


LUCKI CM ELECTRONICS Co.,Ltd


承认书

APPROVAL SHEET

客户代码 Customer : _____

产品名称 Part Number : 石英晶体谐振器 _____

LK 料号 LK Part No. : L538G160U11L _____

产品型号 Holder : SMD5032 GLASS _____

标称频率 Frequency : 16.000MHZ 20PF $\pm$ 10PPM _____

制造商 Manufacturer : 浙江蓝晶芯微电子有限公司 _____

提交时间 Date : 2023-08-04 _____

制作 DESIGNER	审核 Checked	批准 Approved
赵倩	张东伟 技术部	张东伟

客户批准 Customer Approval :

审核 Checked	批准 Approved

(请批准后回签一份 PLEASE RETURN A COPY WITH APPROVAL)

[illegible]

1.This specification applies to SMD quartz crystal unit with a frequency of 8.000MHz.

2. Electrical characteristics

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNIT
Normal Frequency Range	F _n	-	-	16.000	-	MHz
Order of vibration	Fundamental					
Load capacitance	CL	-	-	20	-	pF
Initial Frequency Accuracy	FL	-	-10	-	10	ppm
Resonance resistance	RR	-	-	-	30	Ω
Drive level	DL	-	-	100	300	μW
Shunt capacitance	C0	-		-	5	pF
Insulation resistance	IR	DC 100V	500	-	-	MΩ
DLD	DLD2	0.01~100 μW 10STEPS	-	-		Ω
	FDL D		-	-		ppm
	RLD2		-	-		Ω
	DLDH2		-	-	-	Ω
	FDLDH		-	-	-	ppm
Motional capacitance	C1	-		-		fF
Inductance	L	-	-	-	-	mH
Trim sensitivity	TS	-	-	-	-	ppm/pF
Autoeciousness	SPDB	±5300PPM of nominal Freq	-	-	-3.0	dB
Operating temperature range	T1	±30PPM	-40	-	85	℃
Storage temperature range	-	-	-55	-	125	℃
Aging	-	-	-3	-	3	ppm

3. Construction

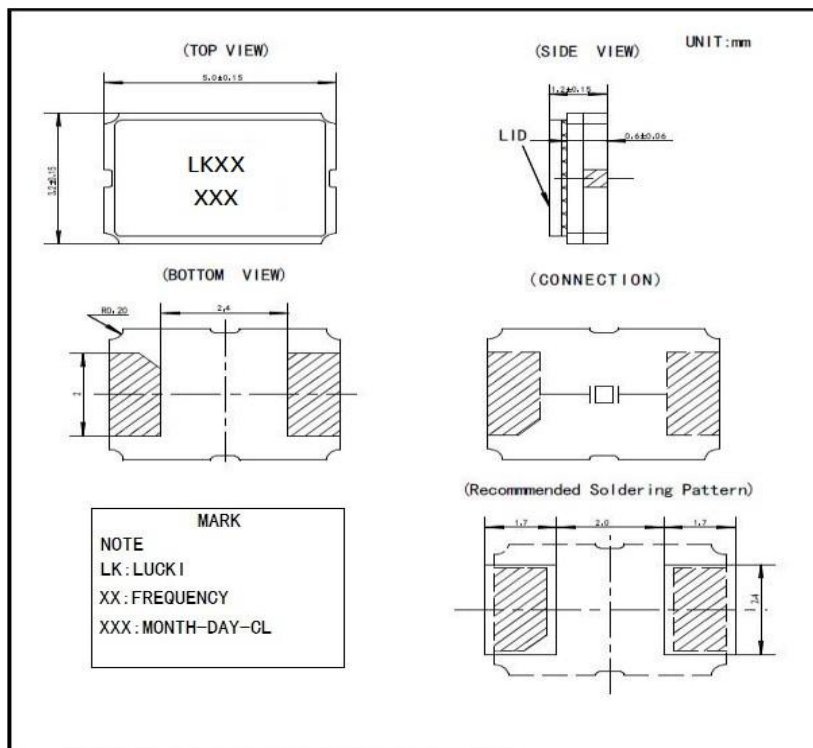
3.1 Crystal enclosure seal:

☒ Seam seal ☐ resistance weld ☐ cold weld

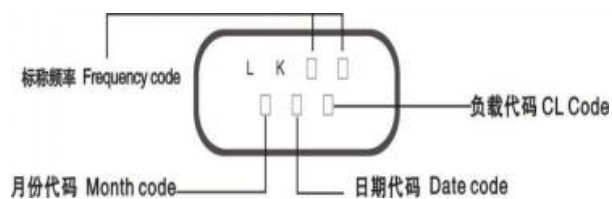
3.2 crystal enclosure medium

☒ nitrogen ☐ vacuum ☐ dry air

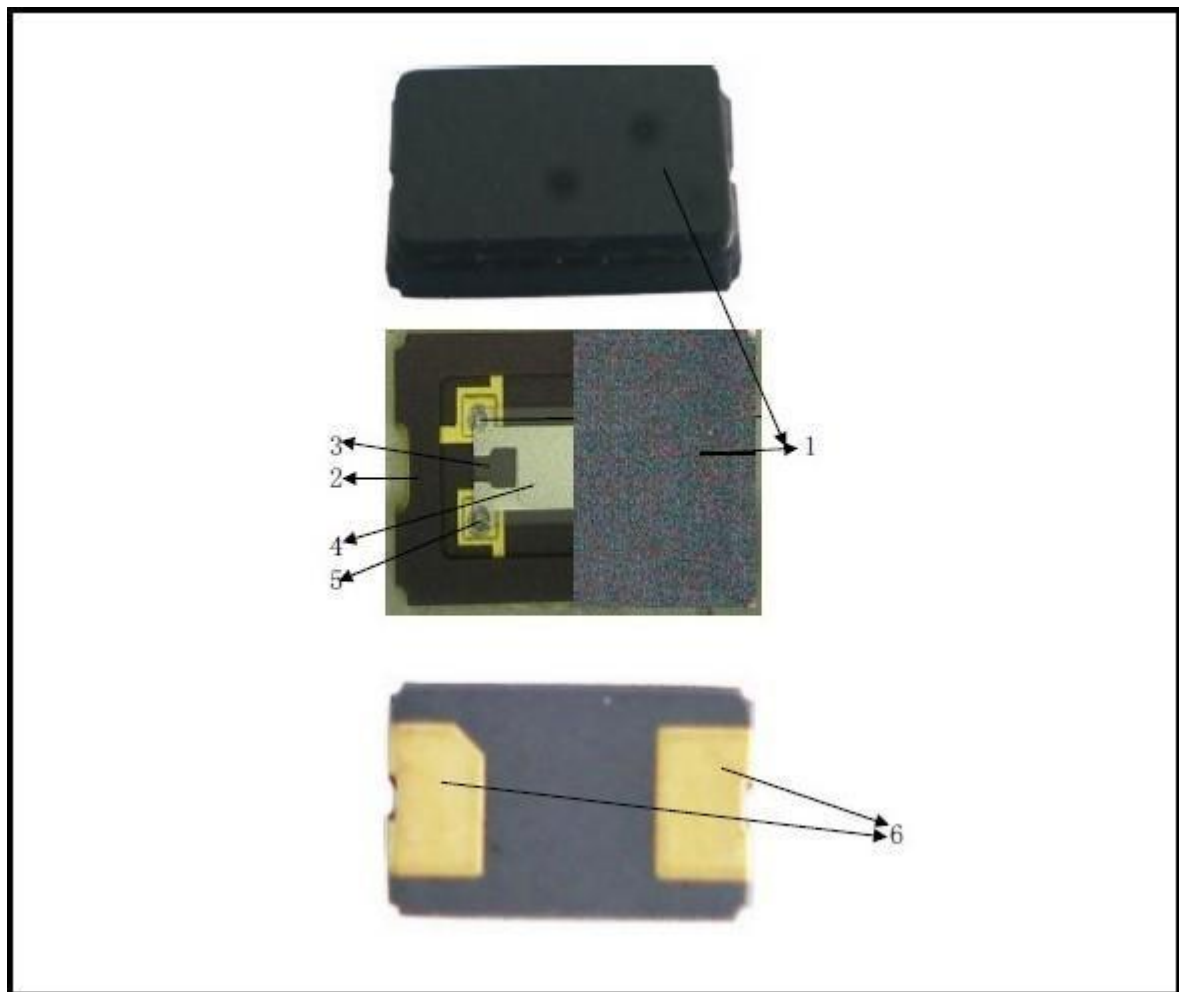
4.Dimension:



5. Marking specification



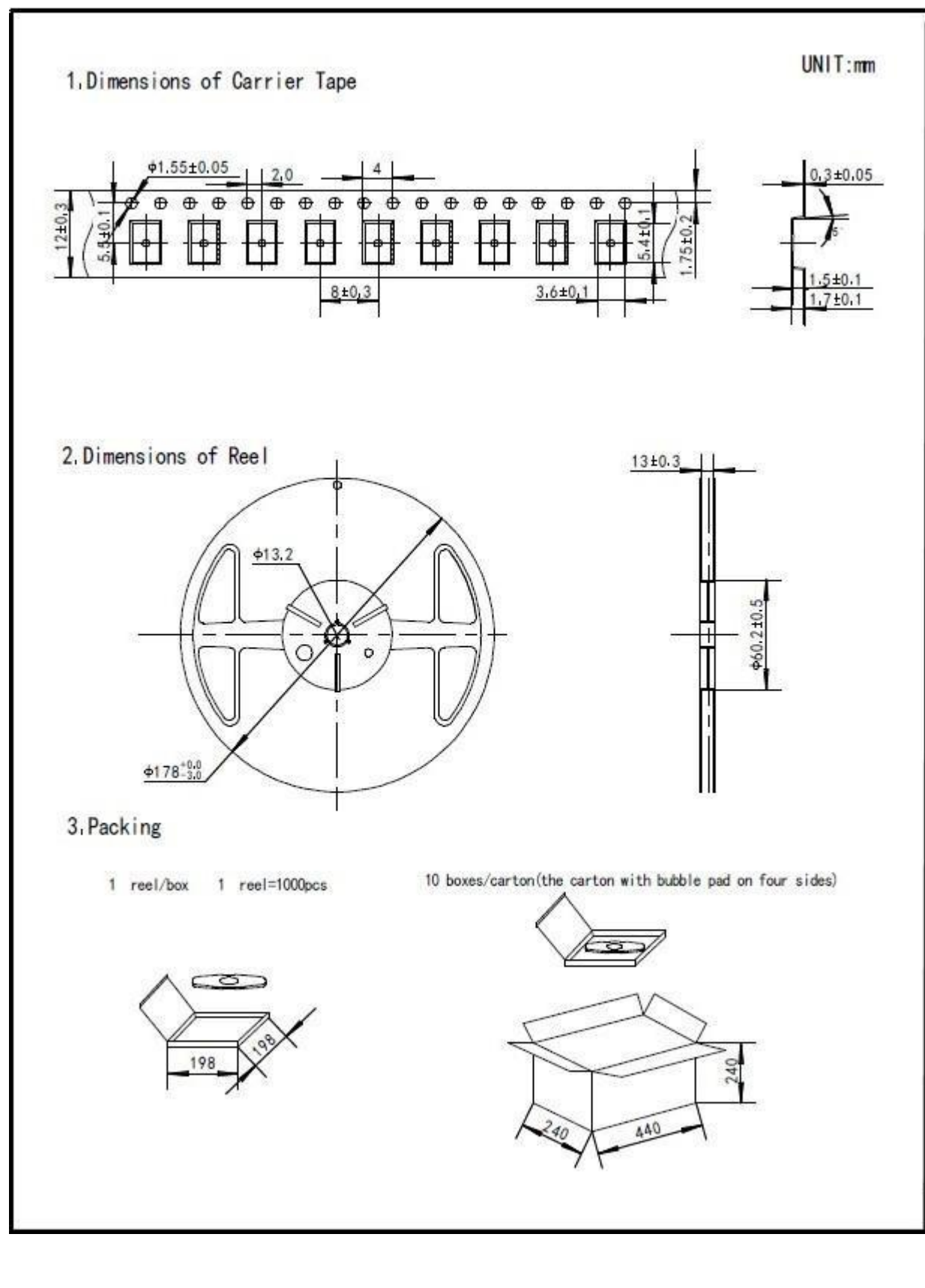
6. Inside Structure



No.	Name	Material
(1)	Can	Ceramic
(2)	Base	Ceramic
(3)	Blank	Quartz
(4)	Electrode	Ag
(5)	Epoxy	Silicon based
(6)	Soldering Pads	Au plated

7.Taping Dimension and Packing Instruction

7.1



7.2

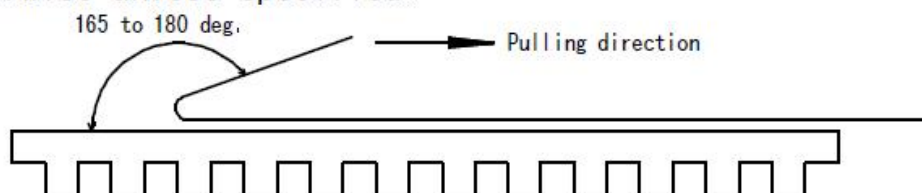
Release strength of cover tape

It has to be between 30g to 90g under following condition.

Pulling direction : 165 deg. to 180 deg.

Speed : 300mm/min.

Otherwise unless specified.



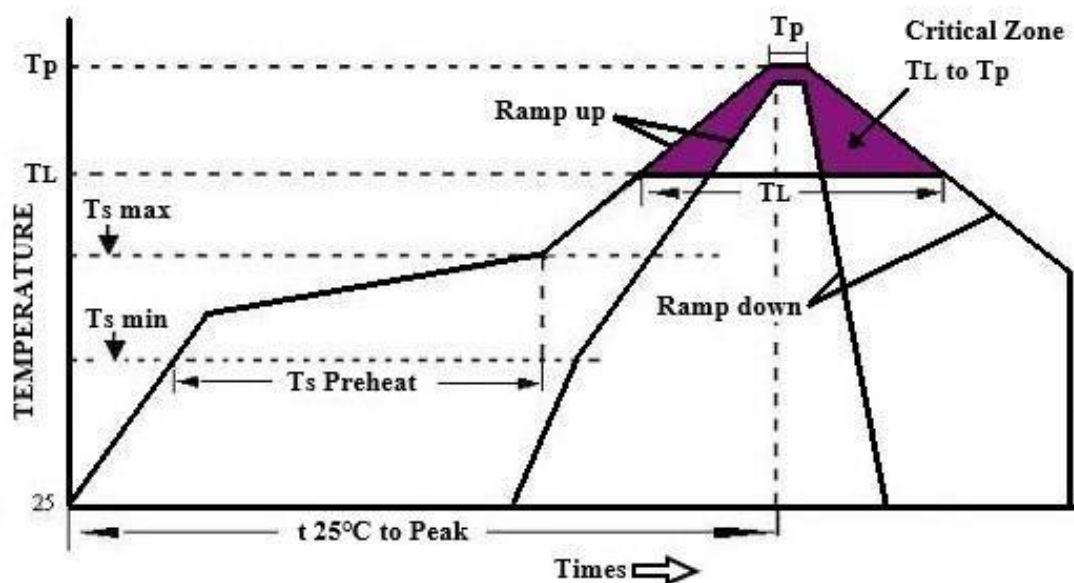
8. Reliability characteristic:

	Item	Condition	Specifications
8.1	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.
8.2	Resistance to soldering heat	Solder temperature 260 $\pm$ 3 °C, Immersion time: 10 S Solder bath composition: 100% tin	$\Delta F \leq \pm 5 \text{ ppm}$ $\Delta R \leq \pm 15\% + 3 \Omega$
8.3	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)	$\Delta F \leq \pm 5 \text{ ppm}$ $\Delta R \leq \pm 15\% + 3 \Omega$
8.4	Drop test	Drop from 75cm height on 3cm hard wooden board for 6 times	$\Delta F \leq \pm 5 \text{ ppm}$ $\Delta R \leq \pm 15\% + 3 \Omega$
8.5	Cold Storage	The quartz crystal unit shall be stored at a temperature of -40 $\pm$ 3 °C for 1000 h. then it shall be subjected to standard atmospheric conditions for 1h after which measurement shall be made.	$\Delta F \leq \pm 5 \text{ ppm}$ $\Delta R \leq \pm 15\% + 3 \Omega$

8.6	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.	$\Delta F \leq \pm 5 \text{ppm}$ $\Delta R \leq \pm 15\% + 3\Omega$		
8.7	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.	$\Delta F \leq \pm 5 \text{ppm}$ $\Delta R \leq \pm 15\% + 3\Omega$		
				Temperature	Duration
		1.		-40+/-3°C	15minutes
		2.		100+/-2°C	15minutes
		3.		Transition time	Within 10 seconds
8.8	Sealing	Helium leakage detector shall used to measure the leakage rate of gas through any faulty seal. Pressure:500Kpa, duration:120 minutes	Leakage rate $\leq 1*10^{-9} \text{Pa.m}^3/\text{S}$		
8.9	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.	$\Delta F \leq \pm 5 \text{ppm}$ $\Delta R \leq \pm 15\% + 3\Omega$		

9.All products are RoHs compliant

10. Reflow Profile



High Temperature Infrared /Convection

Note: Temperature shown are applied to body of device

Ts max to TL(Ramp-up Rate)	3°C/second max
Preheat	
Temperature Min(Ts Min)	150°C
Temperature Typical(Ts Typ)	175°C
Temperature Max.(Ts Max)	200°C
Time(ts)	60-180 seconds
Ram-up Rate(TL to Tp)	3°C/second Max
Time Maintained Above:	
--Temperature(TL)	217°C
--Time(TL)	60-150seconds
Peak Temperature (Tp)	260°C Max for 10 seconds
Time within 5°C of actual peak(tp)	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 10 seconds Max, 4 times Max