NIHON DEMPA KOGYO CO.,LTD.

Crystal Bridge to the Future

RoHS COMPLIANT

CRYSTAL UNIT SPECIFICATIONS

Customer	
Customer P/N	
Product	SMD CRYSTAL 3.2*1.5
Nominal Frequency	32.768KHz
NDK P/N	NX3215SA-32.768K-20ppm-70KOhm-7pF
Version	10W0
Issue Date	

Drawn	**Checked**	**Approved**
Drawn		

Approved By Customer : _____

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R vised Record				
Rev.	Rev. Date	Item	Content	Remark
1.0			Initial released	

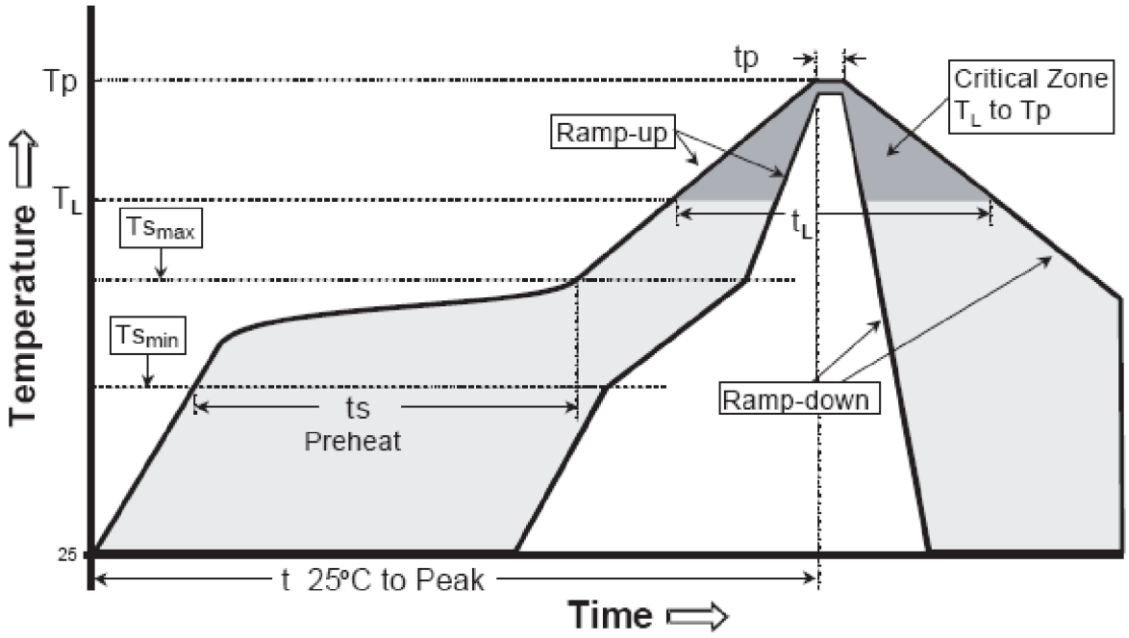
ELECTRICAL PARAMETERS

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	ΔF/F0	-20	-	20	ppm	at 25℃±3℃
5	Operating Temperature Range	TOPR	-40	-	85	℃	
6	Temperature Coefficient			-0.034±0.006		ppm/(Δ℃)^2	
7	Turnover Temperature		20	25	30	℃	
8	Storage Temperature	TSTG	-55	-	125	℃	
9	Load capacitance	CL	-	7	-	pF	
10	Equivalent Series Resistance	ESR	-	-	70	KΩ	
11	Drive Level	DL	-	-	1	μW	
12	Insulation Resistance	IR	500	-	-	MΩ	At 100V_{DC}
13	Shunt Capacitance	C0	-	-	2	pF	
14	Aging	Fa	-5	-	5	ppm	First Year
15	Package type	SMD					

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

● **REFLOW PROFILES**

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



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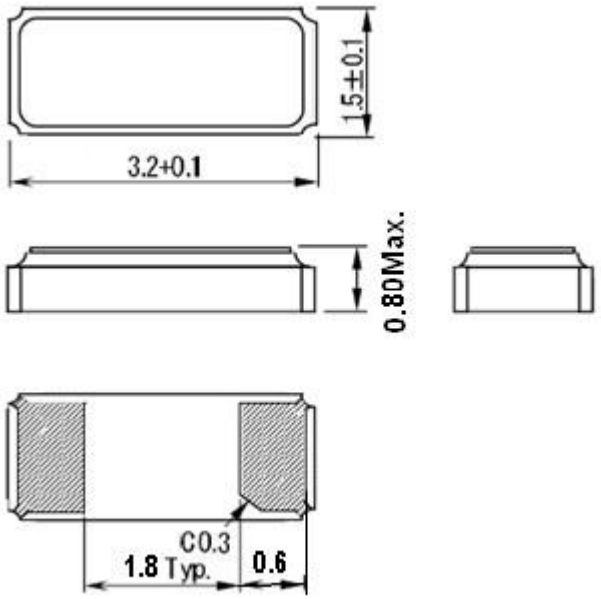
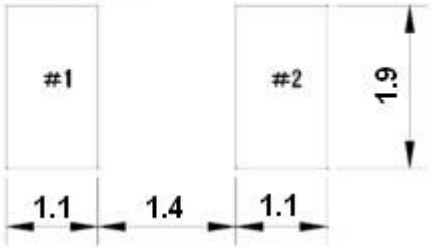
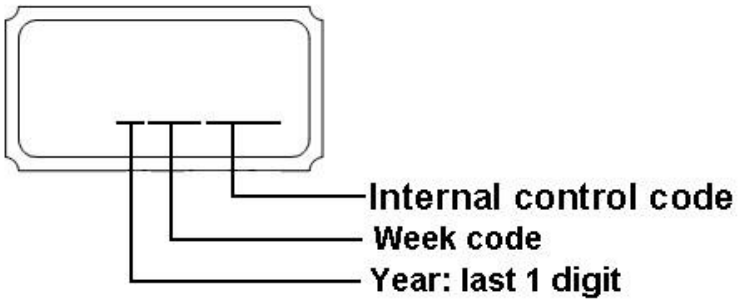
- **OUTLINE DIMENSIONS (unit: mm)**



Recommended PAD lay-out



- **MARKING**



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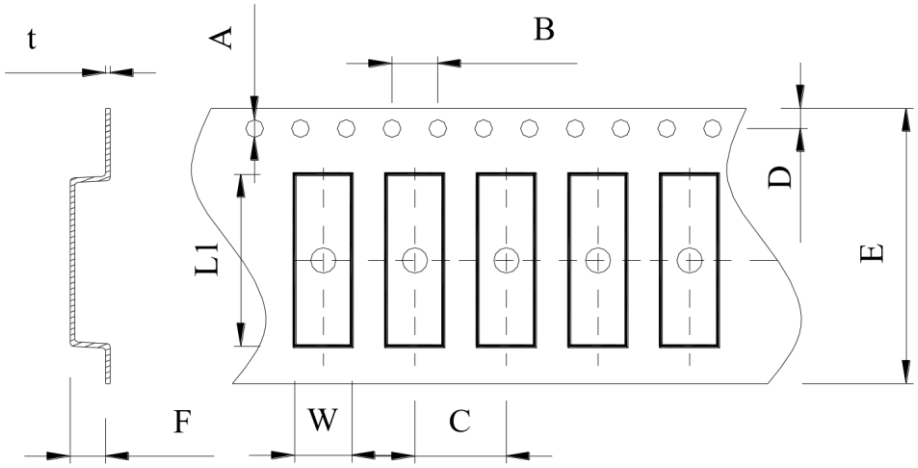
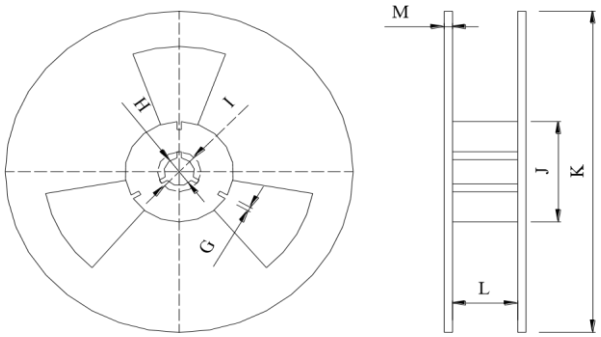
- **PACKAGE** ***(units : mm)***

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

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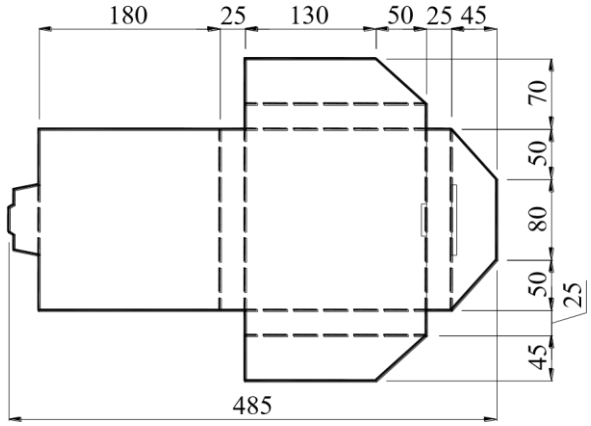
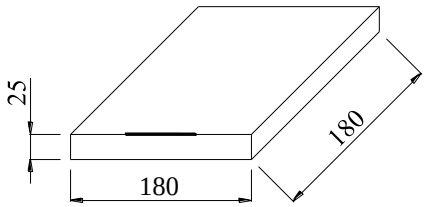
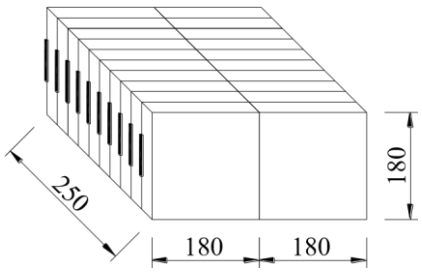
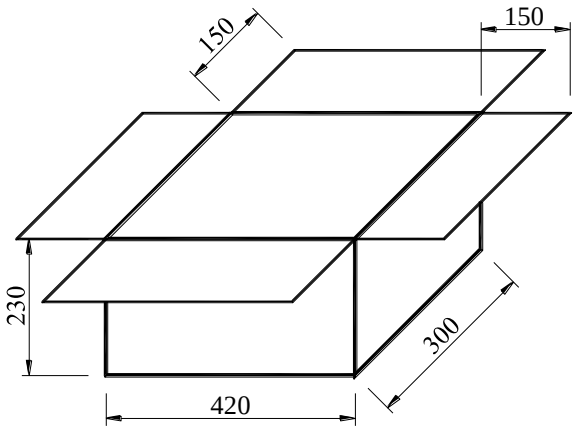
Carton Dimension (unit : mm)





1 reel = 1 Inner box





20 Inner boxes = 1 Carton

60kpcs = 1 Carton

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RELIABILITY SPECIFICATIONS

No.	Test Item	Test Conditions	Criteria
1	High Temperature Endurance	Temperature: 85℃±2℃ Time: 500 Hours	B
2	Low Temperature Endurance	Temperature: -40℃±2℃ Time: 500 Hours	A
3	Thermal Shock	Temperature 1: -40℃±2℃ Temperature 2: 100℃±2℃ Run 5 cycles, maintain T1 and T2 30minutes each in one cycle	A
5	Humidity Endurance	Temperature: 65℃ Relative Humidity: 95%RH Time: 500Hours	B
6	Shock	100g dummy, drop from 150 ㎝ 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