atmosphere for 720 ± 12 hours.	<ul style="list-style-type: none"> Frequency change: Within $\pm 5\text{ppm}$ Equivalent series resistance(E.S.R) change: Within $5\text{k}\Omega$ After conditioning, quartz crystal units shall be subjected to standard atmospheric conditions for 1 hour, and measured. 														
12	Solder-ability	Terminals coated with flux shall be immersed in the solder bath for 3.5 ± 0.5 seconds. <table border="1" data-bbox="452 1549 944 1819"> <thead> <tr> <th></th> <th>Items</th> <th>Conditions</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Solder</td> <td>Sn-3.0Ag-0.5Cu</td> </tr> <tr> <td>2</td> <td>Flux</td> <td>Approximately 25wt% methanol(JIS K 8891) solution of resin(JIS K 5902).</td> </tr> <tr> <td>3</td> <td>Solder temperature</td> <td>$245\pm5^{\circ}\text{C}$</td> </tr> </tbody> </table>		Items	Conditions	1	Solder	Sn-3.0Ag-0.5Cu	2	Flux	Approximately 25wt% methanol(JIS K 8891) solution of resin(JIS K 5902).	3	Solder temperature	$245\pm5^{\circ}\text{C}$	<ul style="list-style-type: none"> Minimum 95% of immersed terminal shall be covered with new uniform solder. 		
	Items	Conditions															
1	Solder	Sn-3.0Ag-0.5Cu															
2	Flux	Approximately 25wt% methanol(JIS K 8891) solution of resin(JIS K 5902).															
3	Solder temperature	$245\pm5^{\circ}\text{C}$															

TYPE G8 SMD CRYSTAL

G83270022

VER. A 16-Jun-16

13	Resistance to soldering heat	Reflow soldering method
		<p>Temperature profile</p> <p>Peak temperature: 260±5°C for within 5seconds. Soldering temperature: 220°C or higher for 60±10 seconds. Pre-heating temperature: 160±10°C for 90±10 seconds. Quartz crystal units which is put on PCB shall be through reflow soldering furnace twice with the condition shown above.</p>
		<ul style="list-style-type: none"> Frequency change: Within ±5ppm Equivalent series resistance (E.S.R) change: Within 10kΩ After conditioning, quartz crystal units shall be subjected to standard atmospheric conditions for 1 hour, and measured. Without distinct deformation in appearance.
		<p>Hot Air method Apply hot air for 7±0.5seconds, distance 10mm, 300±5°C, flow 10L/minutes</p> <ul style="list-style-type: none"> Frequency change: Within ±5ppm Equivalent series resistance(E.S.R) change: Within 5kΩ After conditioning, quartz crystal units shall be subjected to standard atmospheric conditions for 1 hour, and measured. Without distinct deformation in appearance.
14	Solubility to resistance	<p>Soak cleaning Quartz crystal units shall be soaked in isopropyl alcohol at normal temperature for 90 seconds.</p> <ul style="list-style-type: none"> Without mechanical damage such as breaks and satisfy sealing specification. Frequency change: Within ±5ppm Equivalent series resistance(E.S.R) change: Within 5kΩ Without distinct deformation in appearance. Marking shall be legible.

TYPE G8 SMD CRYSTAL

G83270022

VER. A 16-Jun-16

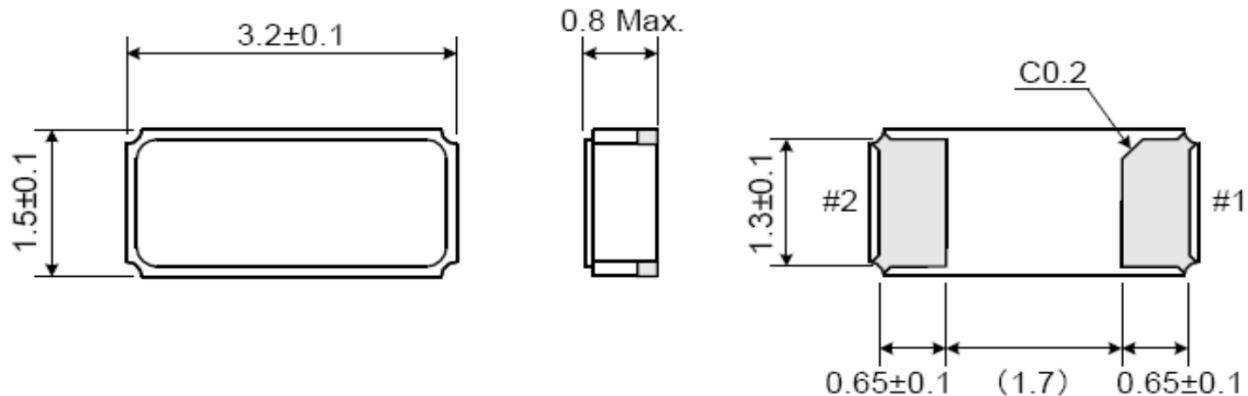
Marking

BEmv

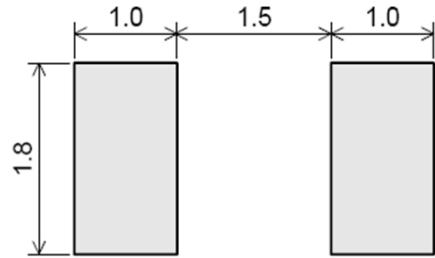
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Factory Code

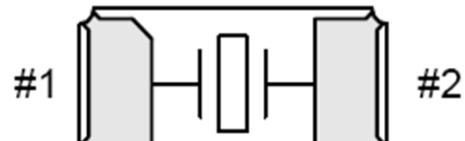
Dimensions (Units: mm)



Recommended Soldering Pattern



Internal connection



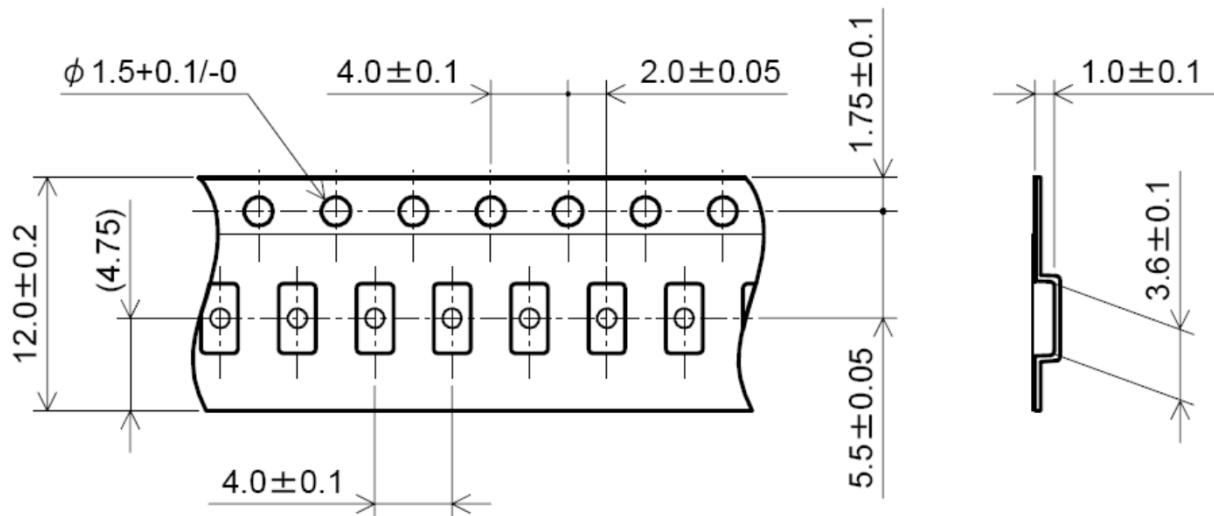
(TOP VIEW)

TYPE G8 SMD CRYSTAL

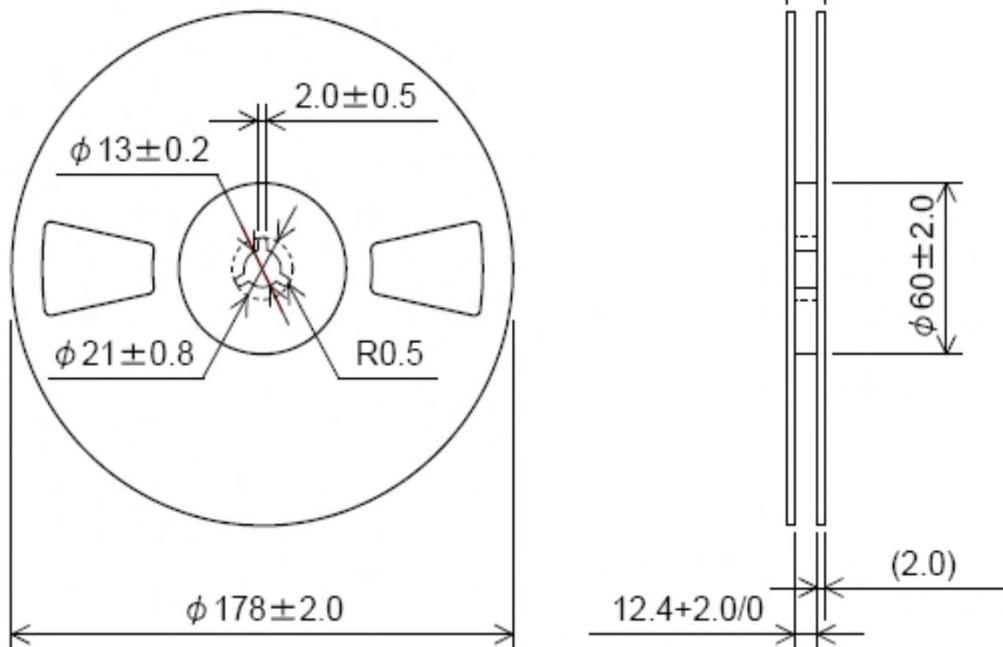
G83270022

VER. A 16-Jun-16

TAPING (Units: mm)



REEL (Units: mm)



Quantity : 3000pcs / Reel

Mouser Electronics

Authorized Distributor

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[G83270022](#)