



PRODUCT SPECIFICATION SHEET

CUSTOMER	:	
PRODUCT TYPE	:	SMD TUNING FORK 3.2X1.5
NOMINAL FREQ.	:	32.768 KHz
FL P/N	:	3SQ3270001-Q
REVISION	:	A0
CUSTOMER P/N	:	

CUSTOMER'S APPROVAL&DATE

[illegible]

FL CORPORATION

APPROVED	CHECKED	DESIGNED
Jay Lee	Jin Qi	Chen XuanRu

MSL 1
RoHS Compliant



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ATTACHMENT (optional)

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



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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.

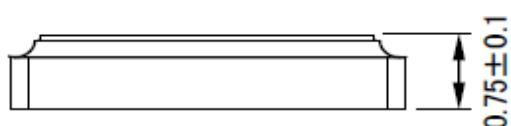
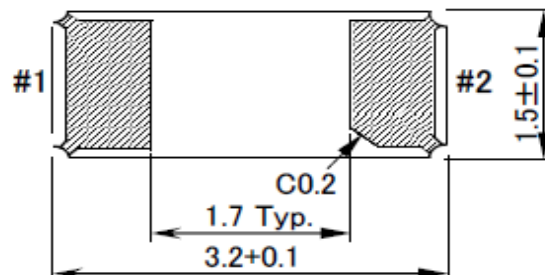
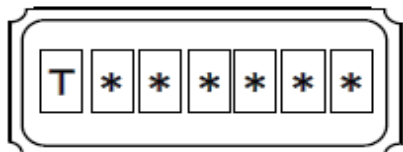
ELECTRICAL SPECIFICATIONS

	Parameters	SYM.	Electrical Spec.				Notes
			MIN	TYPE	MAX	UNITS	
1	Nominal Frequency	F0	32.768			KHz	-
2	Frequency Tolerance	-	± 20			ppm	at 25°C
3	Driver Level	DL	-	0.1	0.5	μW	-
4	Load Capacitance	CL	12.5			pF	-
5	Series Resistance	-	-	-	70	K Ω	-
6	Peak Temperature (Frequency)	-	20	25	30	$^{\circ}\text{C}$	at $25^{\circ}\text{C} \pm 5^{\circ}\text{C}$
7	Frequency-Temperature coefficient	-	-	-	-4×10^{-8}	$^{\circ}\text{C}^{-2}$	-
8	Storage Temperature	-	-55	~	125	$^{\circ}\text{C}$	-
9	Operating Temperature	-	-40	~	85	$^{\circ}\text{C}$	-
10	Shunt Capacitance	C0	-	1.4	-	pF	
11	Motional Capacitance	C1	-	5.8	-	fF	
12	Insulation Resistance	-	500	-	-	M Ω	at DC 100V $\pm$ 15V
13	Aging	-	± 3			ppm	1st Year



DIMENSIONS

(UNIT:mm)



MARKING

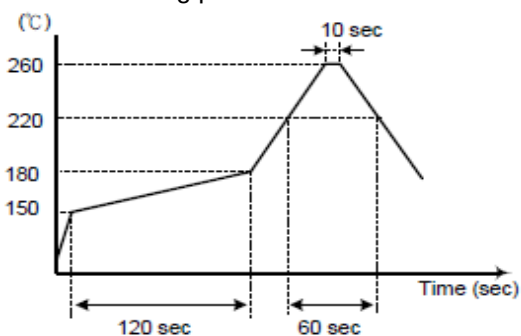
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*1 *2 *3 *4 *5 *6 *7

- *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)

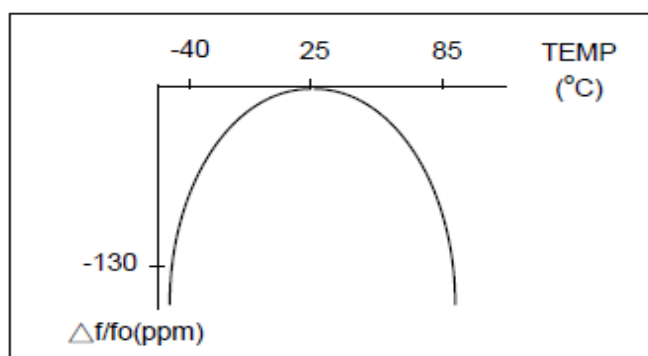
SUGGESTED REFLOW PROFILE

Total time : 200 sec. Max.

Solder melting point :220℃



TEMPERATURE V.S FREQUENCY CURVE



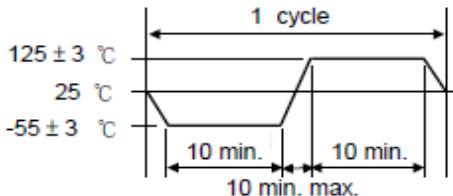


RELIABILITY SPECIFICATIONS

1.MECHANICAL ENDURANCE

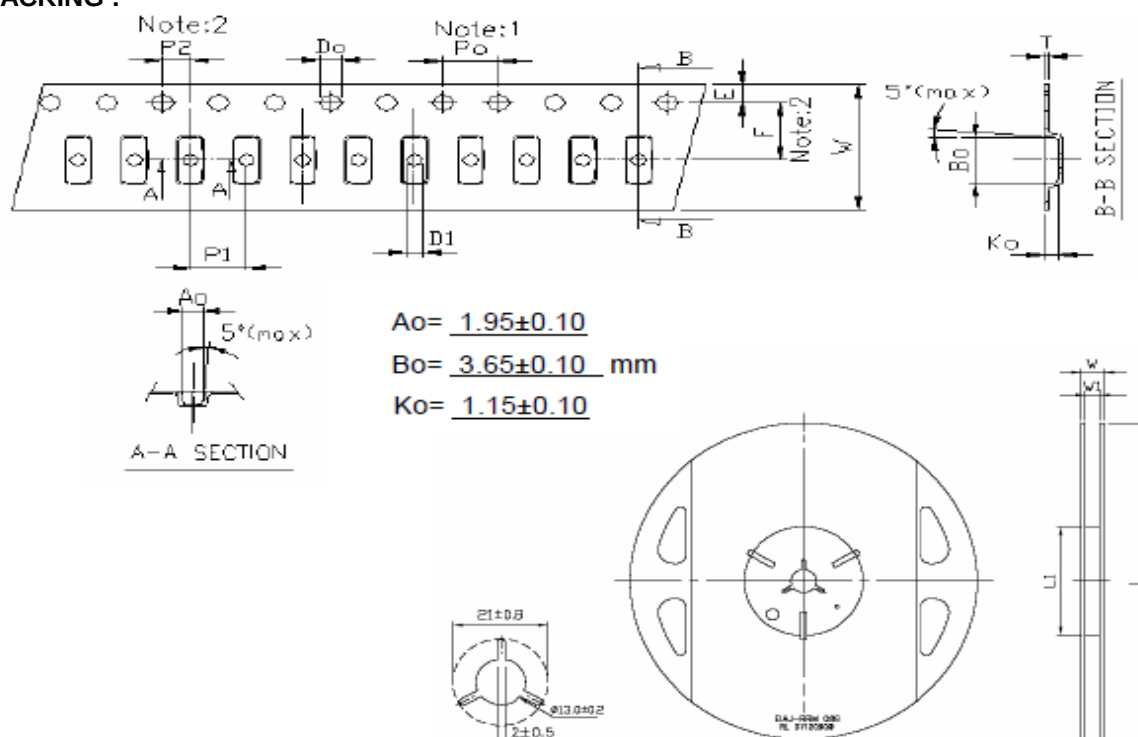
No.	Test Item	Test Methods	REF. DOC
1	Drop Test	150 cm height, fall freely onto concrete floor 3 times.	MIL-STD-202
2	Mechanical Shock	Device are shocked to half sine wave (1000 G) three mutually perpendicular axes each 3 times. 0.5m sec. duration time	MIL-STD-202
3	Vibration	Frequency range 10 ~ 2000 Hz Amplitude 1.52 mm,20G Sweep time 20 minute Perpendicular axes each test time 4 hours (Total test time 12 hours)	MIL-STD-883
4	Solderability	Temperature 245 °C ± 5°C Immersing depth 0.5 mm minimum Immersion time 5 ± 1 seconds Flux Rosin resin methyl alcohol solvent (1 : 4)	MIL-STD-883

2.ENVIRONMENTAL ENDURANCE

No.	Test Item	Test Methods	
2	Resistance To Soldering Heat	Pre-heat temperature 125 °C Pre-heat time 60 ~ 120 sec. Test temperature 260 ± 5 °C Test time 10 ± 1 sec.	MIL-STD-202
2	High Temp. Storage	+ 125 °C ± 3 °C for 1000 ± 12 hours	MIL-STD-883
2	Low Temp. Storage	- 40 °C ± 3 °C for 1000 ± 12 hours	MIL-STD-883
2	Thermal Shock	Total 100 cycles of the following temperature cycle 	MIL-STD-883
3	Pressure Cooker Storage	121 ± 3°C, RH100%, 2 bar, for 240 hours	JIS C6701
3	High Temp& Humidity	85°C ± 3°C, RH 85% , 1000Hrs	JIS C5023



PACKING :



DIMENSIONS	K1	P0	P1	P2	D0	D1	E	F	10P0	W	T	pcs / Reel
	-	4	4	2	1.55	1.1	1.75	3.5	40	8	0.2	3K

REEL DIMENSIONS	W	W1	L	L1
	11.4 $\pm$ 1	9.0 $\pm$ 0.3	180 $\pm$ 0/-3	60 $\pm$ 1/-0

REMARK : 1. 230 mm (9.05) minimum leader which consist of carrier and/or tape followed by a minimum of 160 mm (6.3) of empty carrier tape sealed with cover tape.
2. 160 mm (6.3) minimum trailer of empty carrier tape sealed with cover tape.



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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

