



# PRODUCT SPECIFICATION SHEET

CUSTOMER : 深圳办  
PRODUCT TYPE : SMD TUNING FORK 1.6X1.0  
NOMINAL FREQ. : 32.768000 KHz  
FL P/N : 1SQ3270008  
REVISION : S0  
CUSTOMER P/N :

## CUSTOMER'S APPROVAL&DATE

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## FL CORPORATION

APPROVED	CHECKED	DESIGNED
Jay Lee	Jin Qi	Chen XuanRu

MSL1  
RoHS Compliant



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## ATTACHMENT ( optional )

- |                                    |   |                              |  |
|------------------------------------|---|------------------------------|--|
| • ELECTRICAL CHARACTERISTICS TEST  | A | <input type="checkbox"/> YES | <input checked="" type="checkbox"/> NO |
| • TEMPERATURE CHARACTERISTICS TEST | B | <input type="checkbox"/> YES | <input checked="" type="checkbox"/> NO |





## PRODUCT DESCRIPTION

### Standard atmospheric conditions

Unless otherwise specified. The standard range of atmospheric conditions for making measurement and tests are as follow:

Ambient temperature 25±2℃  
Relative humidity 40%~70%

If there is no doubt the results, measurement shall be made within the following limits:

Ambient temperature 25±2℃  
Relative humidity : 40%~70%

### Measure equipment

Electrical characteristics measured by S&A250B or equivalent.

### Crystal cutting type

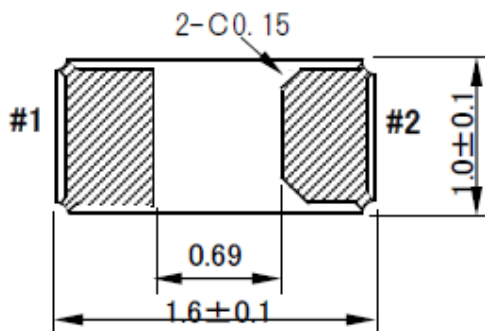
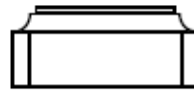
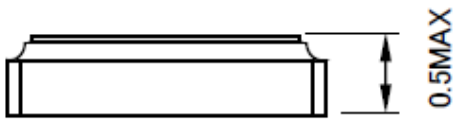
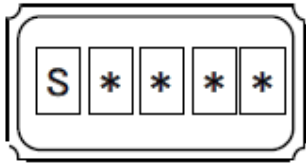
The crystal is using AT CUT (thickness shear mode)

## ELECTRICAL SPECIFICATIONS

No.	Items	Electrical Spec.					Remarks
		Symbol	Min	Typ	Max	Units	
1	Nominal Frequency	FL	32.768000			KHz	
2	Load Capacitance	CL	12.5			pF	
3	Frequency Tolerance	-	±20			ppm	at 25±3℃
4	Turnover Temperature	-	20	25	30	℃	at 25±5℃
5	Parabolic coefficient	-	(-3.6±1) × 10 <sup>-8</sup>			℃ <sup>2</sup>	
6	Shunt Capacitance	C0	-	1.1	-	pF	
7	Motional Capacitance	C1	-	6	-	fF	
8	Aging (/1 year)	-	±3			ppm/year	at 25±2℃
9	Operating Temperature	-	-40	-	105	℃	
10	Storage Temperature	-	-55	-	125	℃	
11	Equivalent series resistance	ESR	-	-	90	kΩ	
12	Insulation Resistance	IR	500	-	-	M-ohms	at DC 100V
13	Drive Level	DL	-	0.1	0.5	uW	



**DIMENSIONS** unit:mm



Unit = mm

**MARKING**

S □ □ □ □  
\*1 \*2 \*3 \*4 \*5

- \*1 Specification
- \*2 CL ( 7pF: B、9pF: J、12.5pF: F )
- \*3 Year of Production( Last digit of year )
- \*4,5 Week of Production(01~ 52)



## RELIABILITY SPECIFICATIONS

### 1.MECHANICAL ENDURANCE

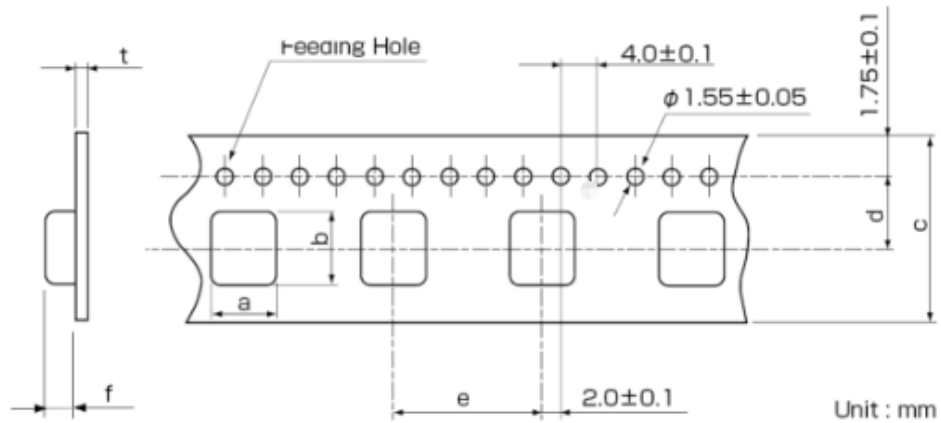
No.	Test Item	Test Methods	
1	Drop Test	150 cm height, fall freely onto stainless plate 3 times.	
2	Mechanical Shock	Device are shocked to half sine wave ( 1000 G ) three mutually pendicular axes each 3 times. 1.0m sec. duration time	
3	Vibration	Frequency range Amplitude Pendicular axes each test time Total test time	10 ~ 55 Hz 1.52 mm 2 hours ( x,y,z Axis ) 6 hours
4	Solderability	Temperature Immersing depth Immersion time Flux	260 °C ±5 °C 0.5 mm minimum 5 ± 1 seconds Rosin resin methyl alcohol solvent ( 1 : 4 )
5	Resistance To Soldering Heat	Pre-heat temperature Pre-heat time Test temperature Test time	125 °C 60 ~ 120 sec. 260 +/- 5 °C 5 +/- 1 sec.

### 2.ENVIRONMENTAL ENDURANCE

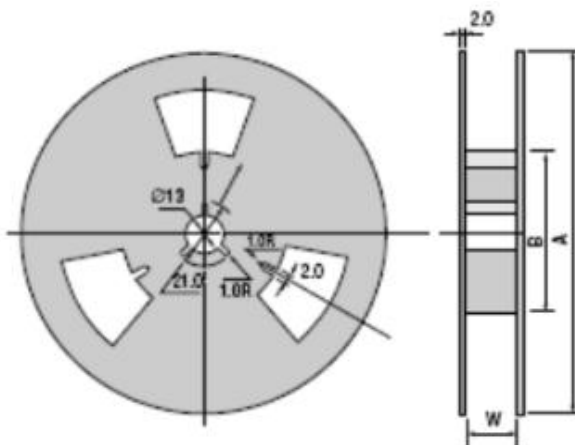
No.	Test Item	Test Methods	
6	High Temp. Storage	+ 125 °C +/- 3 °C for 500 +/- 12 hours	
7	Low Temp. Storage	- 40 °C +/- 3 °C for 500 +/- 12 hours	
8	Thermal Shock	Total 100 cycles of the following temperature cycle 	
9	High Temp&Homidity	85 °C±3 °C, RH 85%,500Hrs	



PACKING :



Dimension (Unit: mm)						
a	b	c	d	e	f	t
1.28	1.79	8	3.5	4	0.65	0.2
±0.05	±0.05	±0.2	±0.05	±0.1	±0.1	±0.05



Dimension (Unit: mm)		
A	B	W
Φ180	Φ60	13



Range	Products	Packing Material
Banned Substances	Maximum concentration ppm(mg/kg)	Maximum concentration ppm(mg/kg)
1.镉及镉化合物 Cadmium and cadmium compounds	100	100
2.铅及铅化合物 Lead and lead compounds	1000	100
3.汞及汞化合物 Mercury and mercury compounds	1000	100
4.六价铬化合物 Hexavalent-Chromium VI (Cr+6)	1000	100
5.聚溴联苯 PBB Polybrominated biphenyls	1000	N/A
6.聚溴二苯醚 PBDE Polybrominated diphenyl ethers	1000	N/A
7.邻苯二甲酸二(2-乙基己基)酯 DEHP Di (2-ethylhexyl) phthalate	1000	N/A
8.邻苯二甲酸丁苄酯 BBP Butyl Benzyl Phthalate	1000	N/A
9.邻苯二甲酸二丁酯 DBP Dibutyl Phthalate	1000	N/A
10 邻苯二甲酸二异丁酯 DIBP Diisobutyl Phthalate	1000	N/A
11. 氟 (F)、氯 (Cl)、溴 (Br)、碘 (I) Fluorine、Chlorine、Bromine、Iodine	900、900、900、900 注: Br+Cl<1000	N/A
12.包装材料中重金属(汞、镉、六价铬、铅、PBB、PBDE)之总量 Heavy metals (mercury, cadmium, lead, Cr+6,PBB and PBDE) in packing materials	N/A	100 铅(Pb) + 镉(Cd) + 汞(Hg) + 六价铬 (Cr+6) <100ppm
13.高度关注物质 SVHC-Substances of Very High Concern	1000	N/A



