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PRODUCT SPECIFICATION SHEET

CUSTOMER	:	
PRODUCT TYPE	:	SMD TUNING FORK 3.2X1.5
NOMINAL FREQ.	:	32.768000 KHz
FL P/N	:	3SQ3270004-Q
REVISION	:	A2
CUSTOMER P/N	:	

CUSTOMER'S APPROVAL&DATE

[illegible]

FL CORPORATION

APPROVED	CHECKED	DESIGNED
Xing Yue	Jin Qi	Li Xiang

MSL1

RoHS Compliant



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ATTACHMENT (optional)

- | | | | |
|------------------------------------|---|------------------------------|--|
| • ELECTRICAL CHARACTERISTICS TEST | A | ☐ YES | ☒ NO |
| • TEMPERATURE CHARACTERISTICS TEST | B | ☐ YES | ☒ NO |



FL P/N:

3SQ3270004-Q

VER:

A2

PAGE:

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PRODUCT DESCRIPTION

Standard atmospheric conditions

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

Ambient temperature $25\pm 2^{\circ}\text{C}$
Relative humidity 40%~70%

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

Ambient temperature $25\pm 2^{\circ}\text{C}$
Relative humidity : 40%~70%

Measure equipment

Electrical characteristics measured by S&A250B or equivalent.

Crystal cutting type

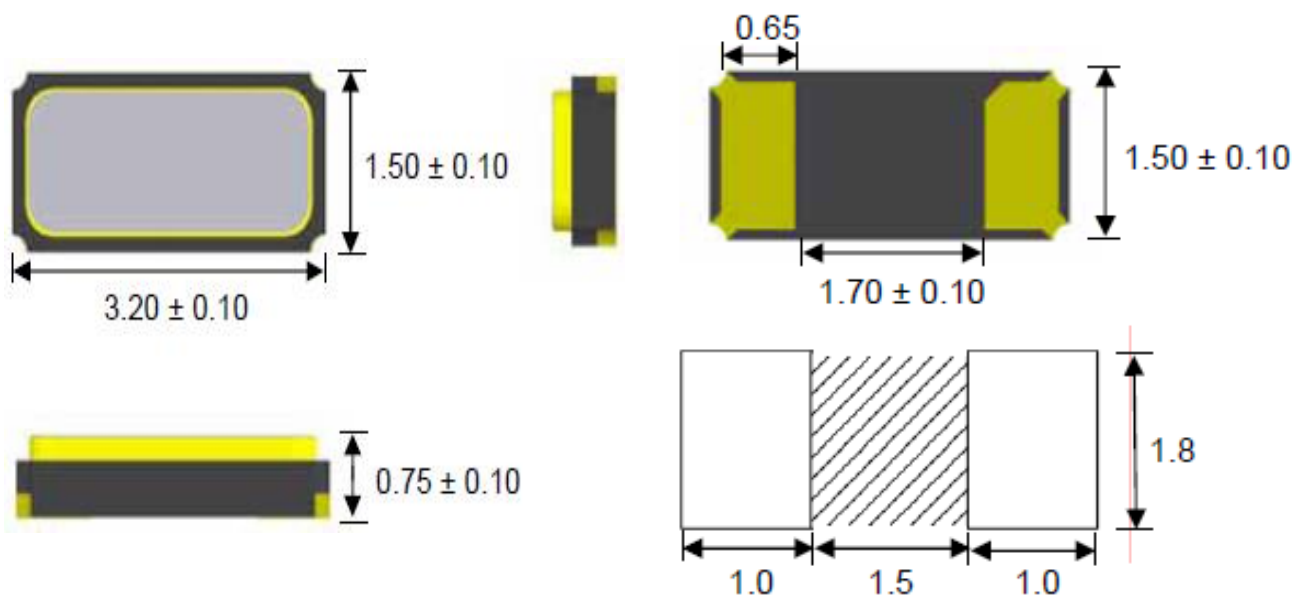
The crystal is using AT CUT (thickness shear mode)

ELECTRICAL SPECIFICATIONS

No.	Items	Electrical Spec.					Remarks
		Symbol	Min	Typ	Max	Units	
1	Nominal Frequency	FL	32.768000			KHz	-
2	Load Capacitance	CL	9.0			pF	-
3	Frequency Tolerance	-	± 20			ppm	at $25\pm 3^{\circ}\text{C}$
4	Quality Factor	Q	13000	-	-		-
5	Turnover Temperature	-	20	25	30	$^{\circ}\text{C}$	at $25\pm 5^{\circ}\text{C}$
6	Freq. vs Temp. Coefficient	-	-	-0.03	-	$\text{ppm}/^{\circ}\text{C}^2$	-
7	Shunt Capacitance	C0	-	1	-	pF	-
8	Motional Capacitance	C1	-	3	-	fF	-
9	Aging (/1 year)	-	± 3			ppm/year	at $25\pm 2^{\circ}\text{C}$
10	Operating Temperature	-	-40	-	85	$^{\circ}\text{C}$	-
11	Storage Temperature	-	-55	-	125	$^{\circ}\text{C}$	-
12	Equivalent series resistance	ESR	-	-	70	k Ω	-
13	Insulation Resistance	IR	500	-	-	M-ohms	at DC 100V
14	ESD	-	HBM>2000V			-	JESD22-A114-B
15	MSL	-	Level 1			-	IPC/JEDEC J-STD-033C
16	Drive Level	DL	-	0.1	1.0	uW	-



1.DIMENSIONS unit:mm

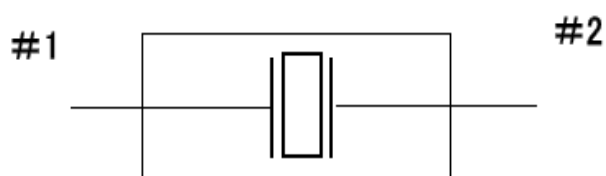


2.Marking

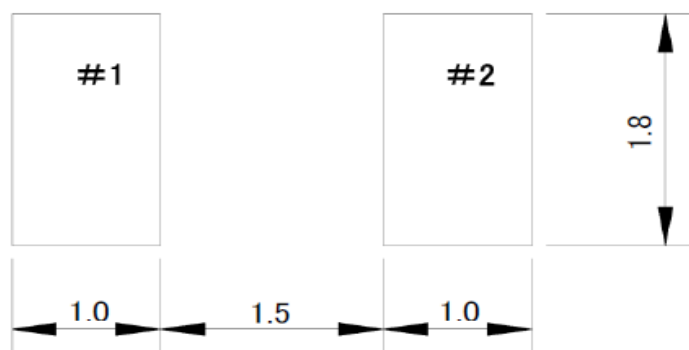
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*1 *2 *3 *4 *5 *6 *7

- *1 Product name
- *2 Type of product
- *3 Specification
- *4 CL (7pF:B, 9pF:J, 12.5pF:F)
- *5 Year of production (Last digit of year)
- *6.7 Week of production (01~ 52)

3.Lead Connection



4. Recommended PAD Lay-out



Unit = mm

Please make sure that there is no pattern under SC-32S on the circuit board

Materials:

Case: Alumina ceramics, Ni-plated, Au-plated

Lead: Kovar material, Ni-plated



RELIABILITY SPECIFICATIONS

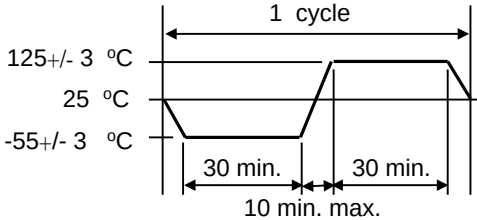
1.MECHANICAL ENDURANCE

No.	Test Item	Test Methods	
1	Drop Test	150 cm height, fall freely onto stainless plate 3 times.	JIS C6701
2	Mechanical Shock	Device are shocked to half sine wave (1000 G) three mutually pendicular axes each 3 times. 1.0m sec. duration time	MIL-STD-202F
3	Vibration	Frequency range 10 ~ 55 Hz Amplitude 1.52 mm Pendicular axes each test time 2 hours (x,y,z Axis) Total test time 6 hours	MIL-STD-883E
4	Solderability	Temperature 260 °C ±5 °C Immersing depth 0.5 mm minimum Immersion time 5 ± 1 seconds Flux Rosin resin methyl alcohol solvent (1 : 4)	GB/T 2424.17-2008 / IEC 60068-2-44:1995; GB/T 2423.28-2005 / IEC 60068-2-20:1979
5	Resistance To Soldering Heat	Pre-heat temperature 125 °C Pre-heat time 60 ~ 120 sec. Test temperature 260 +/- 5 °C Test time 5 +/- 1 sec.	MIL-STD-202F

*Storage conditions : 18 months

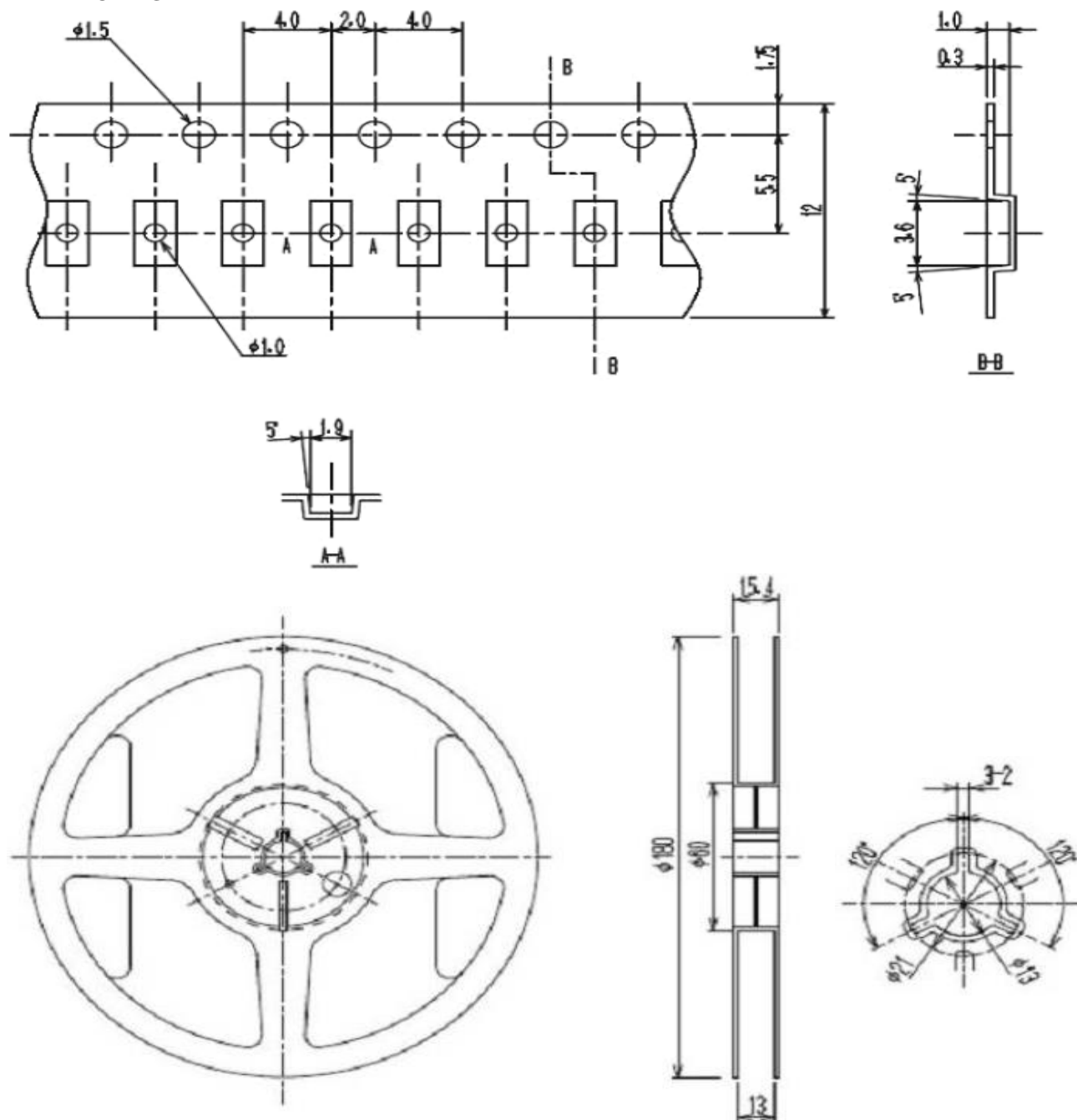
*Constant humidity : 40~70%

2.ENVIRONMENTAL ENDURANCE

No.	Test Item	Test Methods	
6	High Temp. Storage	+ 125 °C +/- 3 °C for 500 +/- 12 hours	MIL-STD-883E
7	Low Temp. Storage	- 40 °C +/- 3 °C for 500 +/- 12 hours	
8	Thermal Shock	Total 100 cycles of the following temperature cycle 	MIL-STD-883E
9	High Temp&Homidity	85°C±3°C, RH 85%,500Hrs	JIS C5023



PACKING :



Tolerance: $\pm 0.2\text{mm}$

Item	Specification	Unit
Materials	PS(anti statics)	-
inside reel wise W1	$13.0 \pm 0.3 / -0$	mm
outside reel wise W2	15.4 ± 1.0	mm

Unit = mm

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

