

**SMD2520 Quartz crystal resonator 12MHz**TOL:  $\pm 10\text{ppm}$ , CL: 12PF**Feature**

- Compact, ultra-thin surface mount
- Wide temperature range, high stability, high reliability

**Quick reference data**

Parameter	Min	Typ	Max	Unit	Condition
output frequency	12.000			MHz	—
operating temperature	-40	—	+85	°C	TC temperature measurement device
storage temperature	-40	—	+85	°C	—
load	12			pF	—

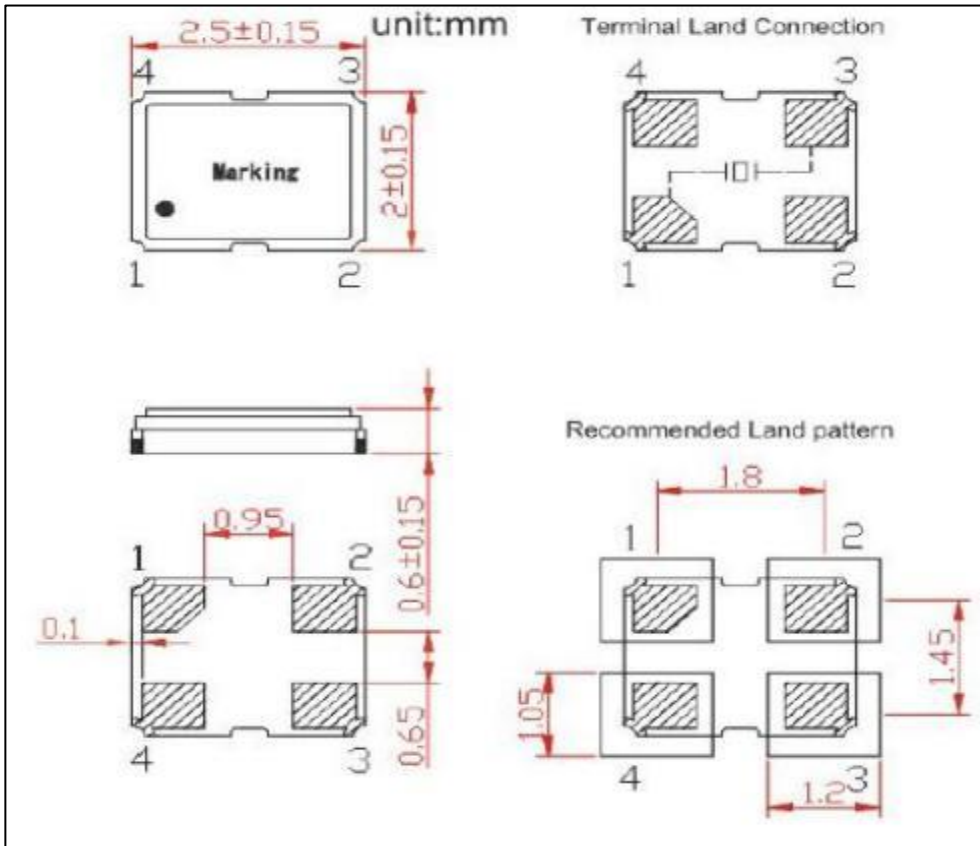
PS :

1. The instrument can use test equipment equivalent to 250B;
2. Measurements of frequency tolerance characteristics should be conducted at a stable room temperature environment of  $25\pm 2^\circ\text{C}$ .

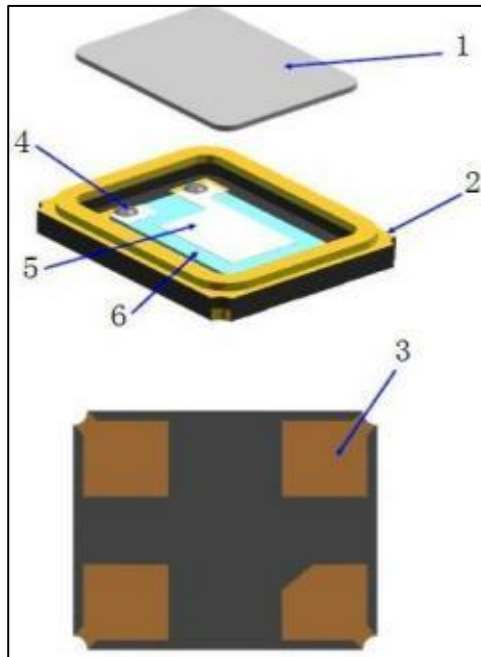
**Electrical characteristics**

NO.	Parameter	Symbol	Min	Typ	Max	Unit	Condition
1	output frequency	$F_L$	12.000			MHz	—
2	oscillation mode	$O_T$	AT cut, Fundamental frequency			—	—
3	load capacitance	$C_L$	12			pF	—
4	frequency tolerance	$\Delta F/F$	$\pm 10$			ppm	room temperature deviation
5	frequency temperature characteristics	$\Delta F/F$	$\pm 20$			ppm	temperature frequency deviation
6	operating temperature range	$T_{OPR}$	-40	—	+85	°C	—
7	storage temperature range	$T_{STR}$	-40	—	+85	°C	—
8	static capacitance	$C_0$	—	—	$\leq 3$	pF	—
9	equivalent resistance	$R_r$	—	—	$\leq 60$	$\Omega$	—
10	drive level	$D_L$	—	—	$\leq 100$	$\mu W$	—
11	insulation resistance	$I_R$	500	—	—	M $\Omega$	DC 100V
12	aging	$F_{ag}$	$\pm 3$			ppm	1 <sup>st</sup> year

External dimensions

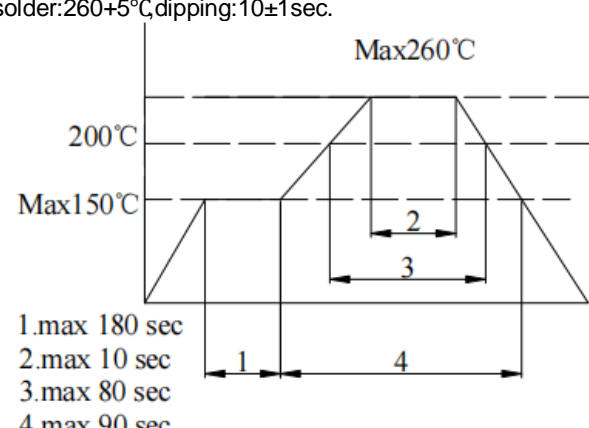


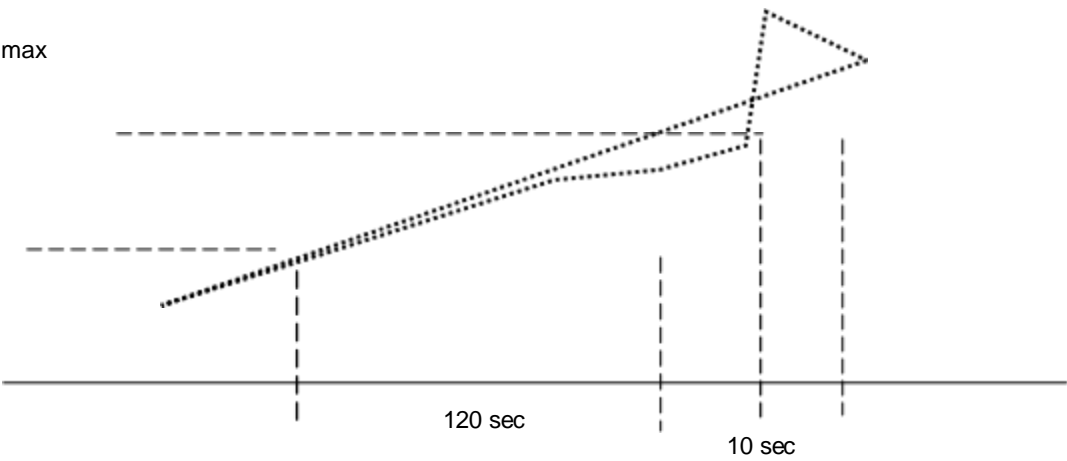
Structure and materials



No.	Parameter	Material	Quantity
1	top cover	kovar	1
2	base	Al <sub>2</sub> O <sub>3</sub>	1
3	pins	Au	4
4	conductive adhesive	Ag + silicone resin	4
5	electrode	Cr + Ag	2
6	chip	SiO <sub>2</sub>	1

**Reliability specification**

Reliability Specification			
No.	Reliability	Reliability Conditions	Specification
1	electrode terminal pull	1kg force in axes of electrode termination 10±1sec	1.glass hermeticity & visual. 2. lead cracked or broken not allowed'
2	electrode wire- lead bend	2.5mm from electrode terminal,bend 90°, ' 0.45kg mass applied 3times.	
3	Solder ability	solder:235±5°C,dipping:5±0.5sec.	at least 95% coating.
4	resistance to	solder:260+5°C,dipping:10±1sec.  <p>1.max 180 sec 2.max 10 sec 3.max 80 sec 4.max 90 sec</p>	1.at least 95% coating. 2.ΔF/F ≤ ±5ppm ΔF/Rr ≤ ±10% or 2ω better, 20%
5	vibration test	10g,10~55~10hz 1minute,x、 y、 z plane each 2hrs.	ΔF/F ≤ ±5ppm ΔF/Rr ≤ ±10% or 2ω better, 20%
6	drop test	75cm high,3 times on hard board	ΔF/F ≤ ±5ppm ΔF/Rr ≤ ±10% or 2ω better, 20%
7	aging test	85°C dynamic 1000hrs	ΔF/F ≤ ±5ppm ΔF/Rr ≤ ±10% or 2ω better, 20%
8	accelerated aging	125°C±3°C,time:168 hrs. dynamic	ΔF/F ≤ ±5ppm ΔF/Rr ≤ ±10% or 2ω better, 20%
9	salt spray	5% NaCl 35°C±2°Cchamber,48hrs. PH value: 6.5~7.2	no corrosion on lead&can ΔF/F ≤ ±5ppm ΔF/Rr ≤ ±10% or 2ω better, 20%

10	high-low tem. storage(static)	high tem:125°C±2°C,1000hrs low tem:-40°C±3°C,1000hrs	$\Delta F/F \leq \pm 5\text{ppm}$ $\Delta F/Rr \leq \pm 10\%$ or 2 $\omega$ better, 20%
11	high tem. & hum. storage test	tem:40°C±2°C hum:83%-88%,96hrs	$\Delta F/F \leq \pm 5\text{ppm}$ $\Delta F/Rr \leq \pm 10\%$ or 2 $\omega$ better, 20%
12	tem. & hum. cycling test	tem:-10°C±2°C~65°C±2°C 24hrs 1 cycle' hum:93±3% 5 cycles	$\Delta F/F \leq \pm 5\text{ppm}$ $\Delta F/Rr \leq \pm 10\%$ or 2 $\omega$ better, 20%
13	high-low tem. operating test	high tem:85°C±2°C,2hrs low tem:-30°C±2°C,2hrs	$\Delta F/F \leq \pm 5\text{ppm}$ $\Delta F/Rr \leq \pm 10\%$ or 2 $\omega$ better, 20%
14	frequency/Rr v.s operating tem.	tem:-10°C~+60°C、-20°C~+70°C、0°C~70°C 'measure point: every 10°C deviation.	as specification
15	high low shock	 <p>specification :</p> <p><math>\Delta f/f \leq \pm 5\text{ppm}</math> <math>\Delta f/r \leq \pm 10\%</math> or 2<math>\omega</math> better,20%</p>	<p>1. 150°C 60--120sec max</p> <p>2. 200°C 20--30sec max</p>