

## CRYSTAL UNITS SPECIFICATION

Product Type : SK-3M

Model : 20.000MHZ

Description : 3225/XTAL/20.000MHZ/20PF/30PPM

P/N : FSK3M20000M20

SPEC No. : 1 – 220509 – FSK3M20000M20



DATE : 9-May-22

Designer : *Aaron Lee*

Checked By : *Tom*

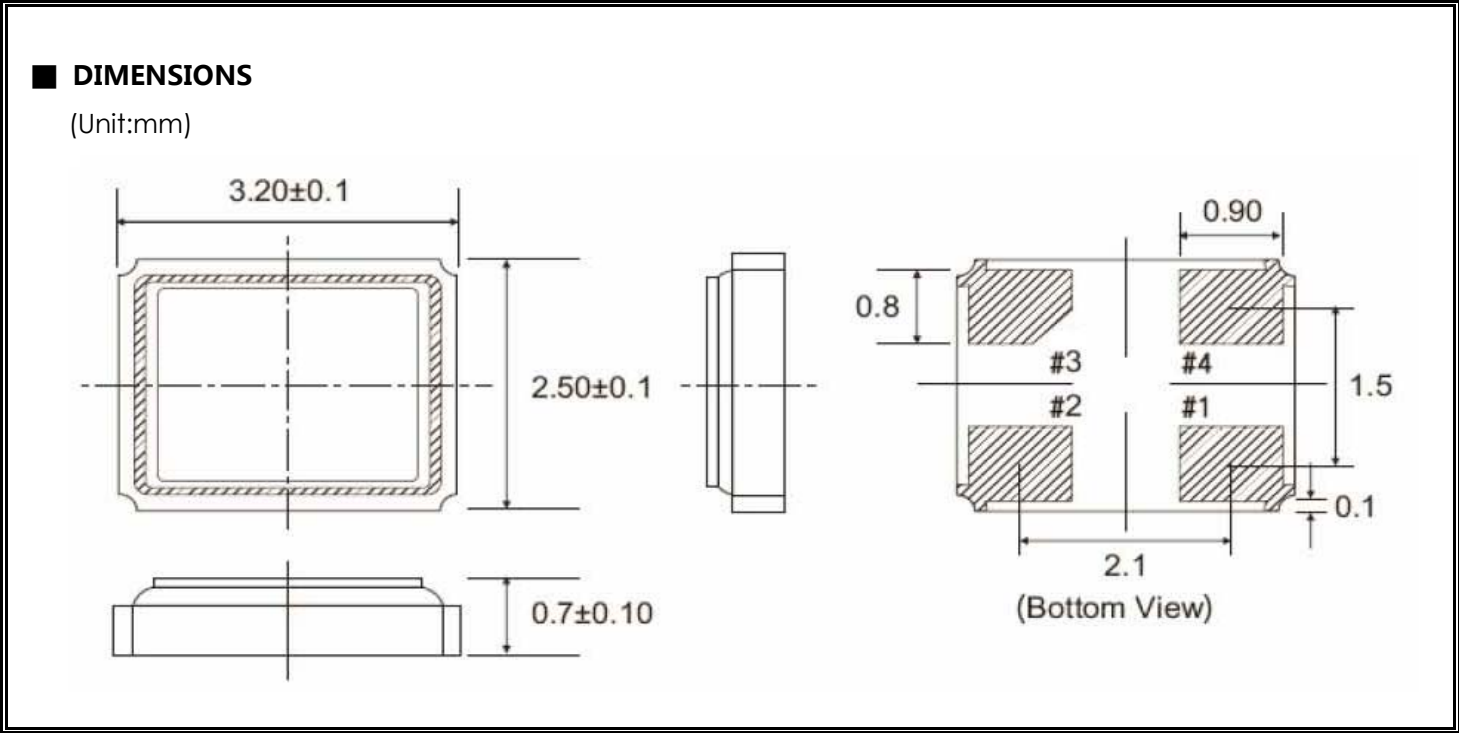
Approved By : *Sam*

### REVISION HISTORY

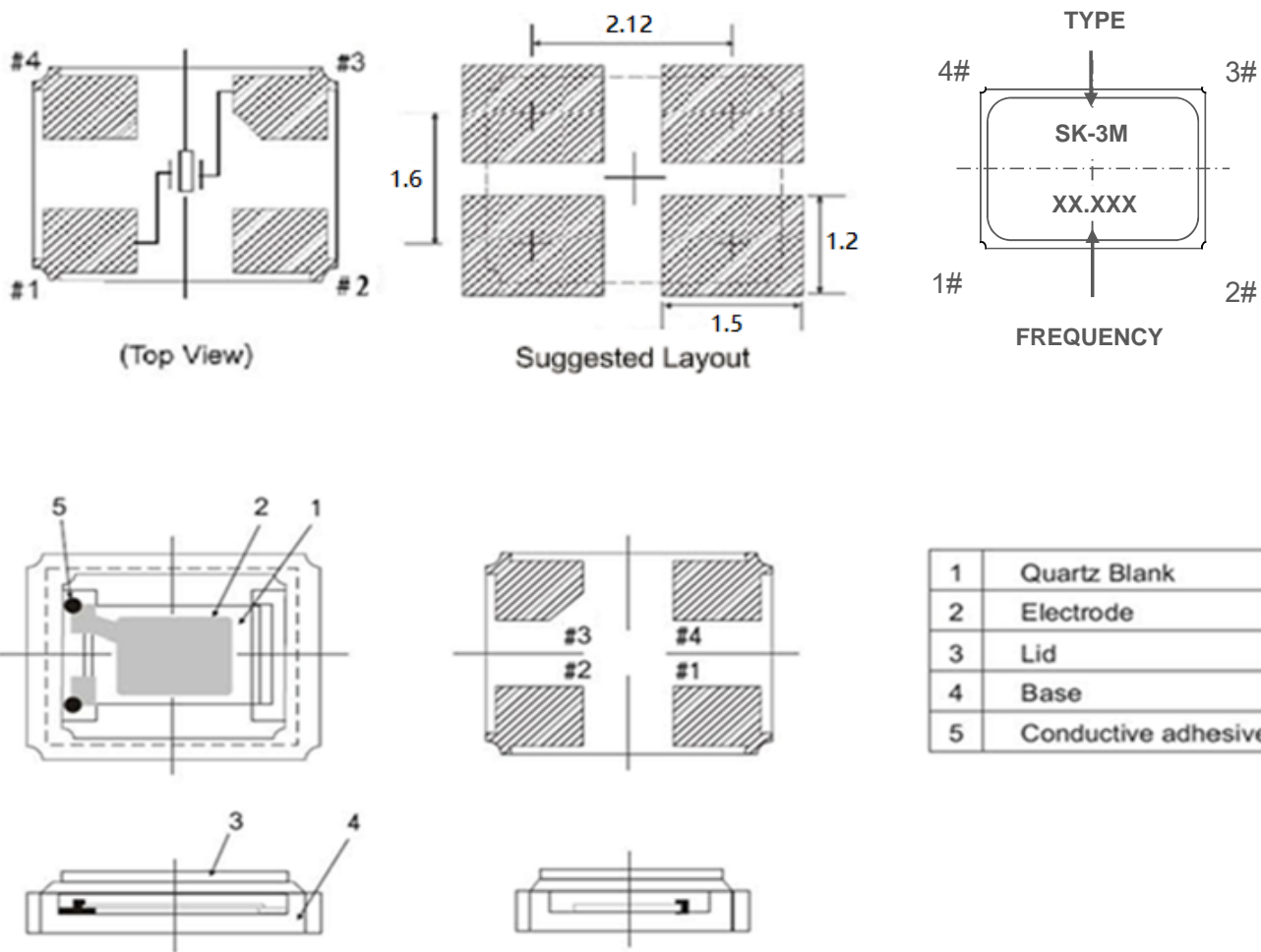
Rev	Revise Page	Revise Contents	Date	Ref. No.	Reviser
A	N/A	Initial Release	9-May-22	N/A	Aaron Lee

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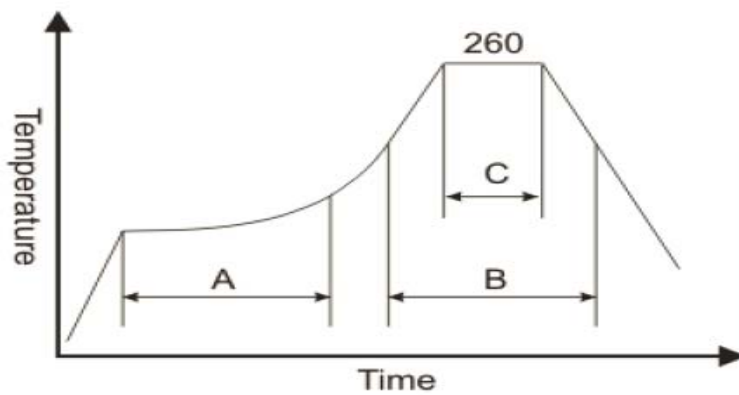
■ ELECTRICAL CHARACTERISTICS			
1	Holder type		SK-3M
2	Oscillation mode		■ Fundamental □ 3rd Overtone □ 5th Overtone
3	Crystal cutting type		AT CUT
4	Nominal frequency	FL	20.000MHz
5	Frequency stability	Tol	± 30 ppm ( ref at 25℃ )
6	Operating temperature range	TOPR	-20℃ to +70℃
7	Storage temperature range		-40℃ to +85℃
8	Temperature characteristic		± 30 ppm in item 6
9	Load capacitance	CL	20 PF ± 0.2PF
10	Equivalent series resistance	ESR	40 Ohms max.
11	Drive level	DL	100 uW
12	Shunt capacitance	C0	3.0 PF max.
13	Aging rate per year		Less than ±3ppm / year
14	Insulation resistance		500M Ohms min. at DC 100V ± 10V
15	Test circuit		Measured in S&A 250B



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## ■ SUGGESTED REFLOW PROFILE



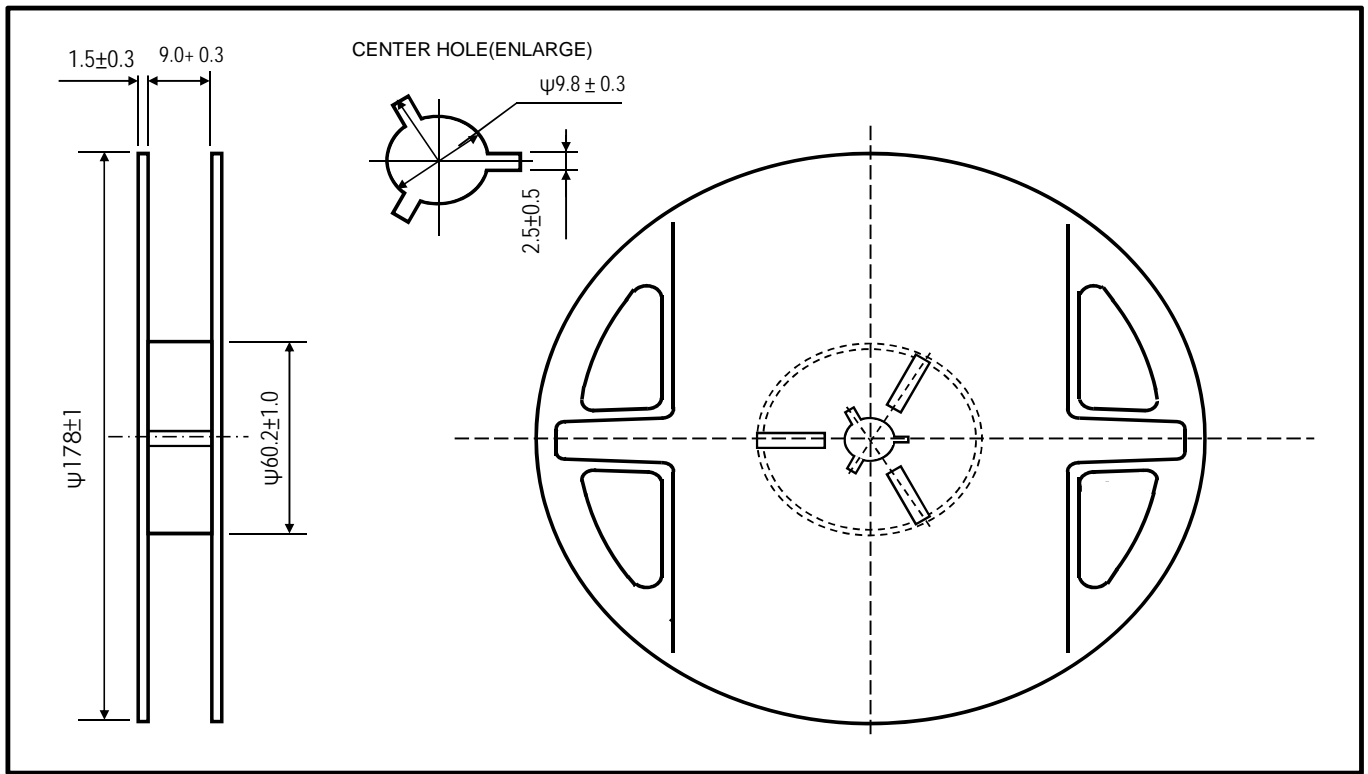
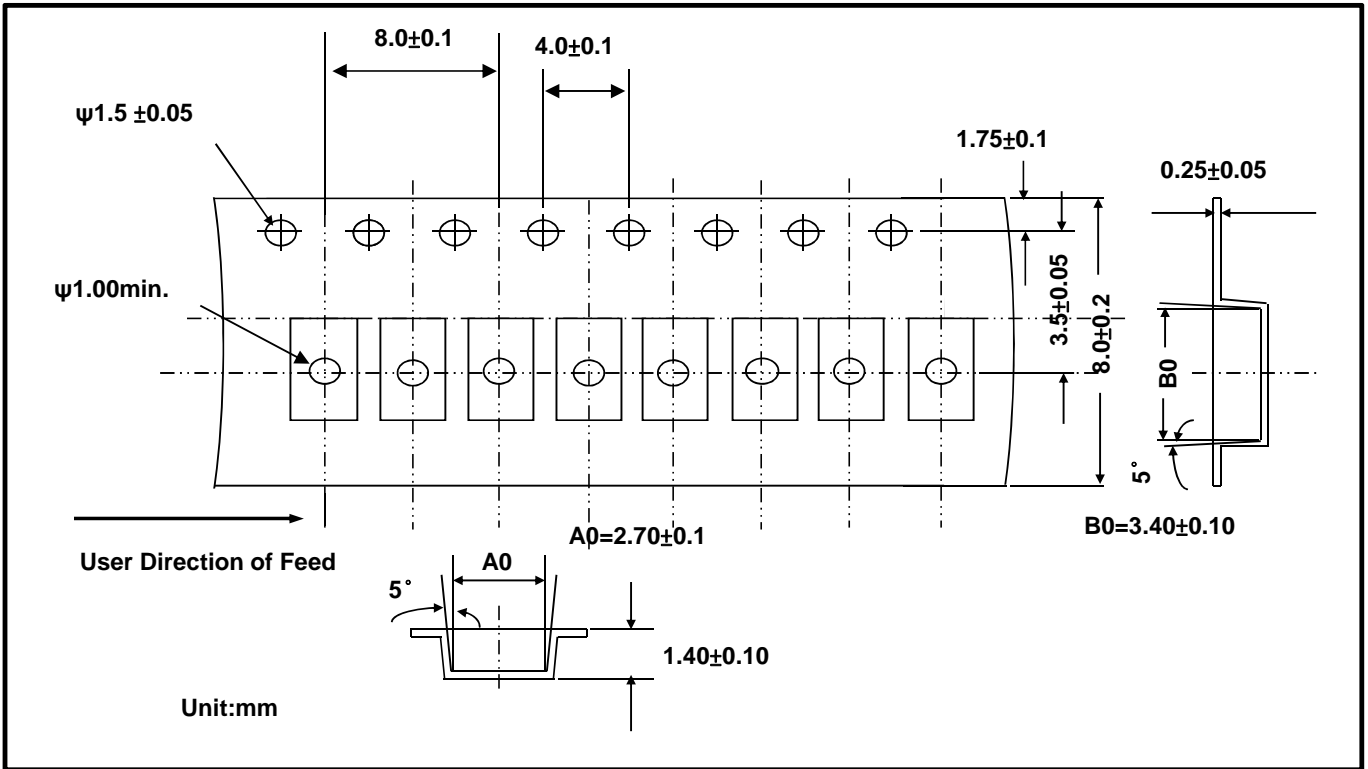
Note:

	Stage	Temperature	Time
A	Preheat	160~180°C	60~120 Sec
B	Primary Heat	220°C	60 Sec
C	Peak	260°C±5°C	10 Sec

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## ■ EMBOSS CARRIER TAPE & REEL

(3000pcs / per reel)



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A. MECHANICAL ENDURANCE : Provide that measurement shall be carried out after letting it alone in the room temperature for 1 hour.

1	Item	CONDITIONS	SPECIFICATION
	Drop	Should be satisfied after dropping 3 times from the high of 50cm onto hard wooden board of thickness more than 30mm.	Freq. drift $\pm$ 5ppm max.
2	Vibration	Should be satisfied after supplying following vibration. (1) Vibration frequency : 10~55Hz (2) Full cycle : 0.8mm (3) Direction : X.Y.Z (4) Time : 2 hours / each direction	Freq. drift $\pm$ 5ppm max.
3	Solder ability	3 sec. Dip in 245°C $\pm$ 5°C solder. (Use ROSIN type flux for solder.)	More than 90% of lead shall be covered by solder.
4	Seal	Less than 1.0x10 <sup>-8</sup> Pa-m <sup>3</sup> /sec. by Helium leak detector. Also, no serial bubble is observed by Fluorinate tests.	

B. ENVIRONMENTAL ENDURANCE : Provide that measurement shall be carried out after letting it alone in the room temperature for 1 hour.

	Item	Test Methods
1	Humidity	Should be satisfied after letting it alone at 60°C $\pm$ 2 °C in humidity of RH 90-95% for 240 hours.
2	Storage in Low Temp.	Should be satisfied after letting it alone at -40°C $\pm$ 2 °C for 240 hours.
3	Storage in High Temp.	Should be satisfied after letting it alone at +85°C $\pm$ 2 °C for 240 hours.
4	Temperature cycles	-40°C $\pm$ 2°C (30min) $\longleftrightarrow$ +85°C $\pm$ 2°C (30min) for 20 cycles.
Specifications : Freq. Drift $\pm$ 5ppm and equivalent resistances shall be within the specification after the test		