

Customer :

SPECIFICATION FOR APPROVAL

Customer P/N:

Product Name: Crystal Resonator

P/N: 9R6A048000-0740100

Type: SMD3225-4pin

Frequency: 48.000000MHz

Present Date: 2021-11-22

Customer Confirm		Customer Approval Chapter
Approver		
Department		
Date		

Confirm		Issue Chapter
Present	邱俊杰	
Check	张 斌	
Approver	王立虎	

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1. Electrical characteristics

Standard atmospheric conditions

Unless otherwise specified, the standard range of atmospheric conditions for making measurement and tests are as follow:

Ambient temperature : $22 \pm 5^{\circ}\text{C}$

Relative humidity : 40%~70%

If there is no doubt about the results, measurement shall be made within the following limits:

Ambient temperature : $22 \pm 1^{\circ}\text{C}$

Relative humidity : 40%~70%

Measure equipment

Electrical characteristics measured by HP E5100A or equivalent.

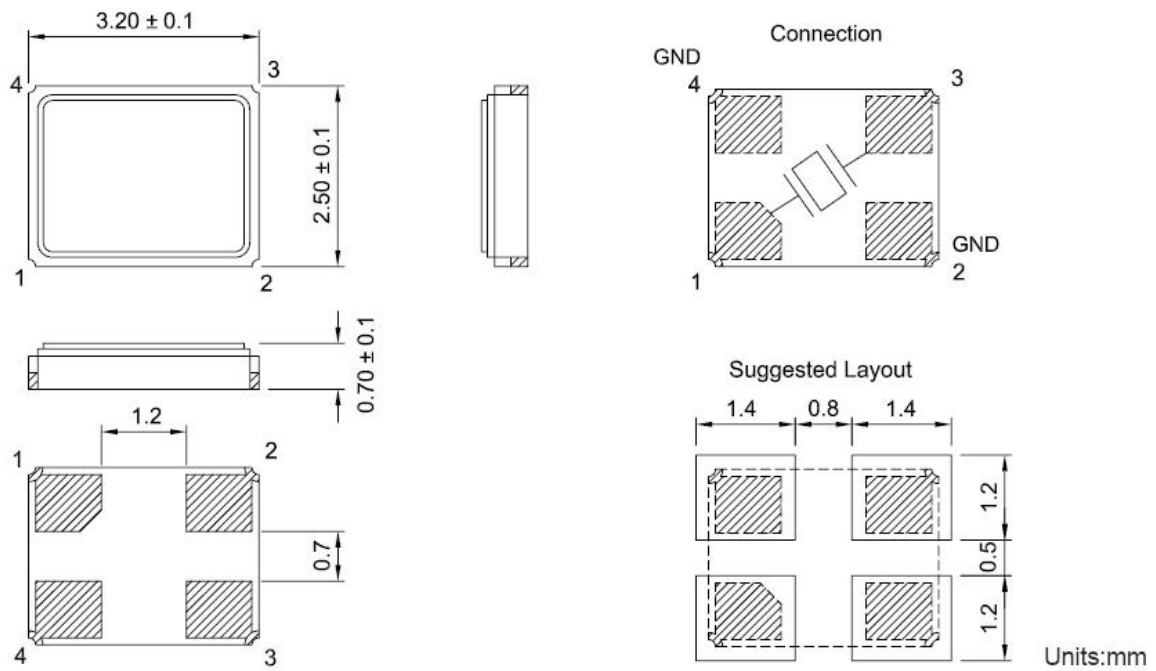
Crystal cutting type

The crystal is using AT CUT (thickness shear mode).

	Parameters	SY M.	Electrical Spec.				Notes
			MIN	TYPE	MAX	UNITS	
1	Nominal Frequency	FL	48.000000			MHz	-
2	Oscillation Mode	-	Fundamental			-	-
3	Load Capacitance	CL	7			pF	-
4	Frequency Tolerance	-	± 10			ppm	at $25^{\circ}\text{C} \pm 3^{\circ}\text{C}$
5	Frequency Tolerance	-	± 20			ppm	Over Operating Temp. Range (Reference 25°C)
6	Operating Temperature	-	-20	~	70	$^{\circ}\text{C}$	-
7	Aging	-	± 3			ppm	1st Year
8	Drive Level	DL	-	100	-	UW	-
9	Effective Resistance RR	Rr	-	-	40	Ω	-
10	Shunt Capacitance C0	C0	-	-	5	pF	-
11	Motional Capacitance C1	C1	-	-	NA	fF	-
12	C0/C1 Ratio				NA	%	
13	Q Factor				NA		
14	SPDB				NA	dB	$\pm 5000\text{ppm}$
15	Insulation Resistance	-	500	-	-	M Ω	at DC 100V
16	Storage Temperature Range	-	-40	~	85	$^{\circ}\text{C}$	-

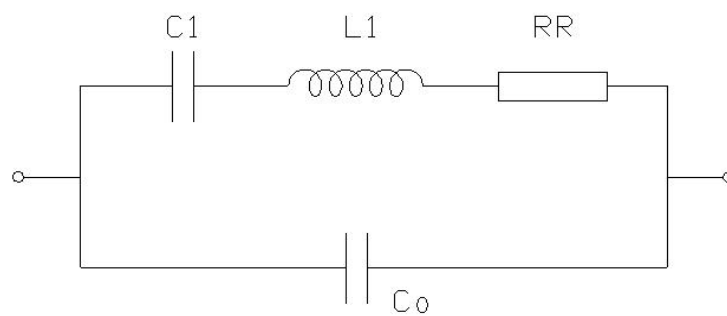
Remark: Sample Data See Attachment

2.Dimension (mm)

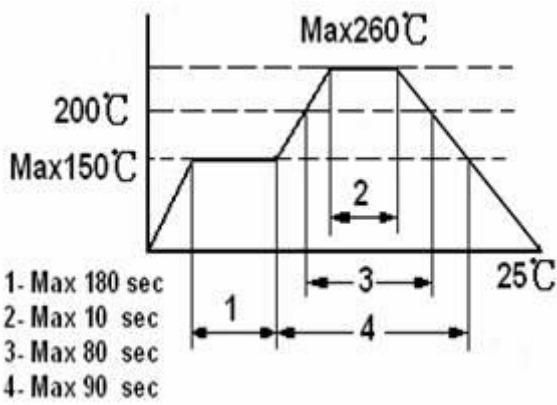


SMD3225

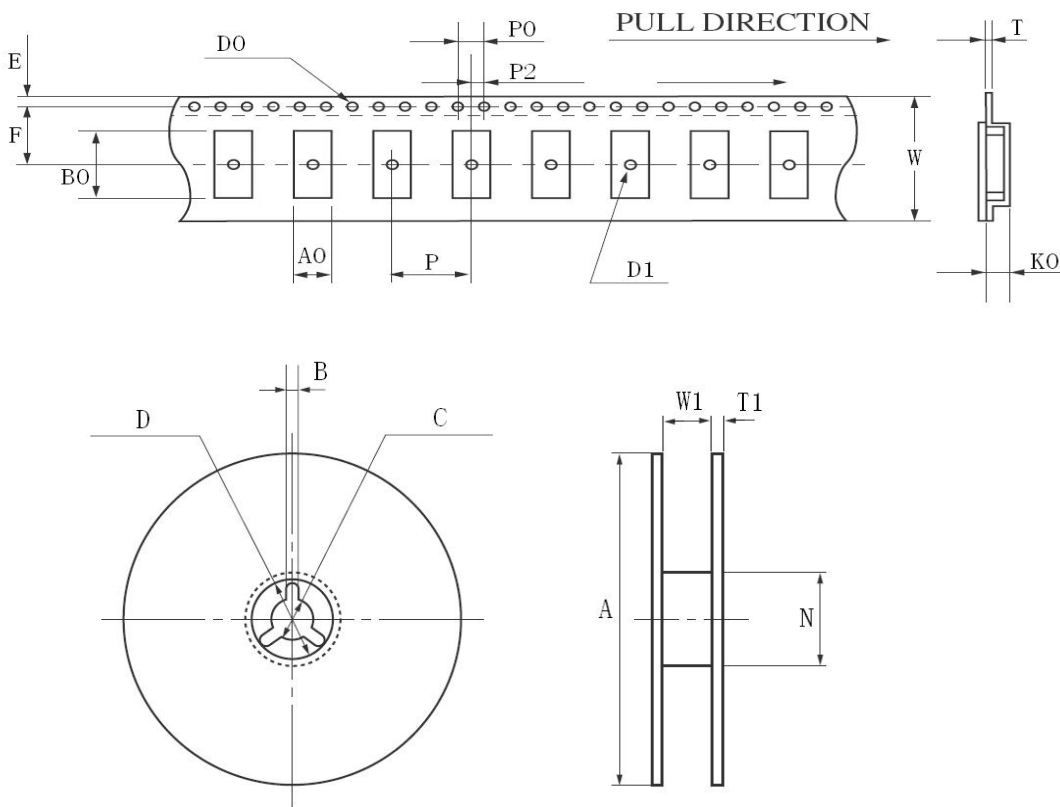
Equivalent Circuit:



3. Reliability Specification

	Item	Condition	Standard
1.	Drop characteristics	Free drop from 75cm height on a hard wooden board for 3 times. (Board is thickness more than 30 mm.)	Frequency change: $\leq \pm 5\text{ppm}$
2	Mechanical shock	Device are shocked to half sine wave (1000g) three mutually perpendicular axes each 3 times	Frequency change: $\leq \pm 5\text{ppm}$
3.	Shake characteristics	Shake frequency 10~55Hz, cyc1~2 minutes, swing 1.5mm, direction x/y/z, all 30 minutes, test after 1 hours.	Frequency change: $\leq \pm 5\text{ppm}$
4.	Humidity characteristics	$+40 \pm 2^\circ\text{C}$ & 90%~95% R.H. 250 hours	Frequency change: $\leq \pm 5\text{ppm}$
5.	Low temperature characteristics	$-40 \pm 2^\circ\text{C}$, 250 hours, put in room temperature, test after 1 hours.	Frequency change: $\leq \pm 5\text{ppm}$
6.	High temperature characteristics	$+85 \pm 2^\circ\text{C}$, 250 hours, put in room temperature, test after 1 hours.	Frequency change: $\leq \pm 5\text{ppm}$
7.	Temperature cycling	$-30 \pm 3^\circ\text{C}/30 \pm 3 \text{ min} \sim +85 \pm 2^\circ\text{C}/30 \pm 3 \text{ min}$, 5 cycles	Frequency change: $\leq \pm 5\text{ppm}$
8.	Refluence examination	 1- Max 180 sec 2- Max 10 sec 3- Max 80 sec 4- Max 90 sec	Frequency change: $\leq \pm 5\text{ppm}$

4. Packing Specification



	HC-49SMD	8045	7050	6035	5032	4025	3225
W	24.00±0.30	16.00±0.05	16.00±0.05	12.00±0.05	12.00±0.05	12.00±0.05	12.00±0.05
E	1.75±0.10	1.75±0.10	1.75±0.10	1.75±0.10	1.75±0.10	1.75±0.10	1.75±0.10
F	11.5±0.10	7.5±0.10	7.5±0.10	5.5±0.10	5.5±0.10	5.5±0.10	5.5±0.10
T	0.40±0.05	0.35±0.05	0.35±0.05	0.35±0.05	0.35±0.05	0.35±0.05	0.30±0.05
P	12.00±0.10	8.00±0.10	8.00±0.10	8.00±0.10	8.00±0.10	8.00±0.10	8.00±0.10
P0	4.00±0.10	4.00±0.10	4.00±0.10	4.00±0.10	4.00±0.10	4.00±0.10	4.00±0.10
P2	2.00±0.10	2.00±0.10	2.00±0.10	2.00±0.10	2.00±0.10	2.00±0.10	2.00±0.10
D0	φ 1.50+0.10	φ 1.50+0.10	φ 1.50+0.10	φ 1.50+0.10	φ 1.50+0.10	φ 1.50+0.10	φ 1.50+0.10
D1	φ 1.50MIN	φ 1.50MIN	φ 1.50MIN	φ 1.50MIN	φ 1.50MIN	φ 1.50MIN	φ 1.50MIN
A0	4.60±0.10	4.85±0.10	5.40±0.10	3.90±0.10	3.60±0.10	2.80±0.10	2.85±0.10
K0	4.40±0.10	1.90±0.10	1.80±0.10	1.50±0.10	1.10±0.10	0.90±0.10	0.85±0.10
B0	14.20±0.15	8.60±0.15	7.40±0.10	6.40±0.10	5.40±0.10	4.30±0.10	3.55±0.10
A	φ 330±1.0	φ 178±2.0	φ 178±2.0	φ 178±2.0	φ 178±2.0	φ 178±2.0	φ 178±2.0
B	2.30±0.20	2.00±0.50	2.00±0.50	2.00±0.50	2.00±0.50	2.00±0.50	2.00±0.50
C	φ 13.5±0.20	φ 13.2±0.20	φ 13.2±0.20	φ 13.2±0.20	φ 13.2±0.20	φ 13.2±0.20	φ 13.2±0.20
D	φ 21.5±0.20	φ 20.0±0.50	φ 20.0±0.50	φ 20.0±0.50	φ 20.0±0.50	φ 20.0±0.50	φ 20.0±0.50
N	φ 100.0±0.5	φ 60.5±1.0	φ 60.5±1.0	φ 60.5±1.0	φ 60.5±1.0	φ 60.5±1.0	φ 60.5±1.0
W1	24.5±0.20	16.5±0.20	16.5±0.20	12.5±0.20	12.5±0.20	12.5±0.20	12.5±0.20
T1	2.30±0.20	1.80±0.20	1.80±0.20	1.80±0.20	1.80±0.20	1.80±0.20	1.80±0.20