



**THE DATASHEET OF
ESC-080002020B20-03**



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DATA SHEET

ESL NO.. : ESC-080002020B20-03

CUS NO. :

REV : A / 0

Producer: Eden

Auditor: _____

Approver: Jack

CUSTOMER'S APPROVAL : _____

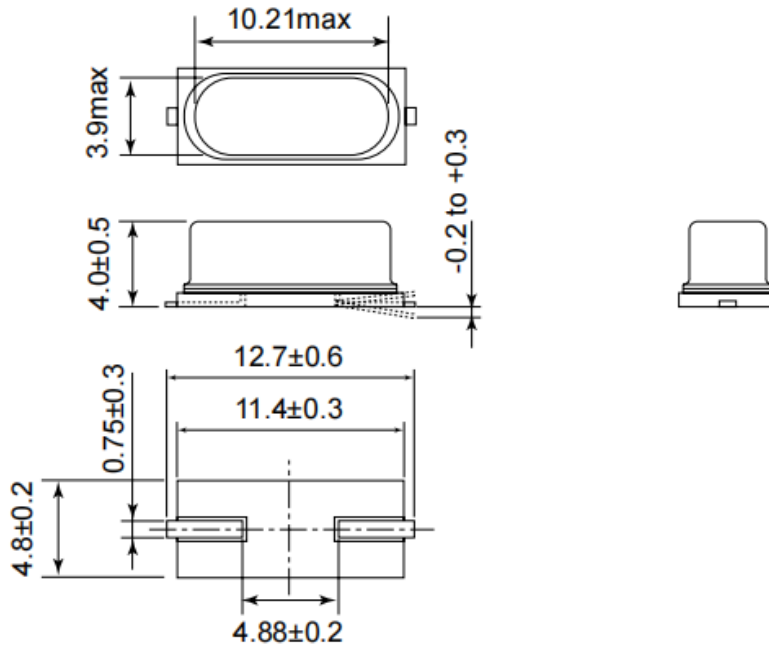
DCC : _____

HC-49/SMD Quartz Crystal

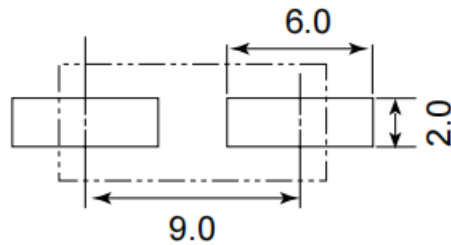
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Package Outline Dimensions



Suggested Pad Layout



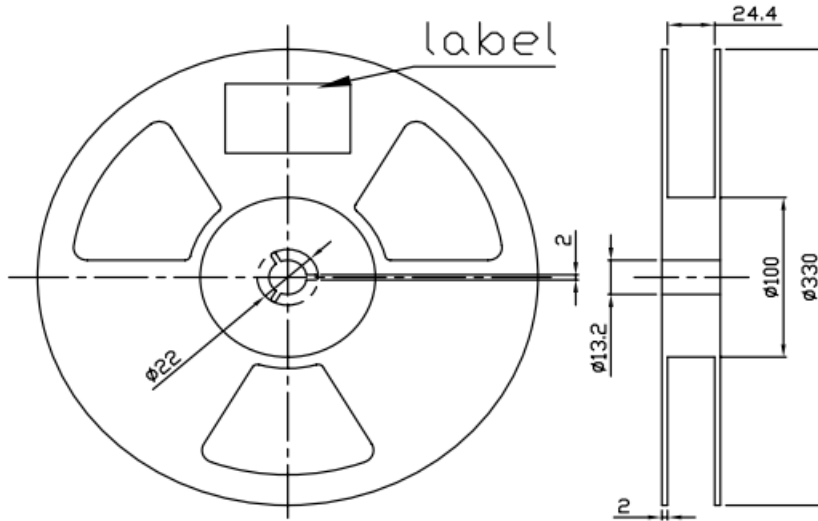
HC-49/SMD Quartz Crystal

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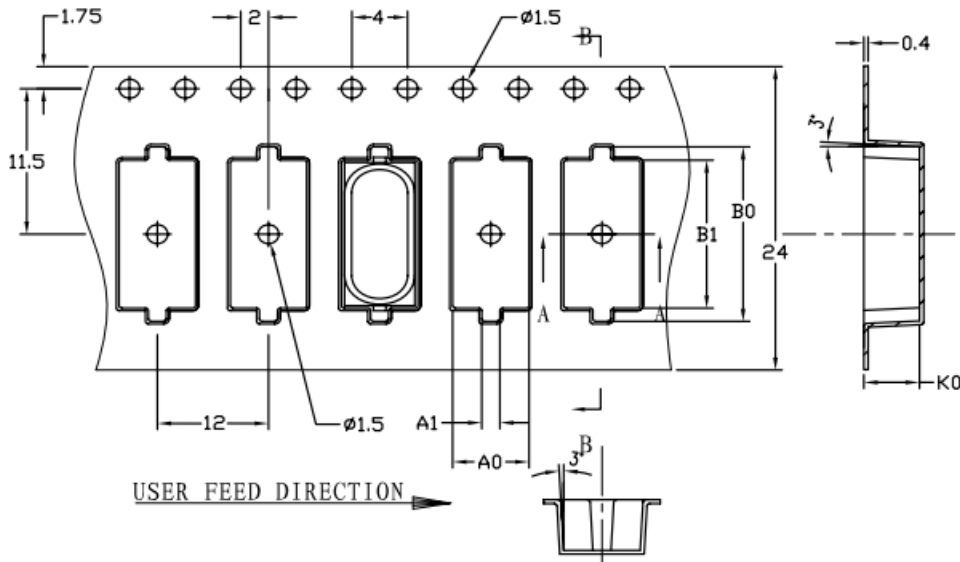
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Tape and Reel

REEL DIMENSIONS



EMBOSSED TYPE DIMENSIONS



ITEM	A0±0.1	B0±0.1	A1±0.1	B1±0.1	K0±0.1
HC-49/SMD	5.0	13.5	1.3	11.7	4.4

HC-49/SMD Quartz Crystal

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1. Scope:

- 1.1 This specification applies to the RoHS/HF compliance quartz crystal unit with a frequency of 8MHz which will be used in crystal oscillator applications.

2. Construction:

- 2.1 Type of Quartz Resonator: HC-49/SMD

3. Electrical Characteristics

- | | |
|---|--------------------------|
| 3.1 Nominal Frequency(f): | 8MHz |
| 3.2 Load Capacitance(C_L): | 20pF |
| 3.3 Frequency Tolerance($\Delta f/f$): | ± 20 ppm |
| 3.4 Frequency Temperature Stability: | ± 20 ppm(Ref. @25°C) |
| 3.5 Resonance Resistance(ohm): | 50ohms Max |
| 3.6 Osc mode: | Fundamental mode |
| 3.7 Shunt Capacitance(C_0): | <7pF |
| 3.8 Drive Level(D_L): | <300 μ W |
| 3.9 Operating Temperature Range(T_{OPR}): | -40 to + 85°C |
| 3.10 Storage Temperature Range(T_{STG}): | -55 to + 125°C |
| 3.11 Insulation Resistance(IR): | >500 M ohms |
| 3.12 Aging(Δf_A): | ± 3 ppm per Year |

HC-49/SMD Quartz Crystal

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4. Reliability Specifications

This is the quality control and quality assurance and reliability tests performance data for the RoHS/ HF compliance 8MHz HC-49/SMD Quartz Crystal.

related to the specification and approval sheet provided by JSCJ .

Standard test condition (TEMP.: 20±5°C. Relative humidity: 65±20%)

For any discrepancy in GO/NG, test will be done at TEMP.25±2°C, R.H. 65±5%.

NO.	PROCESS	SPECIFICATION	TEST METHOD
4.1	Temperature Cycle (GB/T 2423.22-2002, Method Nb)	Frequency change after test $\leq \pm 5$ ppm.Resonance resistance change after test ≤ 10 ohms.	10 cycles from -55°C to 125°C. Measurement taken after DUT being left at room temperature for 24±2 hours.
4.2	Low Temperature Storage (GB/T 2423.1-2001, Method Aa)	Frequency change after test $\leq \pm 5$ ppm.Resonance resistance change after test ≤ 10 ohms.	Spending 72 hrs at -55°C±3°C constant temperature. Measurement taken after DUT being left at room temperature for 24±2 hours.
4.3	High Temperature Storage (GB/T 2423.2-2001, Method Ba)	Frequency change after test $\leq \pm 5$ ppm.Resonance resistance change after test ≤ 10 ohms.	Spending 72 hrs at 125°C±3°C constant temperature. Measurement taken after DUT being left at room temperature for 24±2 hours.
4.4	Humidity (GB/T 2423.3-2006, Method Cab)	Frequency change after test $\leq \pm 5$ ppm.Resonance resistance change after test ≤ 10 ohms.	Spending 96 hrs at 40 °C ± 3 °C, with 93 %R.H. Then keep the DUT in dry oven at 40 ± 5 °C for 24 hour. Measurement taken after DUT being left at room temperature for 1 to 2 hours.
4.5	Vibration (GB/T 2423.10-1995, Method Fc)	Frequency change after test $\leq \pm 5$ ppm.Resonance resistance change after test ≤ 10 ohms.	Apply 0.75mm vibration at sweep frequency 10~500 Hz, 10 cycles in each direction of 3 axis. Measurement taken after 1 hour.
4.6	Shock (GB/T 2423.5-1995, Method Ea)	Frequency change after test $\leq \pm 5$ ppm.Resonance resistance change after test ≤ 10 ohms.and exhibit no visible damage.	Peak 1000m/s ² , normal width 6ms half sine wave form, 3.7m/s, 3 perpendicular axis of samples, 3 cycles / direction, total 18 cycles. Measurement taken after 1 hour.
4.7	Drop (GB/T 2423.8-1995, Method Ed)	Frequency change after test $\leq \pm 5$ ppm.Resonance resistance change after test ≤ 10 ohms.and exhibit no visible damage.	Free drop to the steel plate with thickness of 3 mm from 0.75 m heights for 3 times.
4.8	Solderability (IEC60068-2-58,Test Td:)	Terminals shall be covered more then 95% with solder.	Passed through the re-flow oven under the following condition. Preheat 150 to 180°C for 60 to 120sec, and soldering time for 20s ± 5s at 235°C, peak soldering time for 10s ± 1s between 240 and 250°C. There is no need to do functional test. 8-12X magnifier.
4.9	Terminal Strength (JIS-C-6429 Method 1 & 2)	No visible damage	Mount on a glass-epoxy board (100x50x1.6mm), then bend to 2mm displacement (velocity 1mm/sec) and keep for 5 seconds. or pulling force 0.5kg for at least 60 seconds.
4.10	Resistance to Soldering Heat (IEC60068-2-58,Test Td: Table 4)	Frequency change after test $\leq \pm 5$ ppm.Resonance resistance change after test ≤ 10 ohms.	Passed through the re-flow oven under the following condition. Preheat 150 to 180°C for 60 to 120sec, and sodering time for 60s max at 235°C, peak soldering time for 20s max at 265°C max. Measurement taken after DUT being left at room temperature for at least 2 hours.
4.11	OTHERS		

Notes: The above test items and judgment standards are for reference only, and the actual reliability report shall prevail.

HC-49/SMD Quartz Crystal

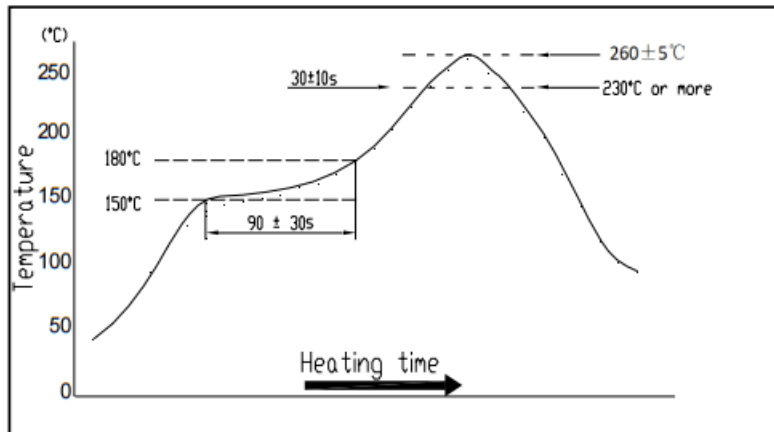
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5. Recommended Reflow soldering condition (SMD)

Solder profile

Peak: $260 \pm 5^\circ\text{C}$ Soldering zone: 230°C or more, $30 \pm 10\text{s}$. Pre-heating zone 1: $150 \sim 180^\circ\text{C}$, $90 \pm 30\text{s}$



Temperature profile for reflow soldering

6. Soldering iron method

Bit temperature: $350 \pm 10^\circ\text{C}$ Application time of soldering iron: $3 \pm 1\text{ s}$. For other procedures, refer to IEC 60068-2-20.

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