



Specification of Crystal Unit

CUSTOMER: _____

PRODUCT TYPE: SMD-3.2*2.5MM(4PAD)

NOMINAL FREQ: 16.0000MHZ

SPEC.NO.(P/N): J3S16M0000FIE11

CUSTOMER P/N: _____

customer opinion		
Drawn	Check	Approval
Provider		
PE/RD	QA	MFG
曾玉林	刘来凤	黄科钧

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- requires one copy returned with signature and title of authorized individual that signifies acceptance of the attached specifications.
- Any issuance of purchase order prior to consigning back the Approval page of "Specification Sheets" from customers will be regarded as the agreement on the contents of these specifications.

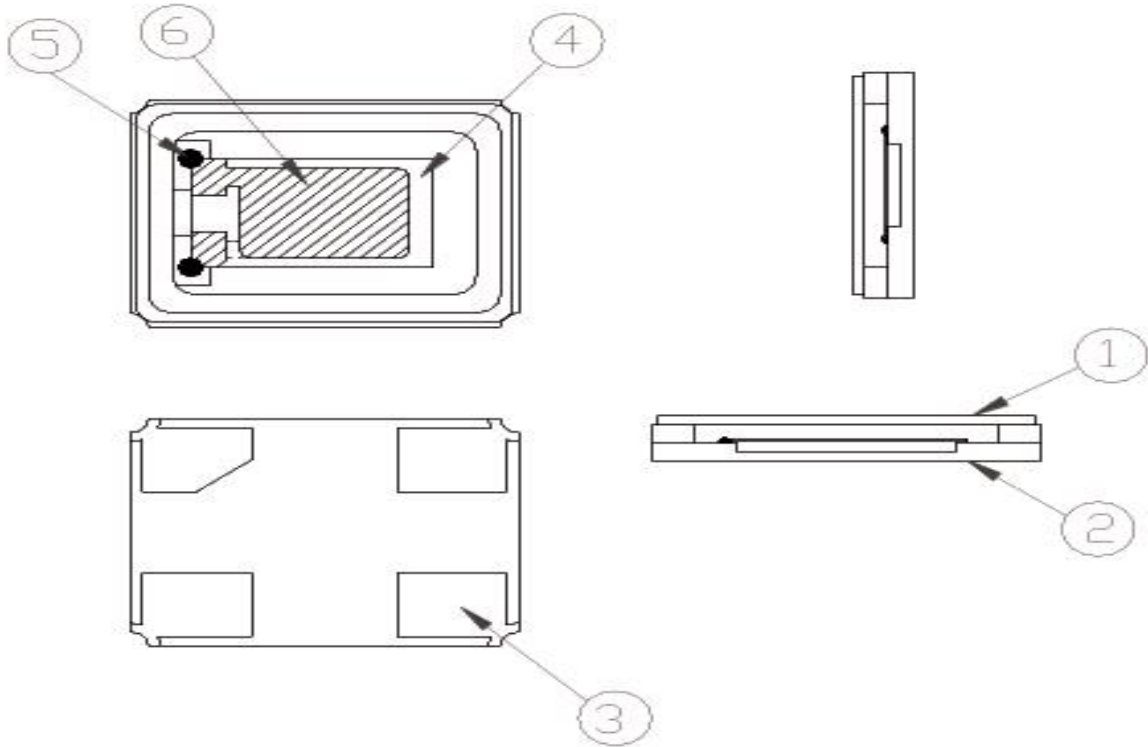


● ELECTRICAL SPECIFICATIONS

Parameters	Symbo	Specifications	Units	Notes
Nominal Frequency	-	16.0000	MHZ	-
Overtone order	-	Fundamental		-
Frequency Tolerance	FL	± 10	ppm	at 25 °C ± 3 °C
Frequency Stability	-	± 10	ppm	Over Operating Temp. Range (Reference 25°C)
Load Capacitance	CL	20	pF	Typ.
Recommended matching capacitance range	-		PF	
Equivalent Series Resistance	ESR	40	Ω	Max.
Operating Temperature Range	TR	-40 to 85	°C	-
Shunt Capacitance	CO	2.0	pF	5.0Max.
Drive Level	DL	100	uw	300uw/Max.
equipment	-	S&A250B	-	-
Aging	-	± 3	ppm	Max. 1st year
Storage Temperature Range	-	-40 to 85	°C	-
Insulation Resistance	-	500	M Ω	At 100V _{DC}
Holder type	-	JSK3S	-	-
Crystal cutting type	-	AT	-	-
Unit Weight	-	0.018 \pm 0.001	g/pcs	-



- RECOMMENDED IR REFLOW PROFILE
- IR REFLOW PROFILE OF CERAMIC SMD PRODUCTS FOR Pb FREE PROCESS



NO	COMPONENTS	MATERIALS	QTY	FINISH/SPECIFICATIONS
1	Cap(Lid)	Metal(Fe)	1	
2	Base (Package)	Ceramic(Al ₂ O ₃)	1	Alumina ceramics
3	Pad (Package)	Au	4	Tungsten metalize +Ni plating + Au plating
4	Crystal blank	SiO ₂	1	-
5	Conductive adhesive	Ag	4	Silicone resin
6	Electrode	Ag + Cr	2	-



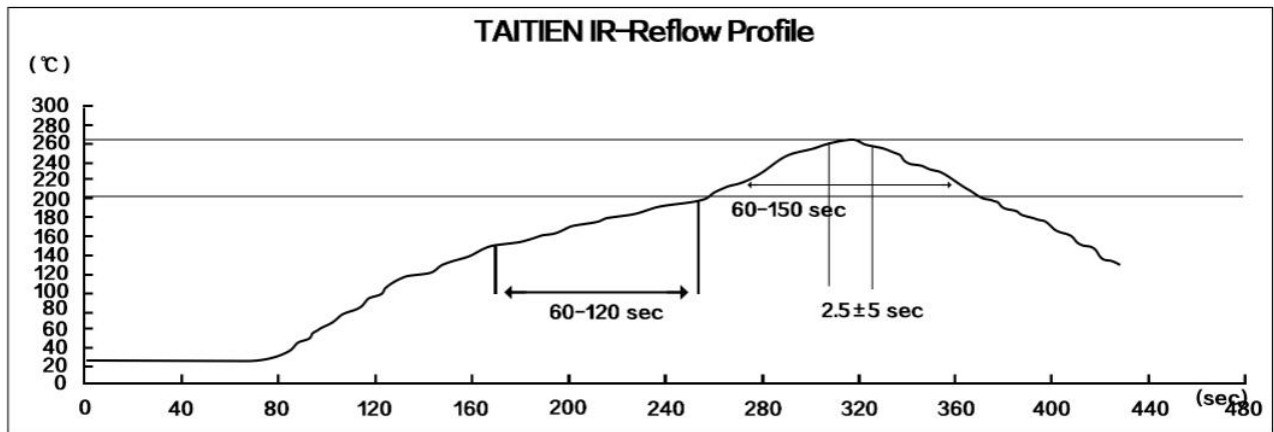
● Reliability (Mechanical and environmental performances)

No.	Test Item	Test Methods	REF.DOC
1	Drop Test	150 cm height, 3 times on concrete floor.	JIS C6701
2	Mechanical Shock	Device are shocked to half sine wave (1000 G) three mutually	MIL-STD-202F
3	Vibration	Frequency range 10 ~ 2000 Hz Amplitude 1.52 mm/20G Sweep time 20 minutes Perpendicular axes each test time 4 Hrs	MIL-STD-883E
4	Gross Leak	Standard Sample For Automatic Gross Leak Detector, Test Pressure: 2kg / cm ²	MIL-STD-883E
5	Fine Leak	Helium Bombing 4.5 kg/ cm ² for 2 Hrs	
6	Solder ability	Temperature 245 °C ± 5°C Immersing depth 0.5 mm minimum Immersion time 5 ± 1 seconds Flux Rosin resin methyl	MIL-STD-883E
7	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-202F
8	High Temp. Storage	+ 125 °C ± 3 °C for 500 ± 12 Hrs	MIL-STD-883E
9	Low Temp. Storag	- 40 °C ± 3 °C for 500 ± 12 Hrs	
10	Temperature Cycling	with a tolerance of ±3°C for both temperature points 	MIL-STD-883E-1 011.9B
11	High Temp & Humidity	85°C ± 3°C, RH 85% , 500 Hrs	JIS C5023
12	Pressure Cooker Storage	121 ± 3°C , RH100% , 2 bar , 240 Hrs	JIS C6701



- **RECOMMENDED IR REFLOW PROFILE**

IR REFLOW PROFILE OF CERAMIC SMD PRODUCTS FOR Pb FREE PROCESS



IR-Reflow Test

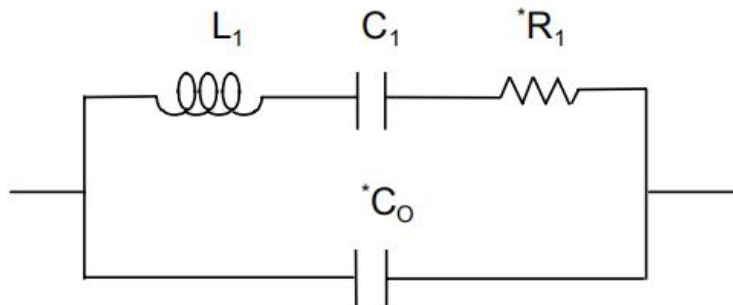
Reference Standard :JEDEC-STD 020

Test Conditions:Pre-heating:150° C to 200° C, 60 -120 sec

Heating :217° C, 60-150 sec

Peak Temperature : 260 ± 5° C , 25 ± 5 sec

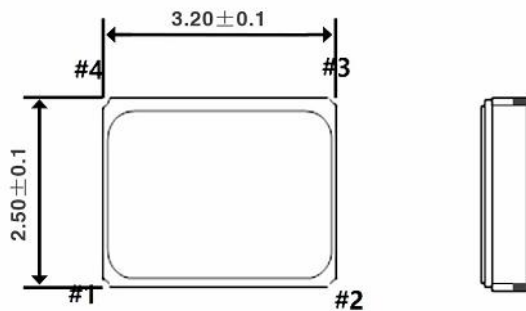
- **Fig.1 Equivalent circuit**



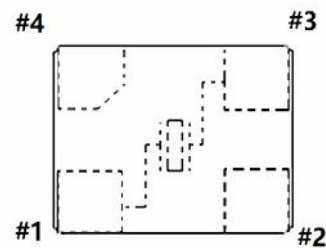


● **DIMENSION (unit:mm)**

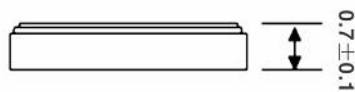
SMD SEAM SEALING X'TAL3.2*2.5



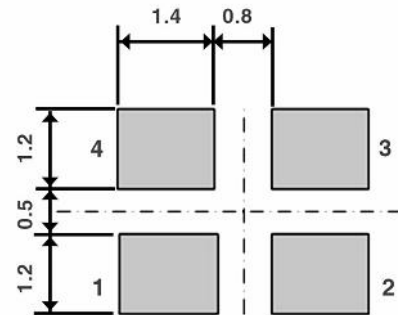
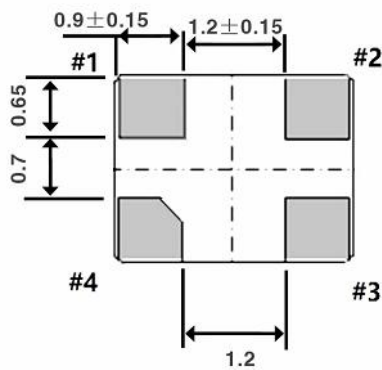
***Internal Connections(Top View)**



#1,#3 connected to quartz element
#2,#4 are not connected (Open)



***Suggested solder pad layout**



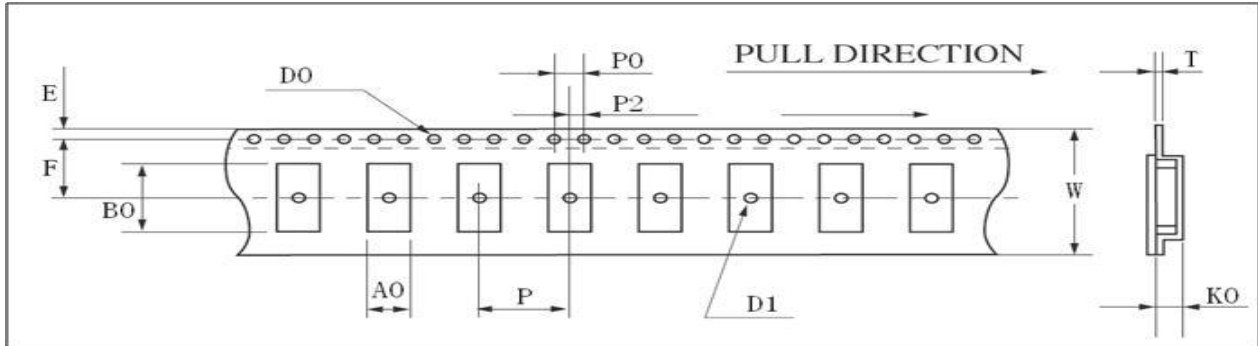
● **MARKING**

First Line: Frequency

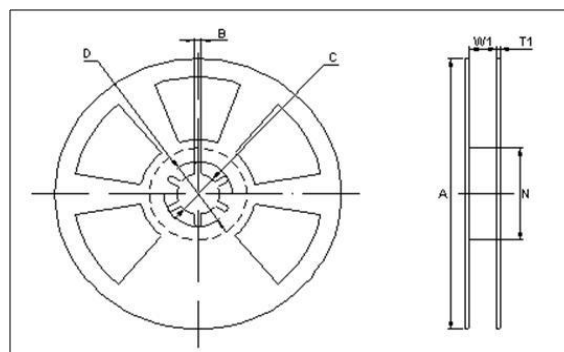
Second Line: MHZ .



● REEL SPECIFICATION



	HC-49SMD	7030	7050	6035	5032	3225	2520	2016	1612
W	24.00±0.30	12.00±0.05	16.00±0.05	12.00±0.05	12.00±0.05	12.00±0.05	8.00±0.02	8.00±0.02	8.00±0.02
E	1.75±0.10	1.75±0.10	1.75±0.10	1.75±0.10	1.75±0.10	1.75±0.10	1.75±0.10	1.75±0.10	1.75±0.10
F	11.5±0.10	5.50±0.10	7.5±0.10	5.5±0.10	5.5±0.10	3.5±0.05	3.5±0.05	3.5±0.05	3.5±0.05
T	0.40±0.05	0.30±0.05	0.35±0.05	0.35±0.05	0.35±0.05	0.25±0.05	0.25±0.05	0.20±0.05	0.20±0.05
P	12.00±0.10	0.40±0.05	8.00±0.10	8.00±0.10	8.00±0.10	8.00±0.10	4.00±0.10	4.00±0.10	4.00±0.10
P0	4.00±0.10	0.40±0.01	4.00±0.10	4.00±0.10	4.00±0.10	4.00±0.10	4.00±0.10	4.00±0.10	4.00±0.10
P2	2.00±0.10	2.00±0.10	2.00±0.10	2.00±0.10	2.00±0.10	2.00±0.10	2.00±0.10	2.00±0.10	2.00±0.10
D0	φ 1.50+0.10	φ 1.50+0.10	φ 1.50+0.10	φ 1.50+0.10	φ 1.50+0.10	φ 1.55+0.05	φ 1.50+0.10	φ 1.50+0.10	φ 1.50+0.10
D1	φ 1.50MIN	φ 1.10+0.10	φ 1.50MIN	φ 1.50MIN	φ 1.50MIN	φ 1.15MIN	φ 1.10+0.10	φ 1.10+0.10	φ 1.10+0.10
A0	4.60±0.10	1.90±0.10	5.40±0.10	3.90±0.10	3.60±0.10	2.80±0.10	2.25±0.10	1.80±0.10	1.40±0.10
K0	4.40±0.10	1.00±0.10	1.80±0.10	1.50±0.10	1.40±0.10	1.00±0.10	0.80±0.10	0.70±0.10	0.60±0.10
B0	14.20±0.15	7.50±0.10	7.40±0.10	6.40±0.10	5.40±0.10	3.50±0.10	2.70±0.10	2.20±0.10	1.80±0.10

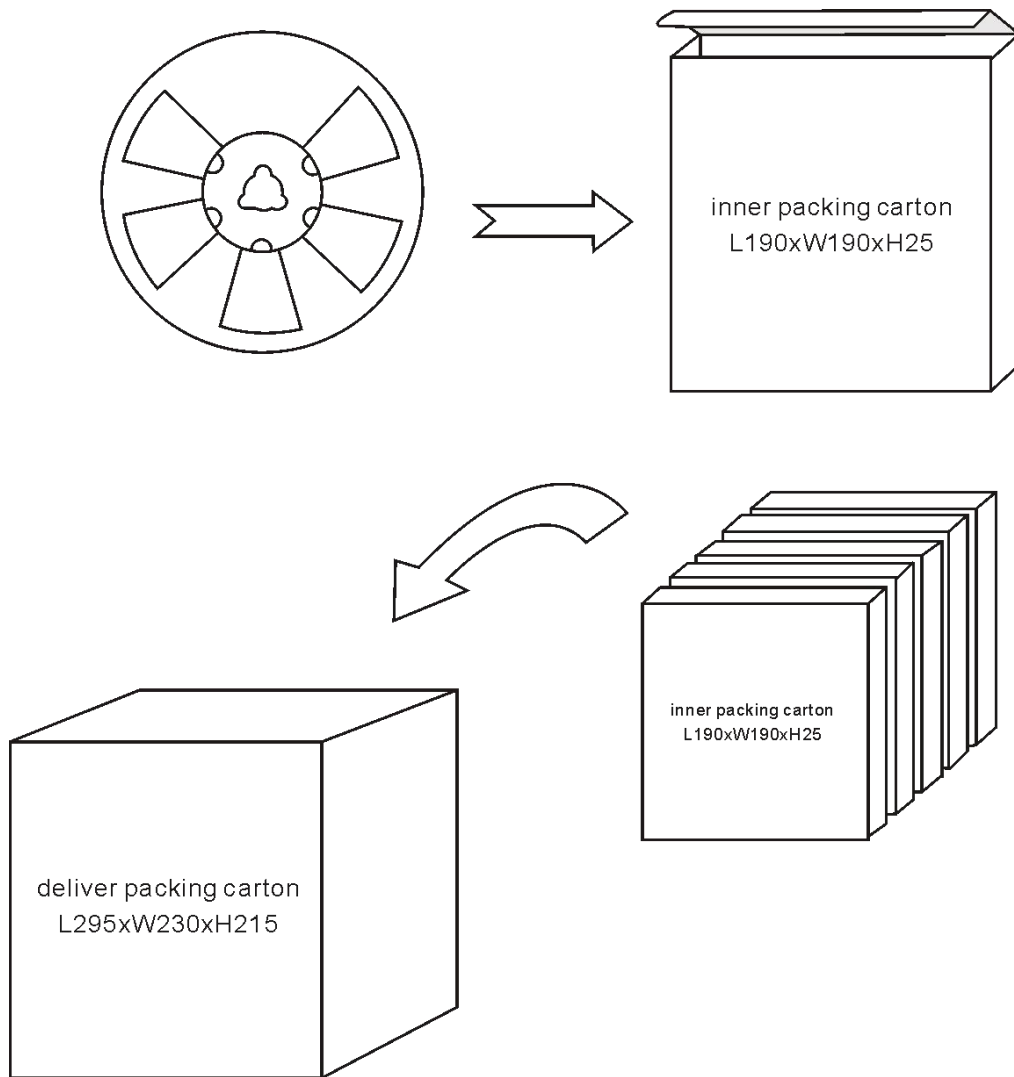


	HC-49SMD	7030	7050	6035	5032	3225	2520	2016	1612
A	φ 330±1.0	φ 330±2.0	φ 178±2.0	φ 178±2.0	φ 178±2.0	φ 178±2.0	φ 178±2.0	φ 180±2.0	φ 178±2.0
B	2.30±0.20	3.20±0.20	2.00±0.50	2.00±0.50	2.00±0.50	2.00±0.50	2.5±0.50	2.3±0.50	2.2±0.50
C	φ 13.5±0.20	φ 13.2±0.20	φ 13.2±0.20	φ 13.2±0.20	φ 13.2±0.20	φ 13.2±0.20	φ 11±0.20	φ 13.5±0.20	φ 13.5±0.20
D	φ 21.5±0.20	φ 20.0 min	φ 20.0 min	φ 20.0 min	φ 20.0 min	φ 20.0 min	φ 13±0.20	φ 13±0.20	φ 13±0.20
N	φ 100.0±0.5	φ 100.0±0.5	φ 60.5±1.0	φ 60.5±1.0	φ 60.5±1.0	φ 60.5±1.0	φ 60.2±1.0	φ 60±1.0	φ 60±1.0
W1	24.5±0.20	16.0±0.050	16.5±0.20	12.5±0.20	12.5±0.20	12.5±0.20	8.0+1.0/-0	8.0+1.0/-0	8.5+1.0/-0
T1	2.30±0.20	1.80±0.20	1.80±0.20	1.80±0.20	1.80±0.20	1.80±0.20	1.75±0.20	1.8±0.20	1.8±0.20



● **PACKING SPECIFICATION**

Carton Dimension (unit : mm)



PS:3000Pcs/Reel

10 discs per box(3000pcs)