



Accurate Kinetic Energy

APPROVAL SHEET

Customer Name : _____
Customer P/N : _____
Frequency : 32.768000 KHz
Aker Approved P/N : D31-032768-BDRD46
Aker MPN : D31-032768-BDRD46
REVISION : A0
ISSUED DATE : 2018/5/9

APPROVED	CHECKED	PREPARED
<i>Earnest</i>		<i>Kiku</i>
APPROVED BY CUSTOMER		

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RoHS compliant



CUST. P/N	:		
Aker Approved P/N	:	D31-032768-BDRD46	
APPROVED	:	Earnest	SHEET : 1 of 4
PREPARED	:	Kiku	REV . : A0

Rev.	Date	Reviser	Revise contents
A0	2018/5/9	Kiku	Initial Released

Please kindly be noted that AKER DO NOT guarantee parts quality which involves human security application.

TUNING FORK CRYSTAL SPECIFICATION

1. ELECTRICAL CHARACTERISTICS

[1] Absolute maximum ratings

No.	Item	Symbol	Rating value			Unit	Note
			Min.	Typ.	Max.		
1	Storage temperature range	T_stg	-55		+125	°C	Store as bare product after unpacking
2	Maximum level of drive	GL		0.5		μW	

[2] Operating range

No.	Item	Symbol	Value			Unit	Note
			Min.	Typ.	Max.		
1	Operating temperature range	T_use	-40		+85	°C	
2	Level of drive	DL	0.01	0.1	0.5	μW	
3	Vibration mode		Fundamental				

[3] Static characteristics

No.	Item	Symbol	Standard	Unit	Conditions	
1	Nominal frequency	F_nom	32.768	kHz		
2	Frequency tolerance	f_tol	± 20	× 10 ⁻⁶	CL = 12.5 pF Ta = +25± 3°C, Level of drive : 0.1 μW Not include aging	
3	Motional resistance(ESR)	R1	Max. 70	kΩ	CI meter : Saunders 140B Level of drive : 0.5 μW	
4	Motional capacitance	C1	Typ. 3.4	fF		
5	Shunt capacitance	C0	Typ. 1.2	pF		
6	Frequency temperature characteristics	Turnover temperature	Ti	+25 ± 5	°C	Values are calculated by the frequencies at +10, +25, +40 °C with C-MOS circuit.
		Parabolic coefficient	B	Max. -0.04	× 10 ⁻⁶ /°C ²	
7	Insulation resistance	IR	Min. 500	MΩ	DC 100V± 15, 60 seconds Between terminal #1 and terminal #2	
8	Frequency aging	f_age	± 3	× 10 ⁻⁶ /year	Ta = +25 °C ± 3 °C Level of drive : 0.1 μW	

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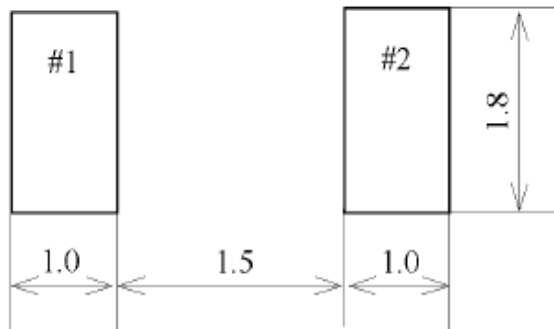
2 . INTERNAL CONNECTION:



#1 #2

Package : Ceramic(Al_2O_3)
Terminal Au plate : 0.5 μm Min.
Lid : Glass

3 . RECOMMENDED SOLDERING PATTERN:(Unit : mm)



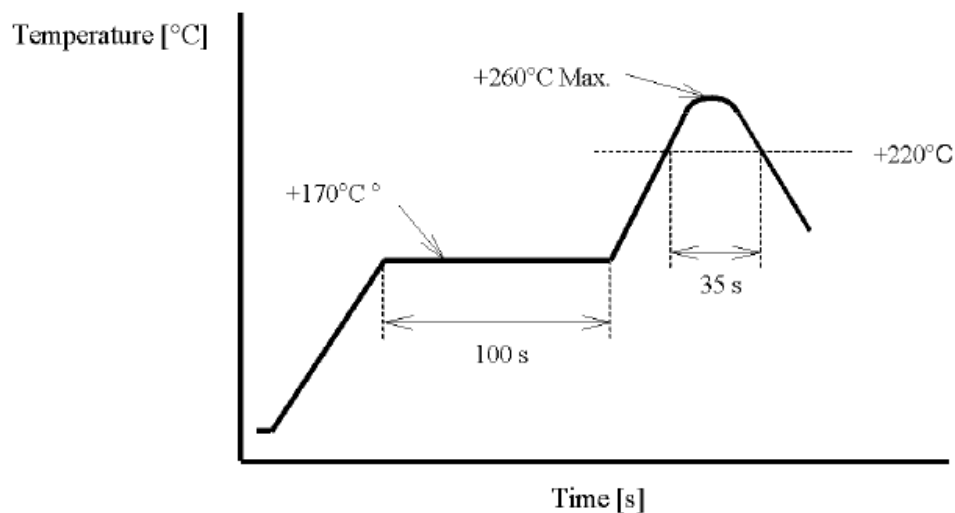
4. SOLDERING REFLOW PROFILE :

Pre heating temperature: +170 [°C]

Pre heating time: 100 [s]

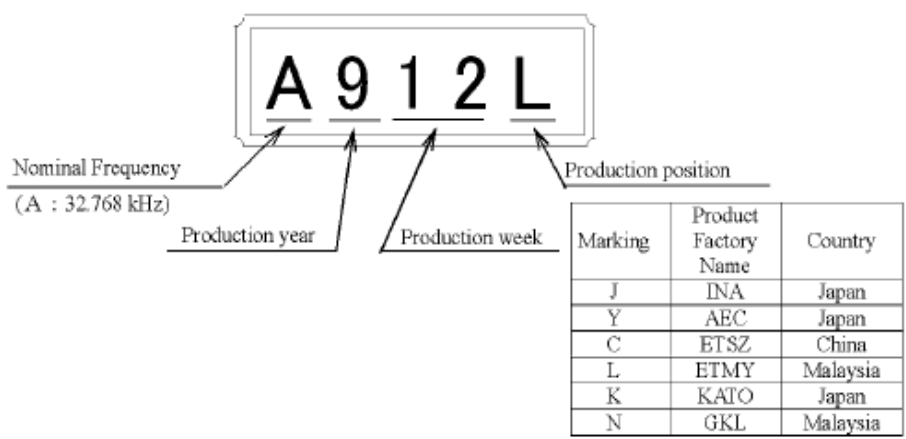
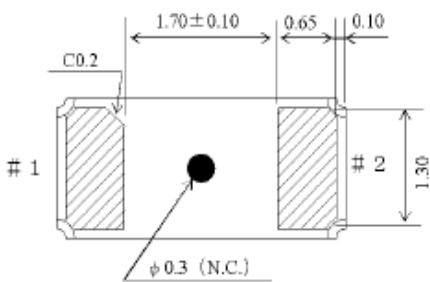
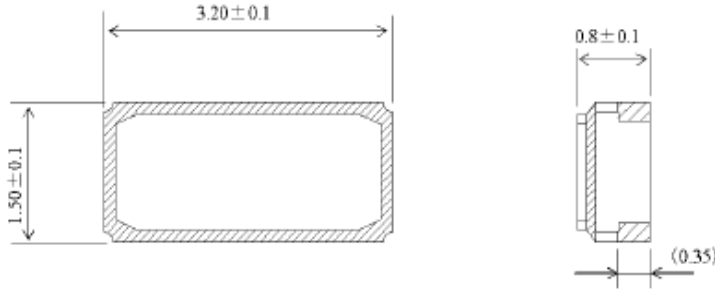
Heating temperature : +220 [°C]

Heating time : 35 [s]



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5 . DIMENSIONS : (Unit : mm)



* The above marking layout shows only marking contents and their approximate position and it is not for font, size and exact position.