



Aker P/N : S163303-48.000-X-R

RoHS compliance
MSL:Level 1

SMD CRYSTAL OSCILLATOR

1. ELECTRICAL CHARACTERISTICS

■ Cutting Mode : AT CUT

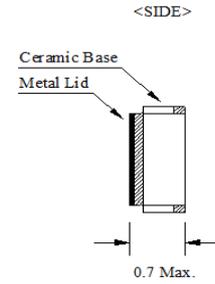
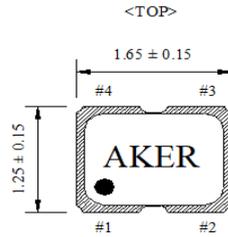
Parameters	Symbol	Electrical Spec				Notes
		Min.	Typ.	Max.	Units.	
Nominal Frequency		48.000000			MHz	
Frequency Stability		±30			ppm	
Supply Voltage	V _{CC}	3.3±10%			V	
Output Load CMOS	CL			15	pF	
Aging		±3			ppm	First Year at 25°C
Enable Control		Yes				Pad 1
Operating Temperature		-30	25	85	°C	
Storage Temperature Range		-55	~	125	°C	
Output Voltage High	VoH	90%V _{DD}			V	
Output Voltage Low	VoL			10%V _{DD}	V	
Input Current	I _{CC}			8	mA	
Standby Current	I _{ST}			10	μA	
Rise Time	T _r			5	ns	10%~90%V _{DD} Level
Fall Time	T _f			5	ns	90%~10%V _{DD} Level
Symmetry (Duty ratio)	TH/T	40	~	60	%	
Start-up Time	T _{osc}			10	ms	
Enable Voltage High	V _{hi}	70%V _{DD}			V	
Disable Voltage Low	V _{lo}			30%V _{DD}	V	
Output Enable Delay Time	T _{on}			10	ms	
Output Disable Delay Time	T _{off}			200	ns	
Phase Jitter RMS				1	ps	12KHz~20MHz

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

2 . DIMENSION :

Enable / Disable Function

E/D (#1)	OUTPUT (#3)
HIGH (Open)	Operating
LOW	High impedance



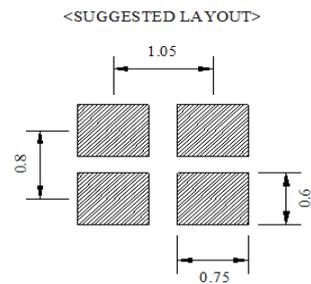
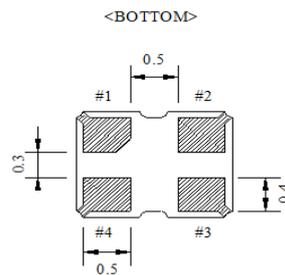
PIN FUNCTION

#1 : Enable / Disable Control

#2 : GND

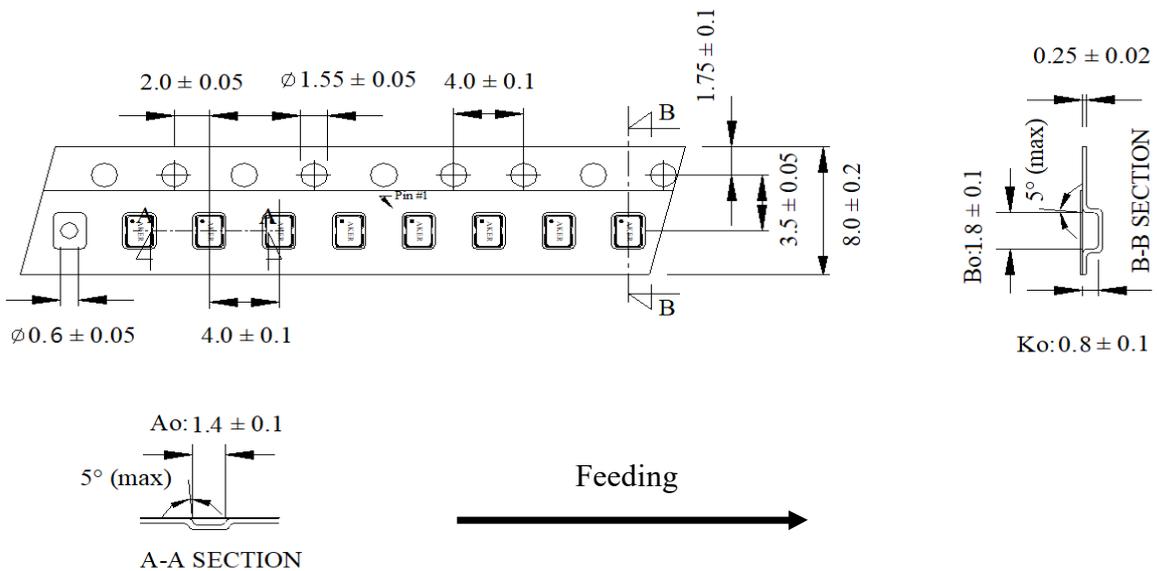
#3 : OUTPUT

#4 : VDD



3 . PACKING :

TAPE SPECIFICATION



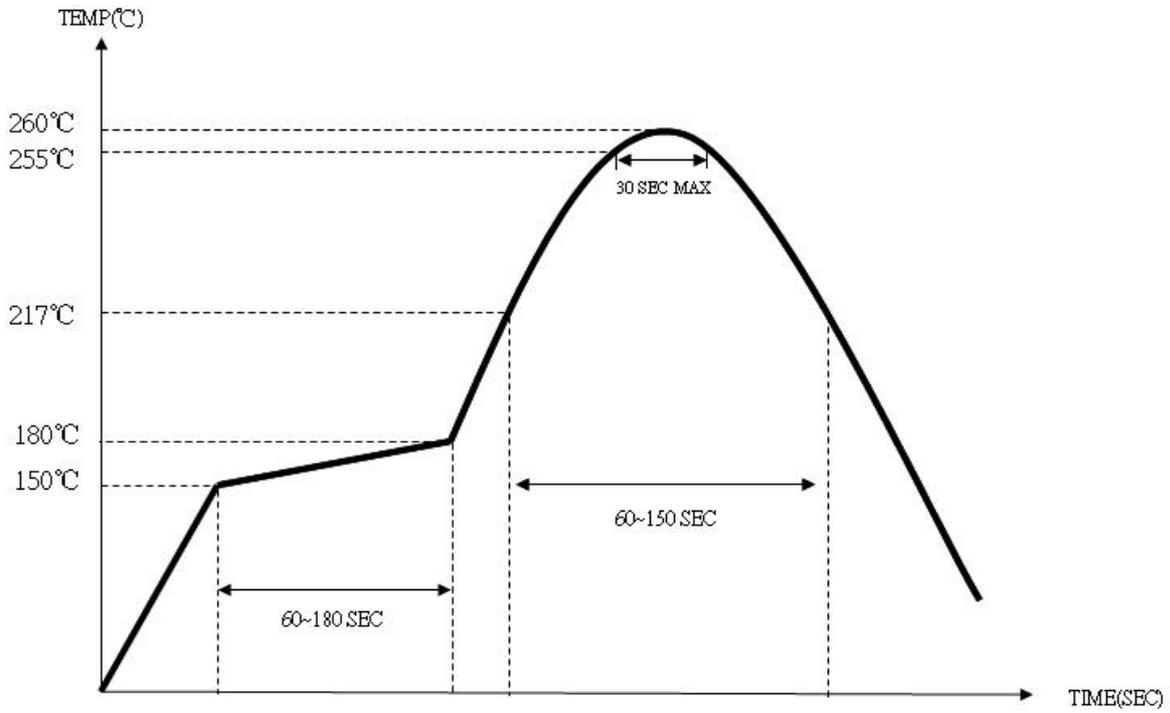


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4 . SOLDERING REFLOW PROFILE





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5 . MECHANICAL PERFORMANCE

TEST ITEMS	TEST METHODS AND TEST CONDITION	PERFORMANCE
5.1 Drop Test	The specimen is measured for its frequency before the test. It is then dropped from a height of 75 cm or more as a free fall object onto a hard wooden plate of 30mm or more in thickness.	To satisfy the electrical performance .
5.2 Vibration Test	The specimen is measured for its frequency before the test. Most them into X,Y and Z axes, respectively, for the vibration test. Vibration condition: Frequency range ; 20~2000HZ Peak to peak amplitude : 1.52 mm Peak acceleration : 20G Sweep time : 20 minute / axis Ppendicular total test time : 4 hours	
5.3 Resistance to Soldering Test	The specimen is measured for its frequency before the test. Place the specimen on the belt of the conveyance and let it pass through the reflow with the presetted temperature condition. After passing twice the reflow place,the specimen under the referee condition for ~2 hours and then measure its electrical performance. Temperature Condition of IR Simulation: The temperature range of the preheated section is setted at 150~180°C for 60~120 sec. For the next section the temperature range is setted at 217~260°C for 45~90 sec. and within this time range the specimen should be able to sustain at the peak temperature, 260+/-3°C , for 10 sec long.	
5.4 Fine Leak Test	Place the specimen in a pressurized container and pressurize it with the detection gas (mixed gas consisting of 95% or more helium) for at least 2 hours. Complete the measurement of the concentration of helium within 30 min after taking it out from the pressurized container.	Less than $1.0 * 10^{-8}$ atm .c.c. / sec, Helium
<p>The referee condition . Temperature 25 ± 2 °C Humidity 44 ~ 55 % Pressure 86 ~ 106 kPa (in accordance with MIL-STD-883E : 1014.9)</p>		

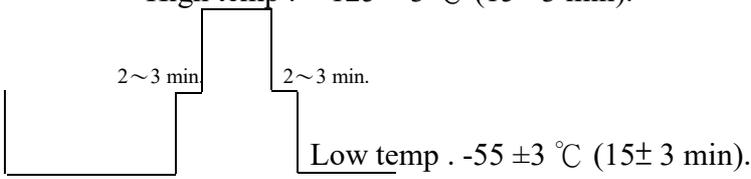


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6 . CLIMATIC RESISTANCE

TEST ITEMS	TEST METHODS AND TEST CONDITION	PERFORMANCE
6.1 Low Temp Exposure Test	<p>The specimen is measured for its frequency before the test .</p> <p>Place the specimen in the chamber and kept it at the temperature of $-40 \pm 3^{\circ}\text{C}$ for 168 ± 6 hours .</p> <p>Take the specimen out of the chamber and measure itselectrical performance after leaving 1 ~ 2 hours under the referee condition.</p>	To satisfy the electrical performance .
6.2 Aging Test	<p>The specimen is measured for its frequency before the test .</p> <p>Place the specimen in the testing chamber and keep it at the temperature of $+125 \pm 3^{\circ}\text{C}$ for 720 ± 48 hours.</p> <p>And then take the specimen out of the chamber and measure its electrical performance after leaving for 1 ~ 2 hours under the referee condition .</p>	
6.3 High Temperature & High Humidty	<p>The specimen is measured for its frequency before the test .</p> <p>Place the specimen in the testing chamber and kept it at the temperature of $+85 \pm 5^{\circ}\text{C}$ and humidity of $85 \pm 5\%$ for 168 ± 6 hours.and then take the specimen out and measure its electrical performance after leaving for 1 ~ 2 hours under the referee condition.</p>	
6.4 Temperature Cycle Test	<p>The specimen is measured for its frequency before the test .</p> <p>Subject the specimen to the 100 cycles of temperature ranges stated below .</p> <p style="text-align: center;">High temp . $+125 \pm 3^{\circ}\text{C}$ (15 ± 3 min).</p> <div style="text-align: center;">  <p style="margin-left: 100px;">$2 \sim 3$ min</p> <p style="margin-left: 250px;">$2 \sim 3$ min.</p> <p style="margin-left: 300px;">Low temp . $-55 \pm 3^{\circ}\text{C}$ (15 ± 3 min).</p> </div> <p>Measure its electrical performance after leaving it for 1 ~ 2 hours under the referee condition .</p>	