

CRYSTAL UNIT SPECIFICATIONS

Customer	
Customer P/N	
Product	SMD CRYSTAL 3.2*1.5
Nominal Frequency	32.768KHz
HOSONIC P/N	ETST00327000JE
Version	10W0
Issue Date	2015/8/3

HOSONIC		
Drawn	Checked	Approved
LUCY	ZOE	JOHN

Approved By Customer : _____



HOSONIC ELECTRONIC CO., LTD.



Revised Record

Rev.	Rev. Date	Item	Content	Remark
1.0	2015-08-03		Initial released	

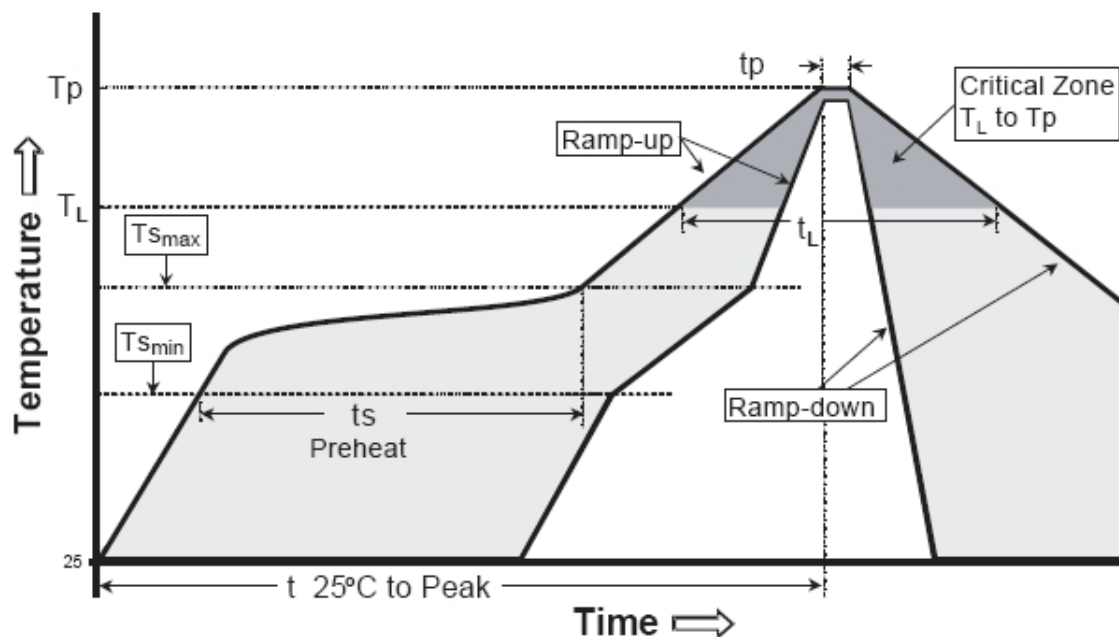
I ELECTRICAL PARAMETERS

No.	Item	Symb.	Electrical Specification				Remark	
			Min.	Typ.	Max.	Units		
1	Nominal Frequency	F0	32.768			KHz		
2	Mode of Vibration		Fundamental					
3	Frequency Tolerance	$\Delta F/F0$	-20	-	20	ppm	at 25°C±3°C	
4	Operating Temperature Range	TOPR	-40	-	85	°C		
5	Temperature Coefficient		-0.034±0.006			ppm/(Δ °C) ²		
6	Turnover Temperature		20	25	30	°C		
7	Storage Temperature	TSTG	-55	-	125	°C		
8	Load capacitance	CL	-	12.5	-	pF		
9	Equivalent Series Resistance	ESR	-	-	70	K Ω		
10	Drive Level	DL	-	-	1	μ W		
11	Insulation Resistance	IR	500	-	-	M Ω	At 100V _{DC}	
12	Shunt Capacitance	C0	-	-	2	pF		
13	Aging	Fa	-3	-	3	ppm	First Year	
14	Package type	SMD						

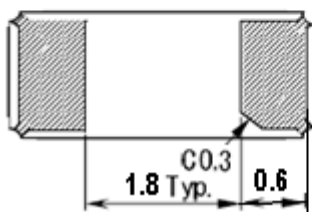
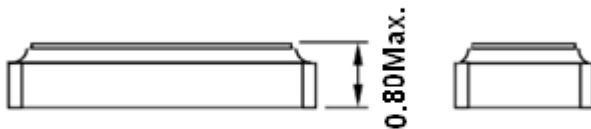
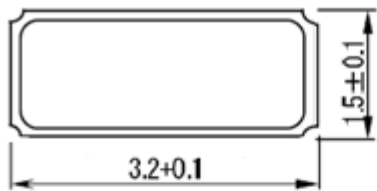
NOTE: Storage Temperature is only for the product itself, the temperature for the packing material is -4~40°C.

I REFLOW PROFILES

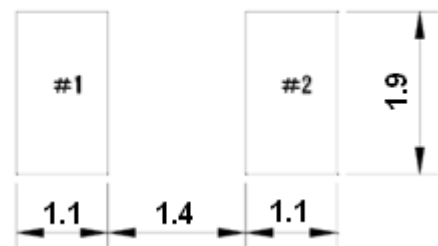
Profiles Feature	Pb-Free Assembly
Average Ramp-up Rate (Ts max to Tp)	3°C/second max.
Preheat	
■ Temperature Min (Ts min)	125°C
■ Temperature Max (Ts max)	200°C
■ Time (ts min to ts max)	60~180 seconds
Time maintained above	
■ Temperature (T _L)	217°C
■ Time (t _L)	60~150 seconds
Peak/Classification Temperature (Tp)	260°C
Time within 5°C of actual Peak Temperature (t _p)	20~40 seconds
Ramp-down rate	6°C/second max.
Time 25°C to Peak Temperature	8 minutes max.
Suggest reflow times	3 Times max



Remark: To reference JEDEC J-STD-020C

I OUTLINE DIMENSIONS (unit: mm)

Recommended PAD lay-out

**I MARKING**

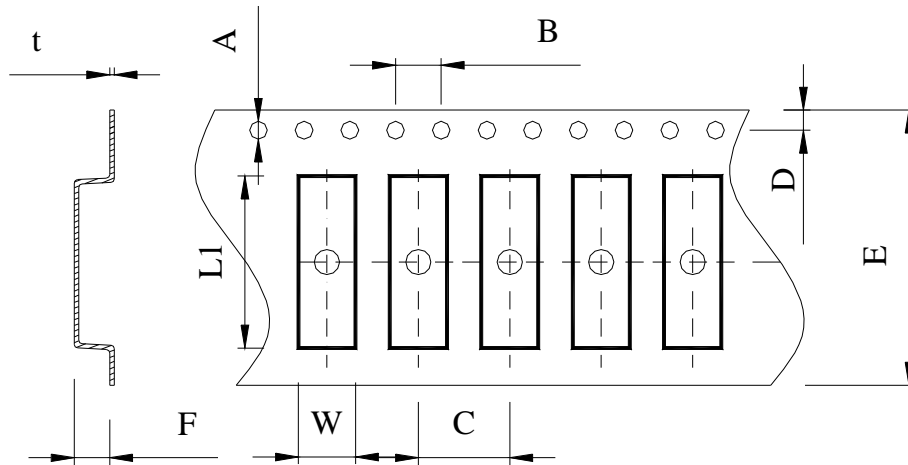
Internal control code

Week code

Year: last 1 digit

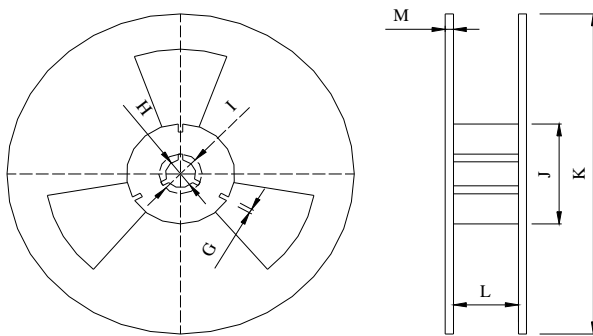
I PACKAGE (units : mm)

Tape Dimensions(unit : mm)



A	B	C	D	E	F	L1	W	t
1.50	4.0	4.0	1.75	12.0	1.0	3.6	1.9	0.3

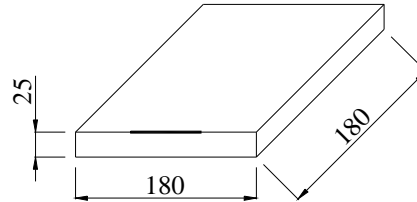
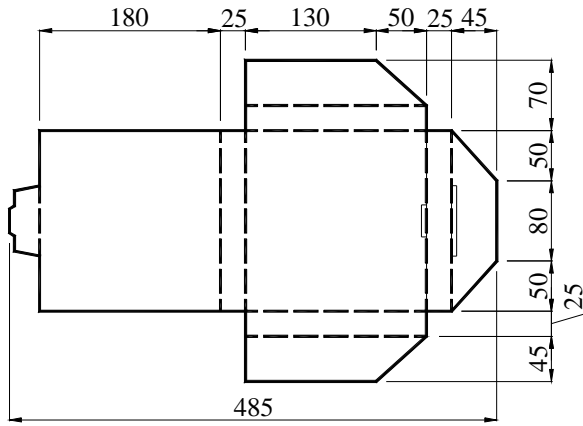
Reel Dimensions(unit: mm)



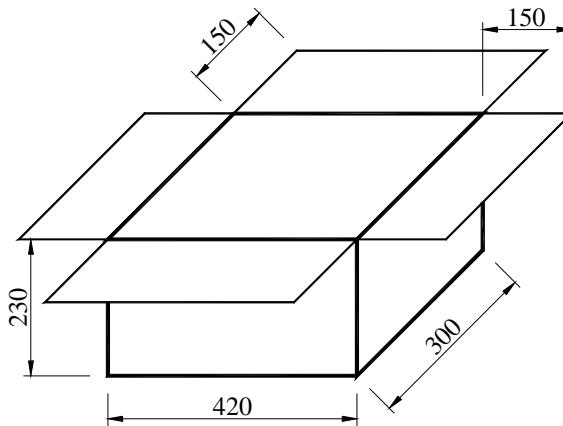
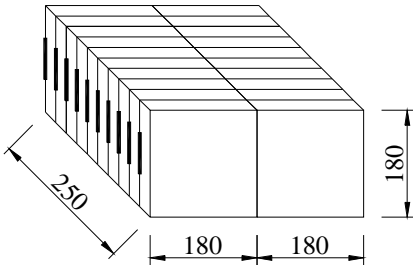
G	H	I	J	K	L	M
2.0	13.0	21.0	60.0	178	13.0	1.2

*3000pcs/Reel

Carton Dimension (unit : mm)



1 reel = 1 Inner box



20 Inner boxes = 1 Carton

60kpcs = 1 Carton

I RELIABILITY SPECIFICATIONS

No.	Test Item	Test Conditions	Criteria
1	High Temperature Endurance	Temperature: 85°C ± 2°C Time: 500 Hours	B
2	Low Temperature Endurance	Temperature: -40°C ± 2°C Time: 500 Hours	A
3	Thermal Shock	Temperature 1: -40°C ± 2°C Temperature 2: 100°C ± 2°C Run 5 cycles, maintain T1 and T2 30minutes each in one cycle	A
5	Humidity Endurance	Temperature: 65°C Relative Humidity: 95%RH Time: 500Hours	B
6	Shock	100g dummy, drop from 150 cm height on to the concrete. And 3 directions, 10 times for each direction.	B
7	Solderability	After applying RMA flux, dip in solder. Dipping Time : 5+/-0.5seconds. Soldering Temperature : 230+/-5 degC.	D
8	Leakage	Leak rate shall be measured by using Helium Leak Detector.	E
9	Strength	Weight 9.8N on the center of sample with R 0.5 bar 10 seconds.	C
10	Vibration	Frequency Range: 10Hz~500Hz Amplitude: 1.5mm or 10G Cycle Time: 2Hours in each direction, total 6Hours	A

Criteria:

A: Any variation between the pre- and post-test frequencies shall remain within ±5ppm.

Any variation between the pre- and post-test the equivalent series resistance shall remain within ±20% or ±15kΩ.

B: Any variation between the pre- and post-test frequencies shall remain within ±10ppm.

Any variation between the pre- and post-test the equivalent series resistance shall remain within ±20% or ±15kΩ.

C: After each test, no visible damage, nor the hermetic seal break down.

D: At least 90% of each dipped area shall be covered by fresh solder.

E: 1×10⁻² Micro Pa · m³/s Max

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