LUCKI CM ELECTRONICS Co.,Ltd

APPROVAL SHEET

Customer : _____

Part Number: _____

LK Part No.: L32AOC024000PBL

Holder : 3225 OSC

Frequency: 24.000MHz 3.3V

Manufacturer: Lucki Electronics

Date: 2023-04-25

Prepared	Checked	Approved
Zhao Qian	Zhang Dongwei	Zhang Bin

(For Customer Use)

Acceptable	

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Revised Record				
Rev.	Rev. Date	Item	Content	Remark

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ELECTRICAL PARAMETERS

No.	Item	Symb.	Electrical Specification				Remark
			Min.	Typ.	Max.	Units	
1	Nominal Frequency	F0		24.000000		MHz	
2	Frequency Stability		-30		30	ppm	All condition*
3	Operating Temperature Range	TOPR	-40		85	℃	
4	Storage Temperature	TSTG	-55		125	℃	
5	Power supply Voltage	V_{DD}		3.3±10%		V	
6	Aging Per Year	Fa	-3.0		3.0	ppm	First Year
7	Supply current	I_{DD}			10	mA	
8	Output symmetry	Sym	45		55	%	
9	Rise time	Tr			5.0	ns	10%~90%V_{DD}
10	Fall time	Tf			5.0	ns	90%~10%V_{DD}
11	Output voltage	V_{OH}	90%			V_{DD}	
		V_{OL}			10%	V_{DD}	
12	Output load Hcmos Load				15	pF	
13	Start-up time				10	mS	
14	Pin 1, E/D function	pin 1="High "or "open" .....output active at pin 3 pin 1="Low" .....high impedance at pin 3 pin 1="Low"&Floating …… unstable at pin3,disallowed for this status					
15	Package type	POSC3225					

NOTE：Storage Temperature is only for the product itself,the temperature for the packing material is -4~40℃.

All condition*：Include 25℃ tolerance, operating temperature range , input voltage change, aging, load change.

STORAGE REQUIRMENT

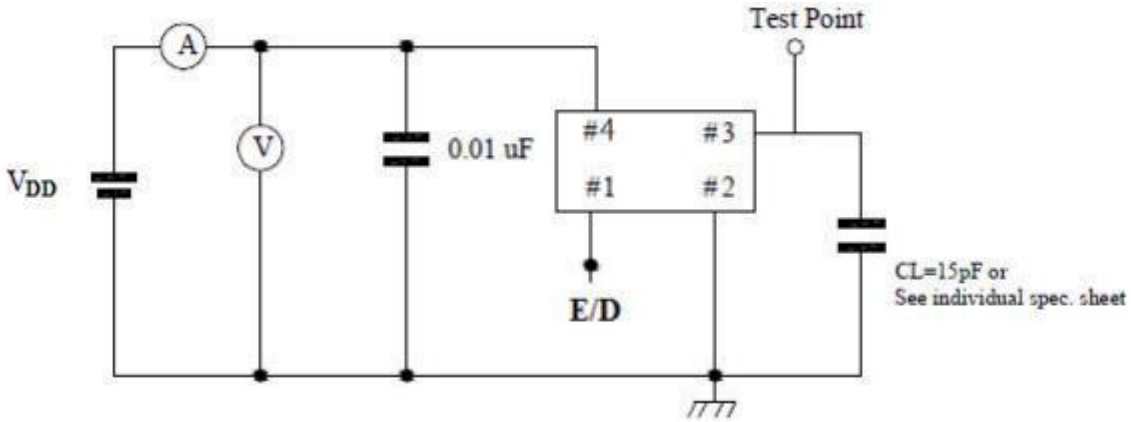
Storage environmental conditions: -4~40℃， 70%RH max.

Maximum storage time: 24 Months from date of manufacture.

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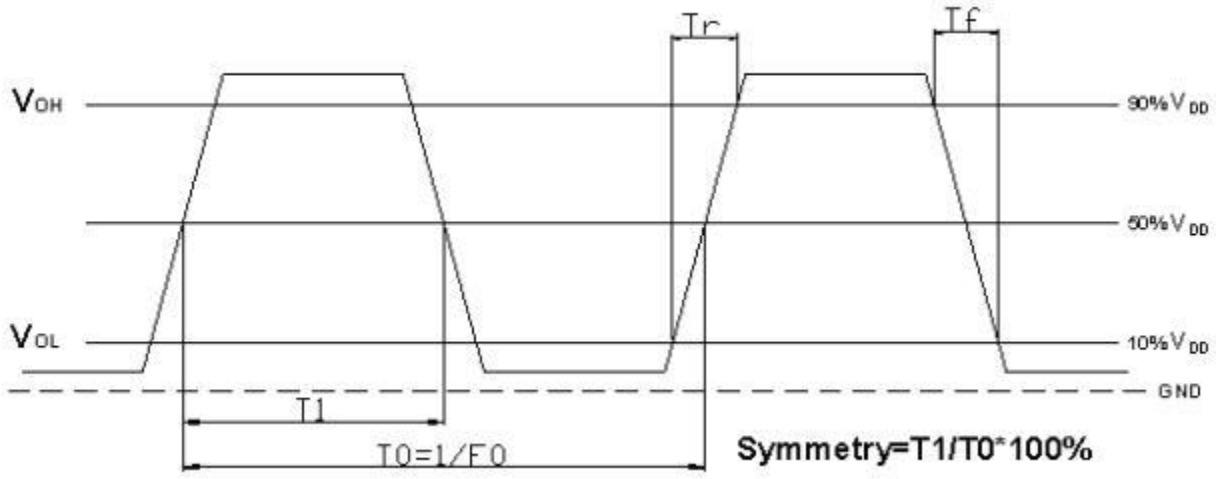
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- **HCMOS Test Circuit**



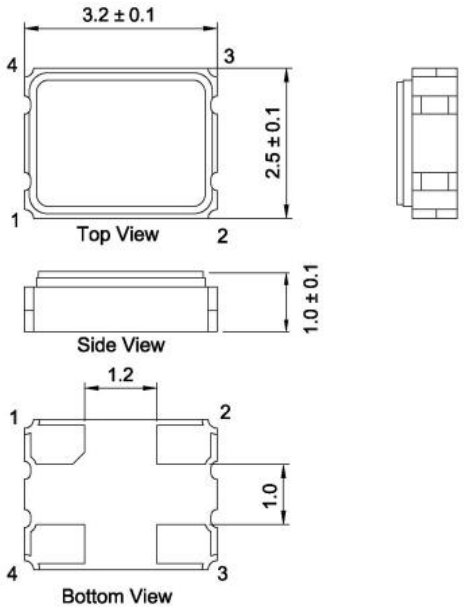
Enable/ Disable Function		
Input (pin 1)	Output (pin 3)	Oscillator
Open	Enable	Normal operation
V_{IH} : 0.7*V_{DD} ~ V_{DD}	Enable	Normal operation
V_{IL} : 0V ~ 0.3*V_{DD}	Disable	Stop oscillation

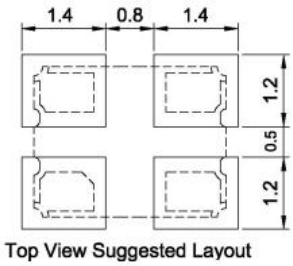
HCMOS OUTPUT WAVEFORM



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- **OUTLINE DIMENSIONS** (unit: mm)





Pin	Connection
1	E/D
2	GND
3	Output
4	V_{DD}

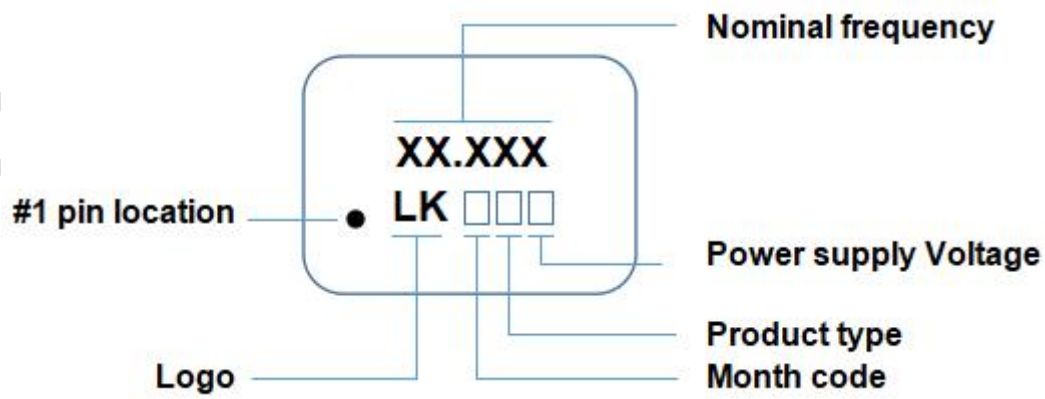
Note：■ 0.01uF bypass capacitor should be placed between V_{DD} (pin 4) and GND (pin 2)to minimize power supply line noise；

■ Line shouldn't be layed under the oscillator in the PCB to minimize signal interference.

■ The Load we advise is only 15pF (that means drive only 1 CMOS/TTL gate).

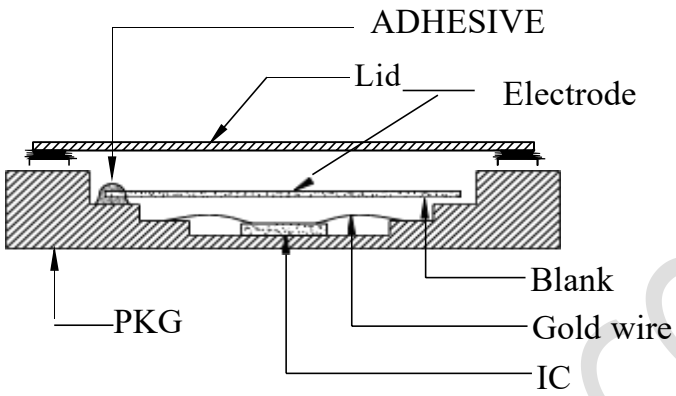
■ unlabeled tolerance：± 0.1mm

- **MARKING**



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- **PRODUCT LAYOUT**



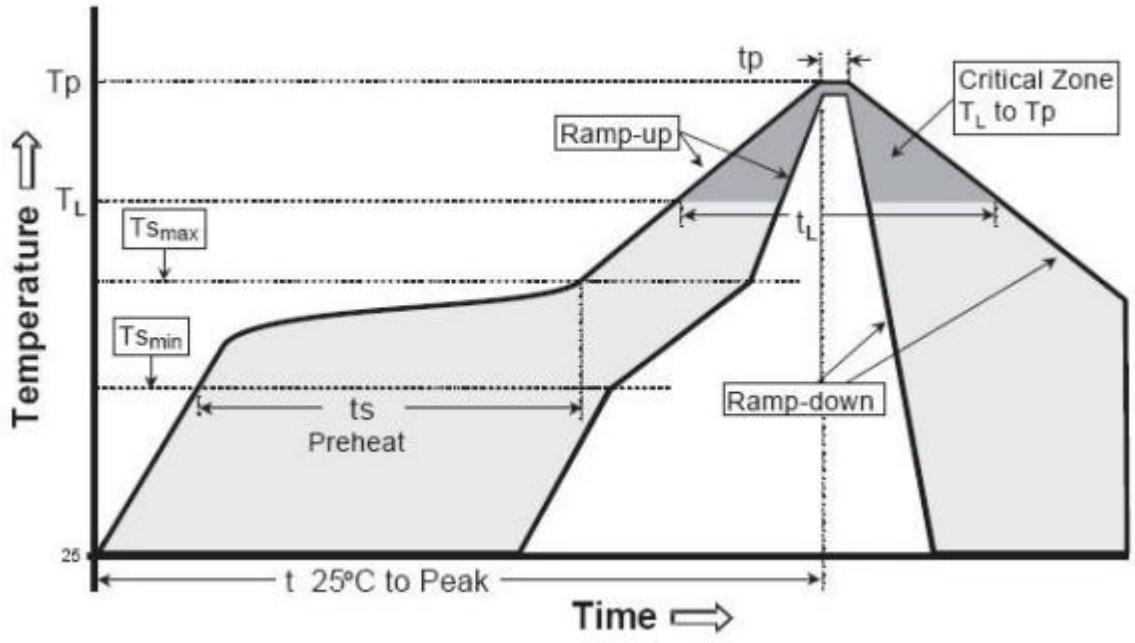
NO.	PART	MATERIAL	REMARK
1	LID	KOVAR(Fe+Co+Ni alloy)	
2	PKG	Al_2O_3	Base
3	BLANK	SiO_2	Quartz
4	ADHESIVE	Ag/Silicon	Support
5	Electrode	Noble metal	
6	IC	Si	
7	Gold wire	Au	Connect

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- **REFLOW PROFILES**

Profiles Feature	Pb-Free Assembly
Average Ramp-up Rate (Ts max to Tp)	3℃/second max.
Preheat ■ Temperature Min (Ts min) ■ Temperature Max (Ts max) ■ Time (ts min to ts max)	 125℃ 200℃ 60~180 seconds
Time maintained above ■ Temperature (T_L) ■ Time (t_L)	 217℃ 60~150 seconds
Peak/Classification Temperature (Tp)	260℃
Time within 5℃ of actual Peak Temperature (t_p)	20~40 seconds
Ramp-down rate	6℃/second max.
Time 25℃ to Peak Temperature	8 minutes max.
Suggest reflow times	**3 Times max**

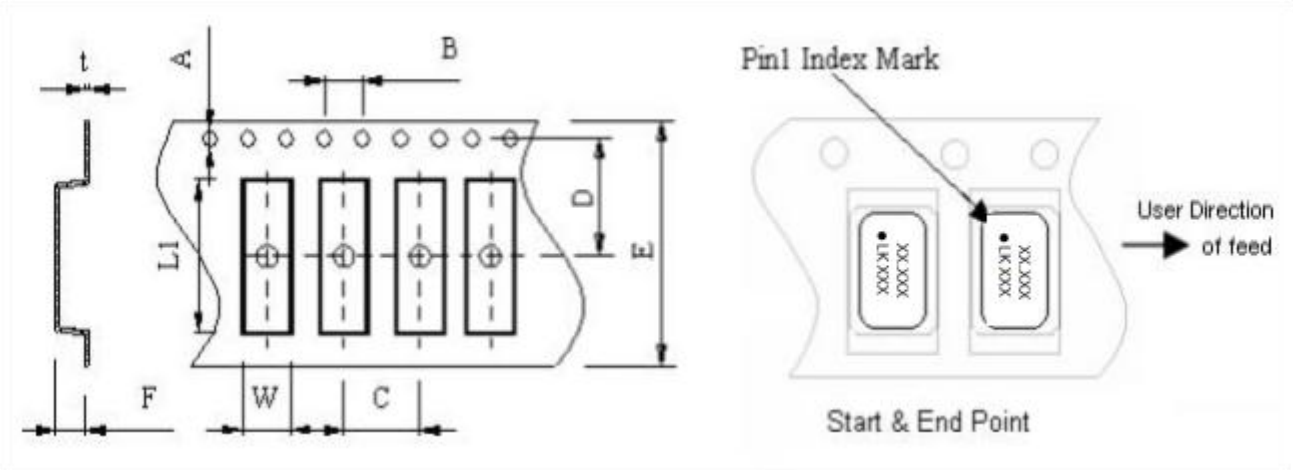


Remark：To reference JEDEC J-STD-020

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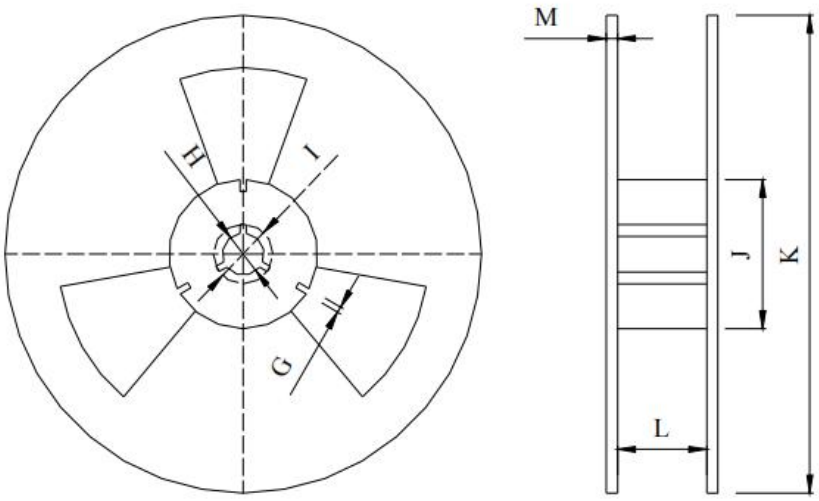
- **PACKAGE(reference to EIA-481)**

Tape Dimensions(unit : mm)



A	B	C	D	E	F	L1	W	t
1.5±0.1	4.0±0.1	4.0±0.1	3.5±0.1	8.0±0.1	1.4±0.10	3.5±0.10	2.7±0.10	0.25±0.05

Reel Dimensions(unit: mm)

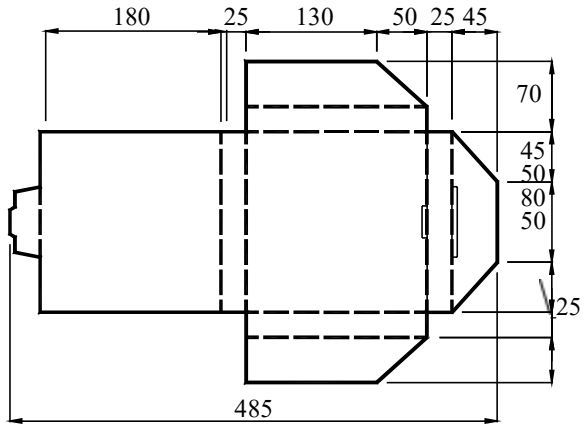


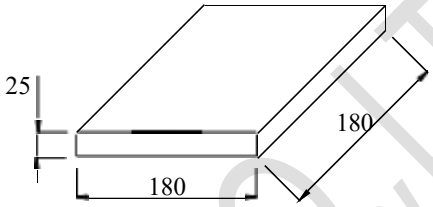
G	H	I	J	K	L	M
2.2±0.5	13.5±0.5	18.2±0.5	60.0± 1.0	178.0± 1.0	9.5± 1.0	1.6±0.2

*3000pcs/Reel

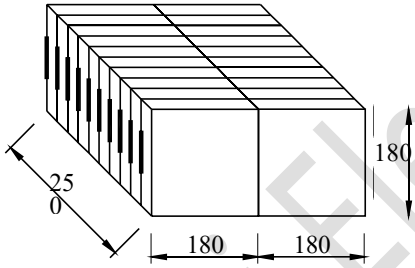
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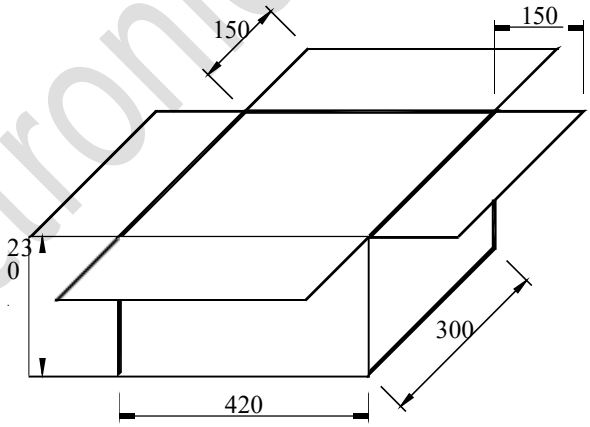
Carton Dimension (unit : mm)





1 reel = 1 Inner box





20 Inner boxes = 1 Carton,60kpcs = 1 Carton

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- **Reliability characteristic:**

No.	Test Item	Test Conditions	Specifications
1	Solderability	Solder bath temperature:260℃ , dwell time:5 seconds, Solder: 100% tin	A new uniform coating of solder shall cover a minimum of 95% of the surface being immersed.
2	Resistance to soldering heat	Solder temperature 260+/-3℃,Immersion time:10 S Solder bath composition:100% tin	ΔF≤+/-5ppm
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)	ΔF≤+/-5ppm
4	Drop test	3 Times Free Fall from 100cm height to concrete floor.	ΔF≤+/-5ppm
5	Cold Storage	The quartz crystal unit shall be stored at a temperature of –40+/-3℃ for 1000 h.then it shall be subjected to standard atmospheric conditions for 1h after which measurement shall be made.	ΔF≤+/-5ppm
6	High temperature high humidity storage (steady state)	The quartz crystal unit shall be stored at a temperature of 40+/-2℃ with relative humidity of 95% for 1000h, then it shall be subjected to standard atmospheric conditions for 2h after which measurement shall be made.	ΔF≤+/-5ppm
7	Thermal Shock	Temperature 1: -55℃±3℃ Temperature 2: 125℃±3℃ Temperature change between T1 and T2 at soonest Run 1000 cycles, maintain T1 and T2 5minutes each in one cycle	ΔF≤+/-5ppm
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≤ $1*10^{-9}$ $Pa.m^3/S$
9	High temperature Life test	The quartz crystal unit shall be stored at a temperature of 105+/-3℃ for 168h ,then it shall be subjected to standard atmospheric condition for 1h after which measurement shall be made.	ΔF≤+/-5ppm

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