



PSE Technology Corporation

SPECIFICATION FOR APPROVAL

CUSTOMER _____

NOMINAL FREQUENCY 32.768 KHz

PRODUCT TYPE TYPE G8 SMD CRYSTAL

SPEC. NO. (P/N) G83270021

CUSTOMER P/N _____

ISSUE DATE Jun.16,2016

VERSION A

APPROVED	PREPARED	QA
Brenda	Clarie	Dong Yang
APPROVED BY CUSTOMER :		AVL Status
Please return one copy with approval to PSE-TW		

PSE Technology Corporation

No.2, Tzu-Chiang 5th Rd, Chung Li Industrial Park,
Chung Li City, Taoyuan County, Taiwan (R.O.C.)
TEL: 886-3-451-8888
FAX: 886-3-461-3865
<http://www.saronix-ecera.com.tw>

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G83270021

VER. A 1-Jun-16

VERSION HISTORY



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ELECTRICAL SPECIFICATIONS

SRe Part Number : G83270021

Parameters	Symbol	Specifications	Units	Notes
Nominal Frequency	Fn	32.768	KHz	
Frequency Tolerance	FT	± 20	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.	

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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.													
10	Sealing	<p>Both the test methods specified below shall be applied.</p> <p>Quartz crystal units shall be soaked in 90°C or higher temperature hot water for 5 minutes.</p> <p>Quartz crystal units shall be tested by Mass spectrometric leakage detector to measure the leakage rate of helium gas.</p>	<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.	<ul style="list-style-type: none"> Minimum 95% of immersed terminal shall be covered with new uniform solder. 												
		<table border="1"> <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	$245\pm5^{\circ}\text{C}$	
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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.

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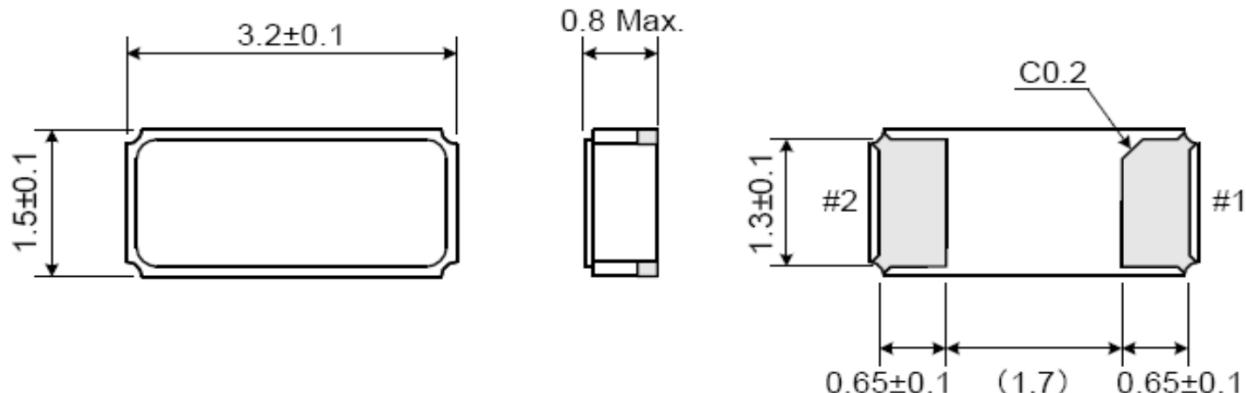
Marking

BEmv

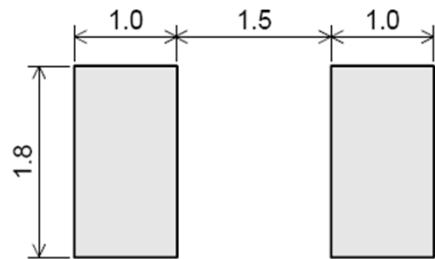
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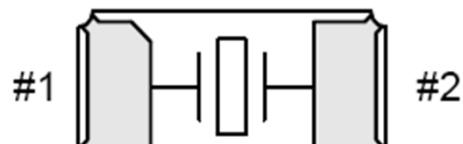
Dimensions (Units: mm)



Recommended Soldering Pattern



Internal connection



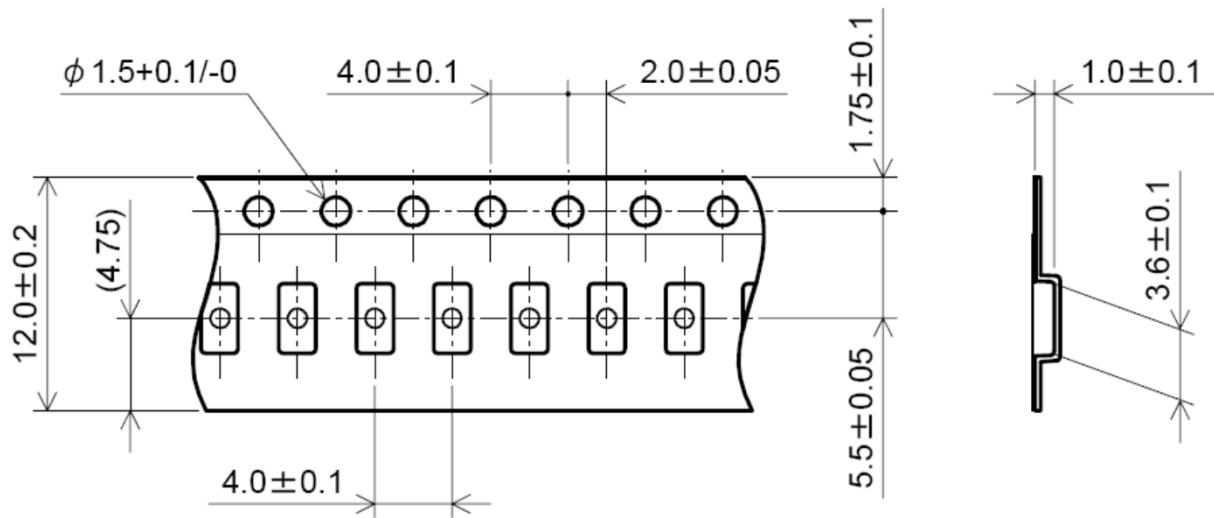
(TOP VIEW)

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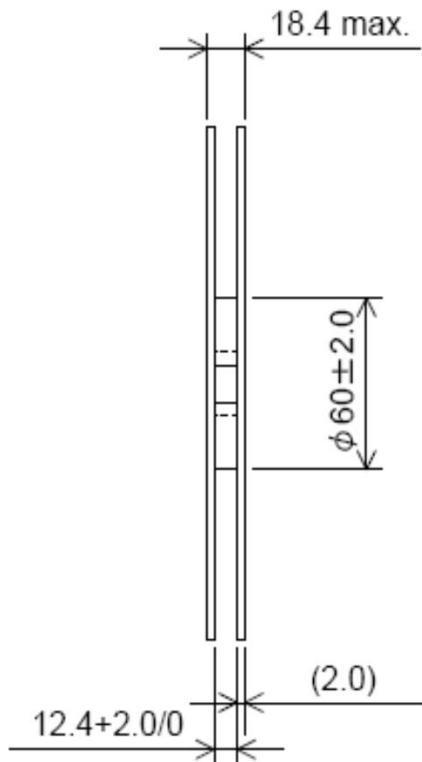
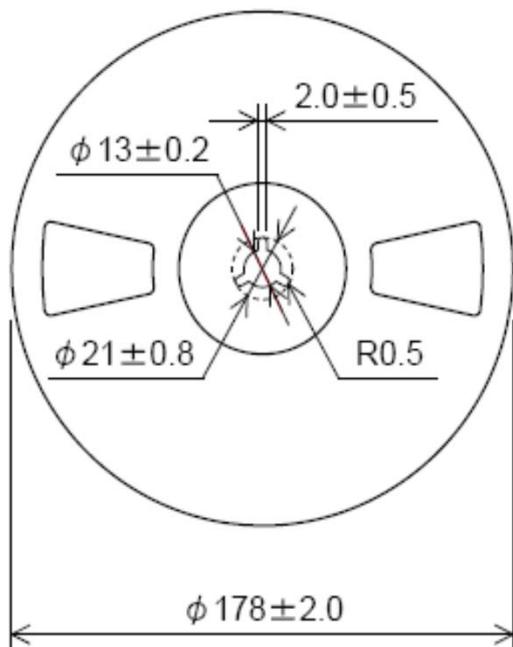
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TAPING (Units: mm)



REEL (Units: mm)



Quantity : 3000pcs / Reel