



**LUCKI CM ELECTRONICS Co.,Ltd**

## APPROVAL SHEET

Customer : \_\_\_\_\_

Part Number: \_\_\_\_\_

LK Part No.: L32AOC048000PBL

Holder : 3225 OSC

Frequency: 48.000MHz 3.3V

Manufacturer: Lucki Electronics

Date: 2023-04-12

Prepared	Checked	Approved
Zhao Qian	Zhang Dongwei	Zhang Bin

(For Customer Use)

Acceptable	



**LUCKI CM ELECTRONICS Co.,Ltd**

Revised Record				
Rev.	Rev. Date	Item	Content	Remark

*Lucki Electronics CO.,LTD*



## LUCKI CM ELECTRONICS Co.,Ltd

### ● ELECTRICAL PARAMETERS

No.	Item	Symb.	Electrical Specification				Remark
			Min.	Typ.	Max.	Units	
1	Nominal Frequency	F0	48.000000			MHz	
2	Frequency Stability		-30		30	ppm	All condition*
3	Operating Temperature Range	TOPR	-40		85	°C	-40°C~85°C±20ppm
4	Storage Temperature	TSTG	-55		125	°C	
5	Power supply Voltage	V <sub>DD</sub>	3.3±10%			V	
6	Aging Per Year	Fa	-3.0		3.0	ppm	First Year
7	Supply current	I <sub>DD</sub>			10	mA	
8	Output symmetry	Sym	45		55	%	
9	Rise time	Tr			5.0	ns	10%~90%V <sub>DD</sub>
10	Fall time	Tf			5.0	ns	90%~10%V <sub>DD</sub>
11	Output voltage	V <sub>OH</sub>	90%			V <sub>DD</sub>	
		V <sub>OL</sub>			10%	V <sub>DD</sub>	
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°C.**

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

### ● STORAGE REQUIRMENT

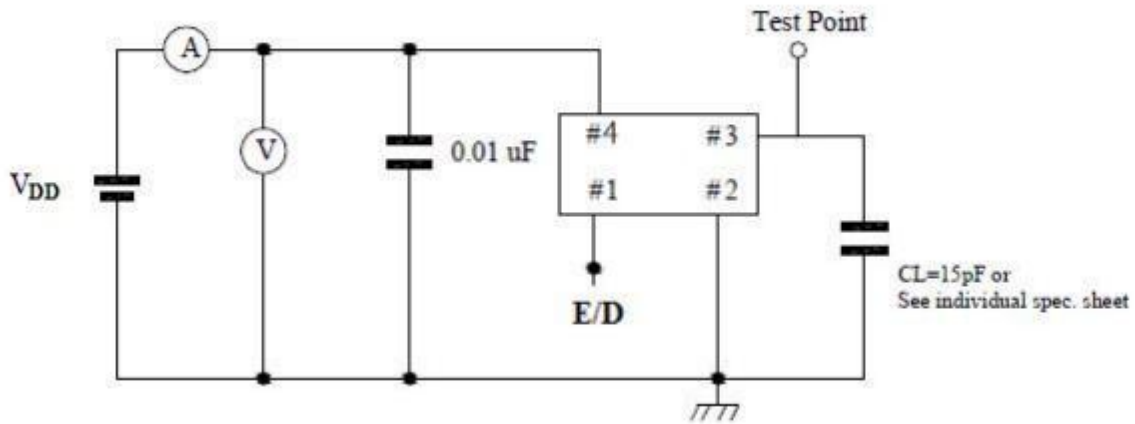
Storage environmental conditions: -4~40°C, 70%RH max.

Maximum storage time: 24 Months from date of manufacture.



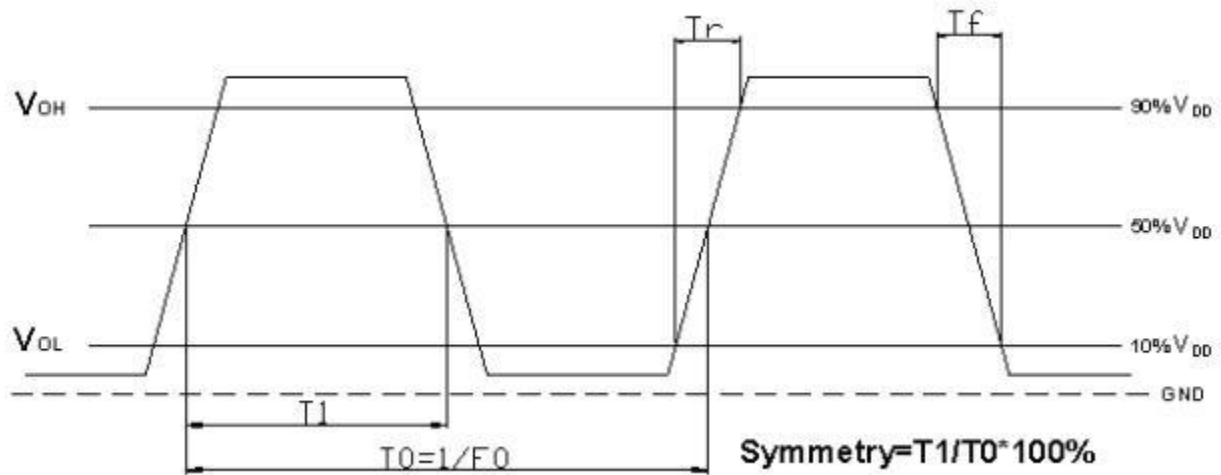
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## ● HCMOS Test Circuit



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

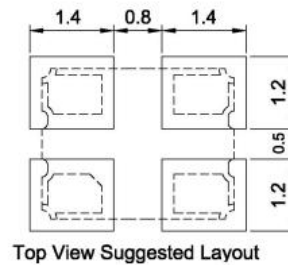
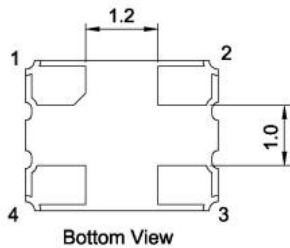
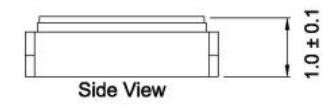
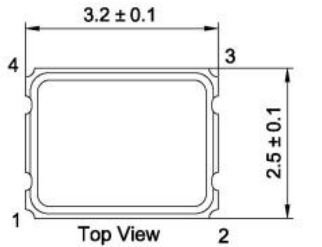
## HCMOS OUTPUT WAVEFORM





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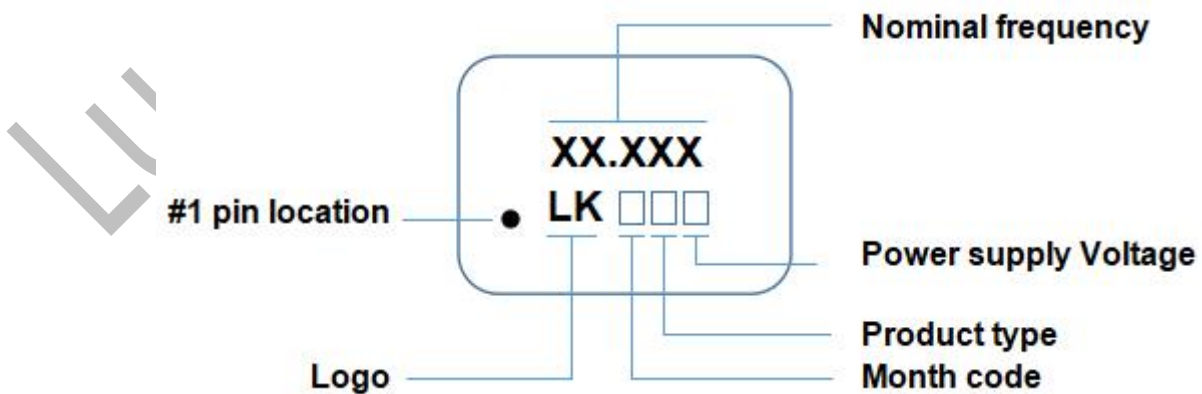
● **OUTLINE DIMENSIONS** (unit: mm)



Pin	Connection
1	E/D
2	GND
3	Output
4	V <sub>DD</sub>

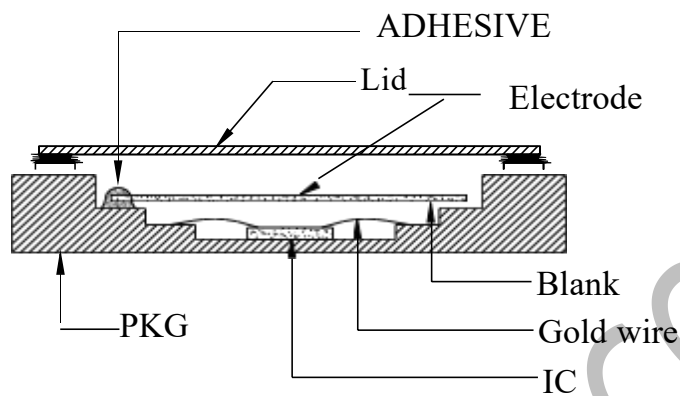
- Note:
- 0.01uF bypass capacitor should be placed between V<sub>DD</sub> (pin 4) and GND (pin 2) to minimize power supply line noise;
  - Line shouldn't be layed under the oscillator in the PCB to minimize signal interference.
  - The Load we advise is only 15pF (that means drive only 1 CMOS/TTL gate).
  - unlabeled tolerance: ± 0.1mm

● **MARKING**



## LUCKI CM ELECTRONICS Co.,Ltd

### ● PRODUCT LAYOUT



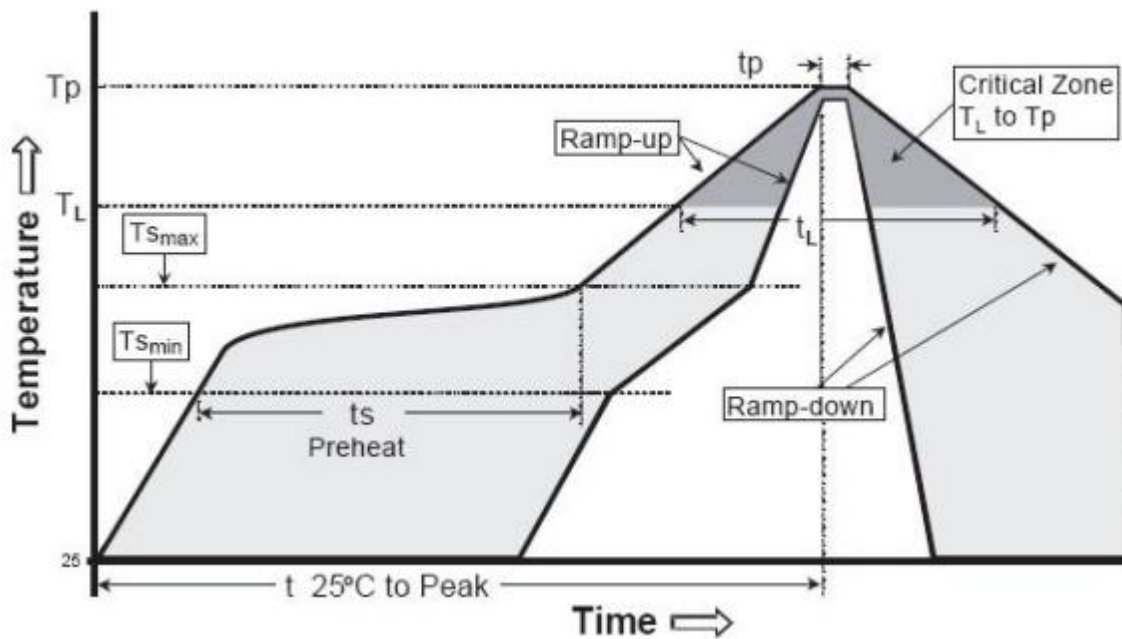
NO.	PART	MATERIAL	REMARK
1	LID	KOVAR(Fe+Co+Ni alloy)	
2	PKG	Al <sub>2</sub> O <sub>3</sub>	Base
3	BLANK	SiO <sub>2</sub>	Quartz
4	ADHESIVE	Ag/Silicon	Support
5	Electrode	Noble metal	
6	IC	Si	
7	Gold wire	Au	Connect



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● REFLOW PROFILES

Profiles Feature	Pb-Free Assembly
Average Ramp-up Rate (Ts max to Tp)	3 °C/second max.
Preheat <ul style="list-style-type: none"> <li>■ Temperature Min (Ts min)</li> <li>■ Temperature Max (Ts max)</li> <li>■ Time (ts min to ts max)</li> </ul>	125°C 200°C 60~180 seconds
Time maintained above <ul style="list-style-type: none"> <li>■ Temperature (TL)</li> <li>■ Time (tL)</li> </ul>	217°C 60~150 seconds
Peak/Classification Temperature (Tp)	260°C
Time within 5 °C of actual Peak Temperature (tp)	20~40 seconds
Ramp-down rate	6 °C/second max.
Time 25°C to Peak Temperature	8 minutes max.
<b>Suggest reflow times</b>	<b>3 Times max</b>

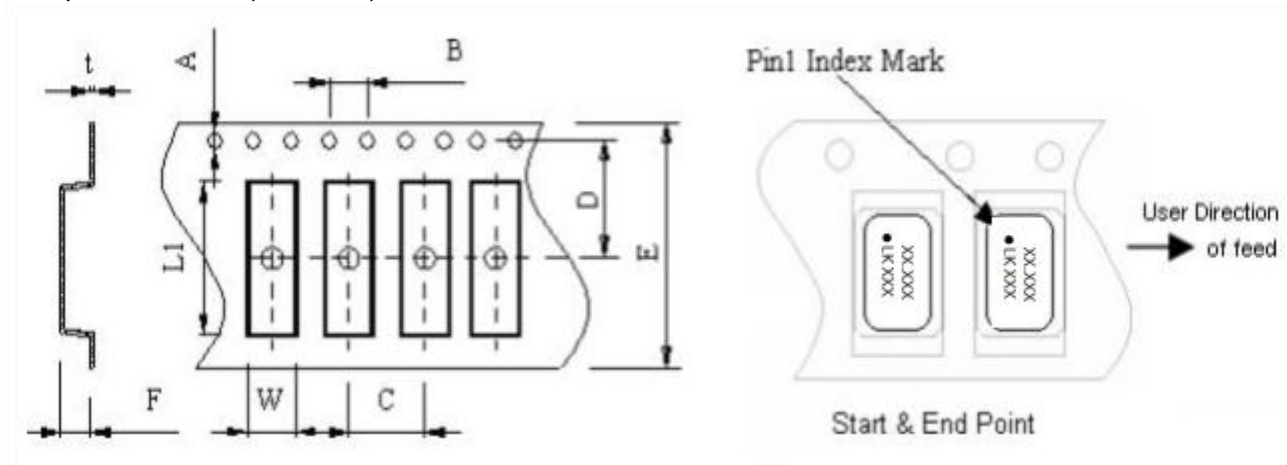


Remark: To reference JEDEC J-STD-020



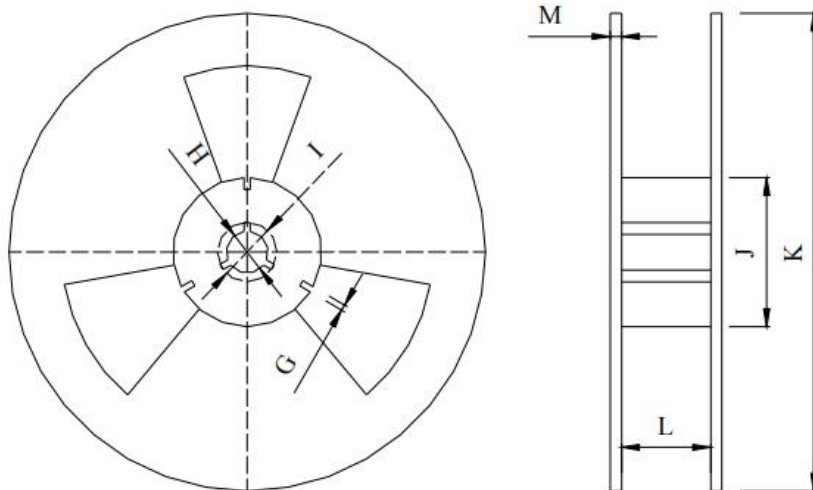
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- PACKAGE(reference to EIA-481)  
Tape Dimensions(unit : mm)



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

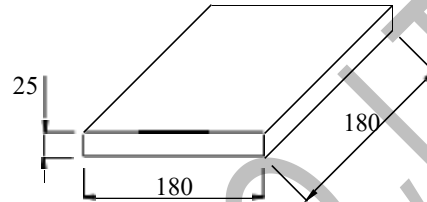
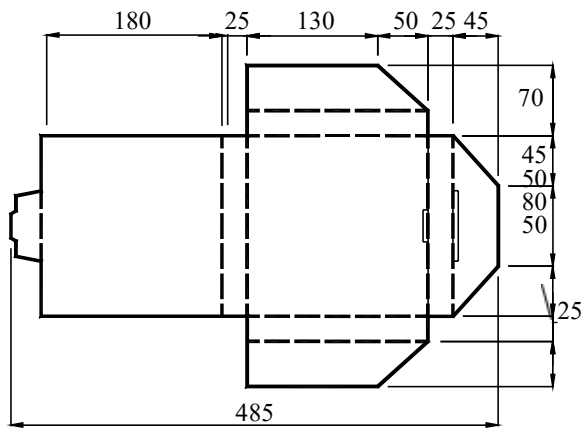
\*3000pcs/Reel



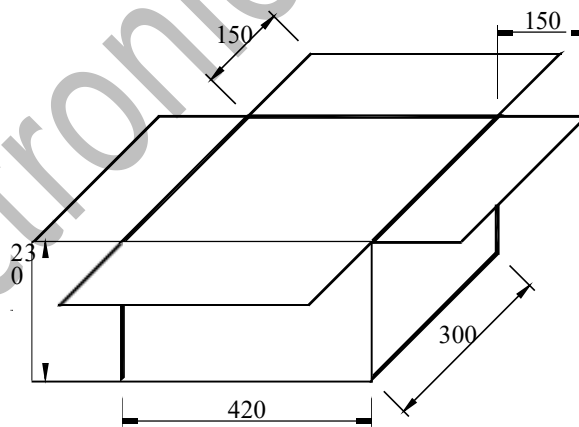
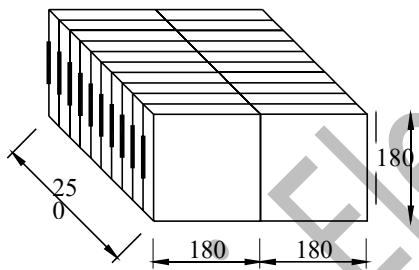


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Carton Dimension (unit : mm)



1 reel = 1 Inner box



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



## LUCKI CM ELECTRONICS Co.,Ltd

### ● Reliability characteristic:

No.	Test Item	Test Conditions	Specifications
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.
2	Resistance to soldering heat	Solder temperature 260+/-3°C,Immersion time:10 S Solder bath composition:100% tin	$\Delta F \leq \pm 5 \text{ppm}$
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)	$\Delta F \leq \pm 5 \text{ppm}$
4	Drop test	3 Times Free Fall from 100cm height to concrete floor.	$\Delta F \leq \pm 5 \text{ppm}$
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.	$\Delta F \leq \pm 5 \text{ppm}$
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.	$\Delta F \leq \pm 5 \text{ppm}$
7	Thermal Shock	Temperature 1: -55°C ± 3°C Temperature 2: 125°C ± 3°C Temperature change between T1 and T2 at soonest Run 1000 cycles, maintain T1 and T2 5minutes each in one cycle	$\Delta F \leq \pm 5 \text{ppm}$
8	Sealing	Helium leakage detector shall used to measure the leakage rate of gas through any faulty seal. Pressure:500Kpa, duration:120 minutes .	Leakage rates $\leq 1 \cdot 10^{-9} \text{Pa} \cdot \text{m}^3 / \text{S}$
9	High temperature Life test	The quartz crystal unit shall be stored at a temperature of 105+/-3°C for 168h ,then it shall be subjected to standard atmospheric condition for 1h after which measurement shall be made.	$\Delta F \leq \pm 5 \text{ppm}$

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