



NIHON DEMPA KOGYO CO., LTD

SPECIFICATIONS



Date, 16/03/13

THIS SPECIFICATION SHEET IS PROVIDED TO:

For specifying specifications of following product:

(NDK Part Number)

NX7050SA 12MHZ S1-4085-5050-12

(Your Part Number)

Prepared By:

Checked By:

CONFIRMED BY:



SPECIFICATIONS

1. This specification applies to quartz crystal unit with a frequency of 12.000MHZ.

2. Electrical characteristics:

	Item	Conditions	Specifications
2.1	Holder type		NX7050SA
2.2	Norminal frequency		12.000MHZ
2.3	Order of vibration		Fundamental
2.4	Adjustment tolerance	Reference temperature shall be 25+/-2°C	+/-50ppm
2.5	Frequency tolerance over temperature Range		+/-50ppm
2.6	Operating temperature range		-40°C--+85°C
2.7	Storage temperature range		-55°C--+125°C
2.8	Resonance resistance		60 Ohms
2.9	Load capacitance		12pF
2.10	DLD	0.01-100uW/20 steps	NA
2.11	RLD	0.01-100uW/20 steps	NA
2.12	Shunt capacitance	C0	< 7pF
2.13	Motional capacitance	C1	NA
2.14	Pulling Sensitivity	S	NA
2.15	Drive level		100uW
2.16	Insulation resistance	DC/100V shall be applied for 1min ,then measurement shall be made between terminal and case.	>500M ohm
2.17	Aging/year		<+/-3ppm

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3.Measurement Circuit:

3.1 Frequency measurement:

Measurement circuit: 250B(Saunders)

Load capacitance: 12pF Drive level :100uW

3.2 Resistance measurement

Measurement circuit:250B(Saunders)

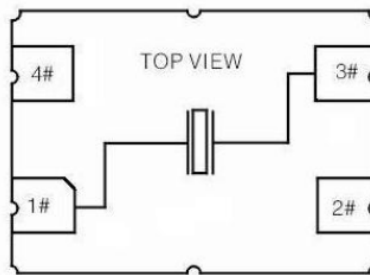
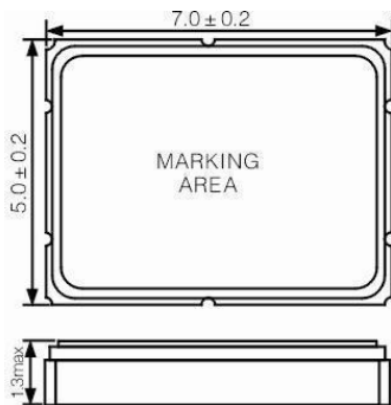
Load capacitance:Series Drive level :100uW

4. Construction

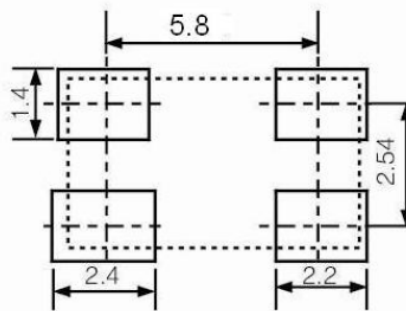
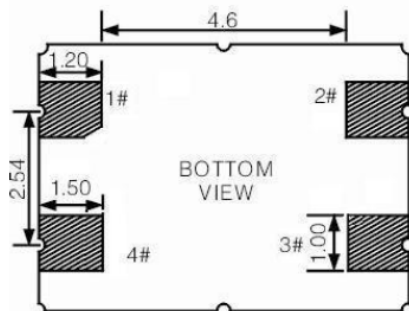
4.1 Crystal enclosure seal: seam seal

4.2 crystal enclosure medium: nitrogen

5.Dimension:



Reference land pattern



Unit:mm

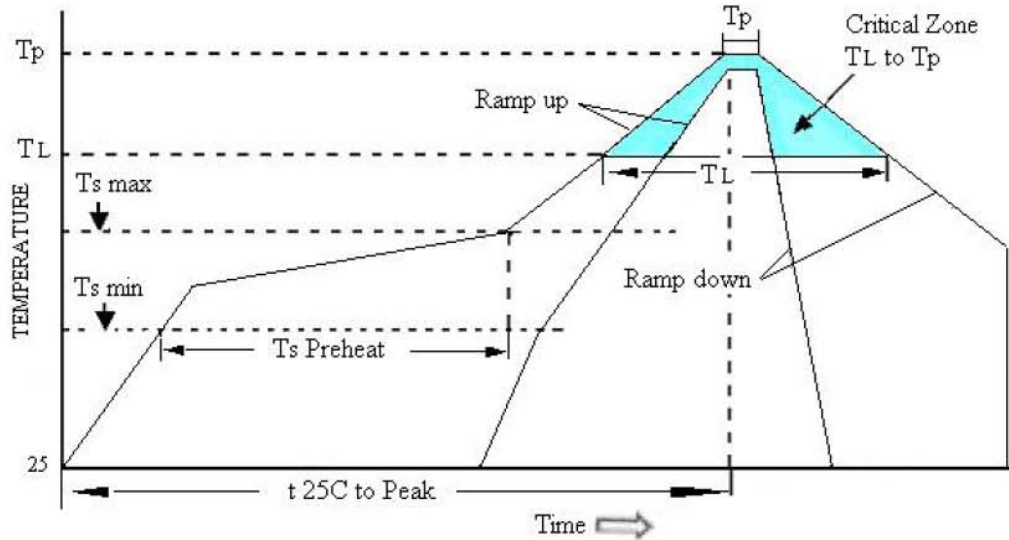


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6. Reliability characteristic:

	Item	Condition	Specifications	
6.1	Solderability	Solder bath temperature:260°C , dwell time:5 seconds, Solder: 100% tin	A new uniform coating of solder shall cover a minimum of 95% of the surface being immersed.	
6.2	Resistance to soldering heat	Solder temperature 260+/-3°C,Immersion time:10 S Solder bath composition:100% tin	$\Delta F \leq \pm 5 \text{ppm}$ $\Delta R \leq \pm 15\% + 3 \text{ ohm}$	
6.3	Vibration	The entire frequency range: 10Hz to 55Hz ,Amplitude:1.5mm This motion shall be applied for a period of 2 h in each of 3 mutually perpendicular axes(a total of 6h)	$\Delta F \leq \pm 5 \text{ppm}$ $\Delta R \leq \pm 15\% + 3 \text{ ohm}$	
6.4	Drop test	Drop from 75cm height on 3cm hard wooden board for 6 times	$\Delta F \leq \pm 5 \text{ppm}$ $\Delta R \leq \pm 15\% + 3 \text{ ohm}$	
6.5	Cold Storage	The quartz crystal unit shall be stored at a temperature of -40+/-3°C for 1000 h.then it shall be subjected to standard atmospheric conditions for 1h after which measurement shall be made.	$\Delta F \leq \pm 5 \text{ppm}$ $\Delta R \leq \pm 15\% + 3 \text{ ohm}$	
6.6	High temperature high humidity storage (steady state)	The quartz crystal unit shall be stored at a temperature of 40+/-2°C with relative humidity of 95% for 1000h, then it shall be subjected to standard atmospheric conditions for 2h after which measurement shall be made.	$\Delta F \leq \pm 5 \text{ppm}$ $\Delta R \leq \pm 15\% + 3 \text{ ohm}$	
6.7	Thermal shock	The quartz crystal unit shall be subjected to 50 successive Change of temperature cycles. Each as shown in table below ,then it shall be subjected to standard atmospheric conditions for 1h after which measurement shall be made.	$\Delta F \leq \pm 5 \text{ppm}$ $\Delta R \leq \pm 15\% + 3 \text{ ohm}$	
6.8	Sealing	Helium leakage detector shall used to measure the leakage rate of gas through any faulty seal. Pressure:500Kpa, duration:120 minutes	Leakage rate $\leq 1 \times 10^{-9} \text{ Pa.m}^3/\text{S}$	
6.9	High temperature Life test	The quartz crystal unit shall be stored at a temperature of 85+/-3°C for 720h ,then it shall be subjected to standard atmospheric condition for 1h after which measurement shall be made.	$\Delta F \leq \pm 5 \text{ppm}$ $\Delta R \leq \pm 15\% + 3 \text{ ohm}$	

7.Reflow Profile:



High Temperature Infrared /Convection

Note:Temperature shown are applied to body of device

Ts max to T_L (Ramp-up Rate)	3°C/second max
Preheat	
Temperature Min(T_s Min)	150°C
Temperature Typical(T_s Typ)	175°C
Temperature Max.(T_s Max)	200°C
Time(t_s)	60-180 seconds
Ram-up Rate(T_L to T_p)	3°C/second Max
Time Maintained Above:	
--Temperature(T_L)	217°C
--Time(T_L)	60-150seconds
Peak Temperature (T_p)	260°C Max for 10 seconds
Time within 5°C of actual peak(t_p)	20-40 seconds
Ramp-down Rate	6°C/seconds Max
Tune 25°C to Peak Temperature(t)	8 minutes Max
Moisture Sensitivity Level	Level 1

High Temperature Manual Soldering

Note:Temperature shown are applied to body of device

260°C Max for 5 seconds Max, 2 times Max