

# RELIABILITY TEST PROCEDURES FOR ECX-33QZ Series



<u>NO.</u>	<u>TEST NAME</u>	<u>TEST PROCEDURES</u>	<u>REQUIREMENTS</u>
1	<b>Drop Test</b>	Fall Height: 150cm, Weight: 50g on concrete plane. Fall Times: 10 times.	Frequency Drift ±5 PPM Max. Resistance Drift ±15% Max.
2	<b>Mechanical Shock</b>	Half-Sine wave with 0.3ms 3000G X, Y, Z each direction 1 time.	Frequency Drift ±5 PPM Max. Resistance Drift ±15% Max.
3	<b>Vibration</b>	Vibration Frequency: 10 to 55Hz Amplitude, 1.5mm, Frequency: 55~2000Hz Peak value, 20G Direction: X.Y.Z axis. Time: 4 hours in each direction	Frequency Drift ±5 PPM Max. Resistance Drift ±15% Max.
4	<b>Storage in High Temperature</b>	+125°C for 1000 hours.	Frequency Drift ±5 PPM Max. Resistance Drift ±15% Max.
5	<b>Storage in Low Temperature</b>	-40°C for 1000 hours.	Frequency Drift ±5 PPM Max. Resistance Drift ±15% Max.
6	<b>Resistance to Solder Heat</b>	The lead is immersed in a 260°C ±5°C solder bath within 10 ±1 seconds	Frequency Drift ±5 PPM Max. Resistance Drift ±15% Max.
7	<b>Humidity</b>	1000 hours, 85°C and 85% humidity (in use)	Frequency Drift ±5 PPM Max. Resistance Drift ±15% Max.
8	<b>Thermal Shock</b>	-55/125°C 300 cycles, transfer time 20 seconds, dwell time 5 minutes.	Frequency Drift ±5 PPM Max. Resistance Drift ±15% Max.
9	<b>Temperature Cycle</b>	1000 Cycles (-40 ~ +125°C)	Frequency Drift ±5 PPM Max. Resistance Drift ±15% Max.
10	<b>Leakage</b>	Gross leak (Air leak test), Fine leak (Helium leak test) He-pressure: 6kgf/cm <sup>2</sup> 2 hours.	There are no visual abnormalities.
11	<b>Board Flex</b>	Shall be pressurized at a speed of approx. 0.5mm/sec in the direction indicated by the arrow until the bending width reaches 2mm and held for 5 sec.	There are no visual abnormalities.
12	<b>Terminal Strength</b>	Force 60s at 1, 8kg	There are no visual abnormalities.
13	<b>Resistance to Solvents</b>	With IPA to scrub the surface of the subject with brush 10 times.	There are no visual abnormalities.
14	<b>Mean Time Between Failures (MTBF)</b>	$MTBF (25^{\circ}C) = \frac{H_s X e^{(E_a / K) \times (1/T_1 - 1/T_2)}}{\pi}$	16396600 Hours