WARRANTY CLAUSE

1300 Series

No.	Item	Condition	Specification
1	Vibration Test	MIL-STD-202F, TM204D, condition B	Please see below note. (*)
2	Shock Test	MIL-STD-202F, TM213B, condition 9,800m/s^2 0.5 ms	Please see below note. (*)
3	Drop Test	3 times natural drops on to hard wooden board from the height (see 4)	Please see below note. (*)
4	Humidity Test	MIL-STD-202F, TM103B, condition A	Please see below note. (*)
5	Solder Heat Test	MIL-STD-202F, TM210A, condition B (260°C ± 5°C for 10 ± 1 seconds)	Please see below note. (*)
6	Thermal Shock Test	Expose to 100 cycles of extreme temperatures, that is, –40°C for 30 minutes then +85°C for 30 minutes.	Please see below note. (*)
7	Terminal Strength Test	MIL-STD-202F, TM211A, condition A (Pull Weighting 0.907 kg) and condition C (Bend Weighting 0.45 kg)	
8	Soldering Test	Soaking in the soldering bath at +235±5°C for 5±1 seconds More than 90% of lead should be covered by solder.	
9	Solvent Resistance	After soaking in alcohol for 30 minutes. The markings are not faded out.	

(*) After the tests mentioned above, the electrical specifications are satisfied. Also frequency deviation before and after test should be △ F/F ≦ ±10×10^{-6}
The electrical specifications are frequency tolerance, Lcc, Tr/Tf, V_{OL}/V_{OH}, duty cycle.

Model	Height
1300	50 cm

1600 Series

No.	Item	Condition	Specification
1.	P.C Test	Temperature: +121±2°C, Pressure: 2 Atmospheric pressure, Time: 48 Hours	Please see below note.(*)
2.	Thermal Shock Test	1Cycle: –55°C (30minutes)~+125°C (30minutes) Number of Cycle: 15 cycles is gas phase	Please see below note.(*)
3.	Heat Cycle Test	1Cycle: –55°C ~ +25°C ~ +125°C ~ +25°C (30 minutes) (10 minutes) (30 minutes) (10 minutes) Number of Cycle: 10 cycles	Please see below note.(*)
4.	High Temperature High Humidity Test	Temperature: +85°C, Humidity: 85%, Time: 250 Hours	Please see below note.(*)
5.	+85°C Aging (non operated)	Temperature: +85°C, Time: 720 Hours	Please see below note.(*)
6.	Vibration Test	MIL-STD-202F Test Method: 204D, Test Condition: D (196m/s^2 Peak)	Please see below note.(*)
7.	Shock Test	MIL-STD-202F Test Method: 213B Test Condition: Half Sinusoidal Wave 29,400m/s^2 0.5 ms 3 Directions 3 times each	Please see below note.(*)
8.	Drop Test	Fall Height: 75 cm, 3 Drops on to Hard Wooden board	Please see below note.(*)
9.	Soldering Test	MIL-STD-202F Test Method: 208E Test Condition: Soaking in the soldering bath at +245±5°C for 5±1 seconds	More than 90% of lead or Pad should be covered by solder.
10.	Soldering Resistance	MIL-STD-202F Test Method: 210A Test Condition: Soaking in the soldering bath at +260±5°C for 10±1 seconds	Please see below note.(*)
11.	Solvent Resistance	After soaking in each solvent, Freon, tri-chloro-ethane and alcohol for 30 minutes.	The markings are not faded out. Also (*)

(*) After the tests mentioned above, the electrical specifications are satisfied. Also frequency deviation before and after test should be △ F/F ≦ ±10×10^{-6}
The electrical specifications are frequency tolerance, Lcc, Tr/Tf, V_{OL}/V_{OH}, duty cycle.

WARRANTY CLAUSE

1700 Series

No.	Item	Condition	Specification	
			Frequency Tolerance	Electrical Spec.
1	P.C. Test	Temperature: +121°C ±2°C, Pressure: 2 Atmospheric pressure, Time: 96 Hours (NONE operative)	$\pm 50 \times 10^{-6}$	Please see below note. (*)
2	Heat Cycle Test	–55~+100°C (NONE operative) 15 minutes at each temp. stage, 100 cycles.	$\pm 20 \times 10^{-6}$	Please see below note. (*)
3	High Temperature High Humidity Test	Temperature: +85°C, Humidity: 85% Time: 1000 Hours (5.5V operative)	$\pm 50 \times 10^{-6}$	Please see below note. (*)
4	Low Temp. Resistance Test	+100°C, 1000 Hours (NONE Operative)	$\pm 50 \times 10^{-6}$	Please see below note. (*)
5	High Temp. Resistance Test	–55°C, 1000 Hours (NONE operative)	$\pm 10 \times 10^{-6}$	Please see below note. (*)
6	Vibration Test	10~500Hz, 1.5 mm (Peak to Peak) or 98m/s^2 10Hz~500Hz~10Hz Approx. 15 minutes/cycle Sweep time 6 Hours (3 directions, 2H each)	$\pm 10 \times 10^{-6}$	Please see below note. (*)
7	Shock Test	Test Condition: Half Sinusoidal Wave 29,400m/s^2 0.1 ms 3 Directions 3 times each	$\pm 20 \times 10^{-6}$	Please see below note. (*)
8	Drop Test	Drop Height: 75 cm, 3 drops on to Hard Wooden board	$\pm 20 \times 10^{-6}$	Please see below note. (*)
9	Soldering Test	Test Condition: Soaking in the soldering bath at +230°C for 5 seconds (use rosin frux)	More than 90% of lead should be wet by solderer.	——
10	Soldering Resistance	Test Condition: Soaking in the soldering bath at +260±5°C for 20 seconds	$\pm 10 \times 10^{-6}$	Please see below note. (*)
11	Terminal Strength Test	500g load is weighed on lead tip for 10 seconds.	No damage on lead	——

(*) After the tests mentioned above, the electrical specifications are satisfied.
The electrical specifications are Current Consumption, Tr/Tf, V_{OL}/V_{OH}, Duty Cycle.

1800 Series

No.	Item	Condition	Specification	
			Frequency Tolerance	Electrical Spec.
1	Heat Cycle Test	–55~+125°C (NONE operative) 30 minutes at each temp. stage, 100 cycles.	$\pm 20 \times 10^{-6}$	Please see below note. (*)
2	High Temperature High Humidity Test	Temperature: +85°C, Humidity: 85% Time: 1000 Hours (Energizing at the upper limit of V_{DD})	$\pm 20 \times 10^{-6}$	Please see below note. (*)
3	Low Temp. Resistance Test	+125°C, 1000 Hours (NONE Operative)	$\pm 50 \times 10^{-6}$	Please see below note. (*)
4	High Temp. Resistance Test	–55°C, 1000 Hours (NONE operative)	$\pm 10 \times 10^{-6}$	Please see below note. (*)
5	Vibration Test	10~500Hz, 1.5 mm (Peak to Peak) or 98m/s^2 10Hz~500Hz~10Hz Approx. 15 minutes/cycle Sweep time 6 Hours (3 directions, 2H each)	$\pm 10 \times 10^{-6}$	Please see below note. (*)
6	Drop Test	Drop Height: 75 cm, 3 drops on to Hard Wooden board	$\pm 20 \times 10^{-6}$	Please see below note. (*)
7	Soldering Test	Test Condition: Soaking in the soldering bath at +230°C for 5 seconds (use rosin frux)	More than 90% of lead should be wet by solderer.	——
8	Soldering Resistance	Test Condition: Soaking in the soldering bath at +260±5°C for 10 seconds 2times each	$\pm 10 \times 10^{-6}$	Please see below note. (*)
9	Terminal Strength Test	500g load is weighed on lead tip for 10 seconds.	No damage on lead	——

(*) After the tests mentioned above, the electrical specifications are satisfied.
The electrical specifications are Current Consumption, Tr/Tf, V_{OL}/V_{OH}, Duty Cycle.

WARRANTY CLAUSE

2500 Series

No.	Item	Condition	Specification
1	Thermal Shock Test	1 Cycle: –55˚C (15minutes)~+125˚C (15minutes) Number of Cycle : 5 cycles is gas phase	(1)
2	Vibration Test	10~55Hz, 1.5mm (Peak to Peak) 55~2000Hz, 196m/s^2 Sweep time 6 Hours (3 directions, 2H each)	(1)
3	Drop Test	Drop Height: 75 cm, 3 drop on to hard wooden board	(1)
4	Soldering. Resistance	Test Condition Soaking in the soldering bath at +260˚C±5˚C for 20 seconds 2 times each or Soaking in the soldering bath at +230˚C±5˚C for 180 seconds 2times each	(1)
5	Soldering Test	Test Condition: Soaking in the soldering bath at +230°C for 2±0.5 seconds	(2)
6	Air Tightness	5minutes immersion in Fluorinert at 125˚C±5˚C	(3)
7	Solvent Resistance	After soaking in each solvent, Freon, trichloroethane and alcohol for 30 minutes	(4)

(1) After the tests mentioned above, the electrical specifications are satisfied.
The electrical specifications are Tr/Tf, V_{OL}/V_{OH}, Duty Cycle.
(2) More than 90% of Lead or Pad should be covered by solder.
(3) No bubbles should be observed.
(4) The markings are not faded out.

2700 Series

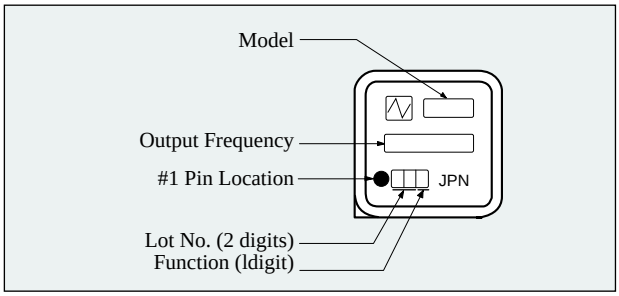
No.	Item	Condition	Specification
1	Thermal Shock Test	1 Cycle: –40˚C (30minutes)~+85˚C (30minutes) Number of Cycle : 100 cycles is gas phase	(1)
2	High Temperature High Humidity Test	Temperature: +85˚C, Humidity: 80~85% Time: 250 Hours	(2)
3	+85˚C Aging (non operated)	Temperature: +85˚C, Time: 720 Hours	(1)
4	Vibration Test	10~2000Hz, 1.52mm (Peak to Peak) or 196m/s^2 20minutes/cycle Sweep time 4 Hours (3 directions, 12H each)	(1)
5	Shock Test	Test Condition: Half sinusoidal wave 29,400m/s^2 0.3ms 3 directions 3 times each	(1)
6	Drop Test	Drop Height: 75 cm, 3 drop on to hard wooden board	(1)
7	Soldering Test	Test Condition: Soaking in the soldering bath at 230˚C for 3.5±1 seconds	
8	Soldering Resistance	Pre-heat: 150˚C 60~120 seconds, Peak temperature 245˚CΔ, 215˚C min 10~30 seconds 3times each	(1)

(1) After the tests mentioned above, the electrical specifications are satisfied.
Also frequency deviation before and after test should be $\Delta F/F \leqq \pm 10\times10^{-6}$.
(2) After the tests mentioned above, the electrical specifications are satisfied.
Also frequency deviation before and after test should be $\Delta F/F \leqq \pm 20\times10^{-6}$.
The electrical specifications are frequency tolerance, current consumption, Tr/Tf, Vol/Voh, Duty Cycle, current consumption (stand-by), stand-by function.

MARKING

Marking frequency digits differs according to marking space available.
Please refer to below.

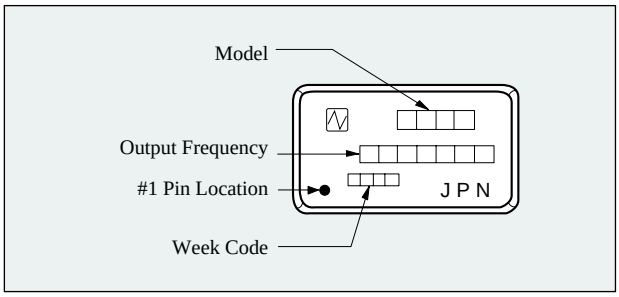
1300 Series



1300 Series:

- Including decimal point, maximum 7 digits are marked when frequency unit is MHz.
  When kHz, maximum digits are marked with initial "k".
  [EX] $14.3181818^{MHz} \rightarrow 14.3181$
  $900^{kHz} \rightarrow 900.00^{k}$

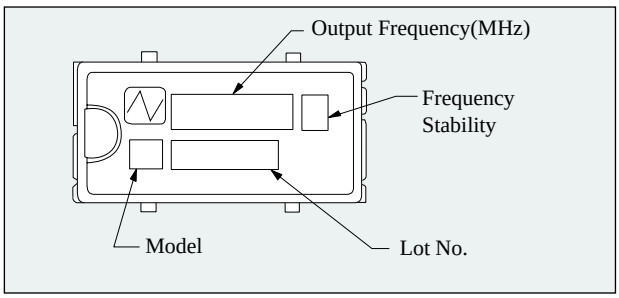
1600 Series



1600 Series:

- Including decimal point, 7 digits are marked.
  [EX] $4.9152^{MHz} \rightarrow 4.91520$

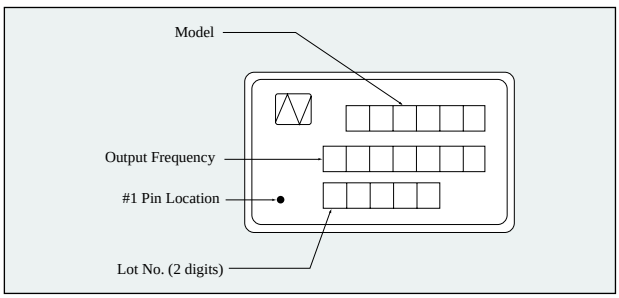
1700 Series



1700 Series:

- Including decimal point, 7 digits are marked.
  [EX] $14.31818^{MHz} \rightarrow 14.3181$

1800 Series

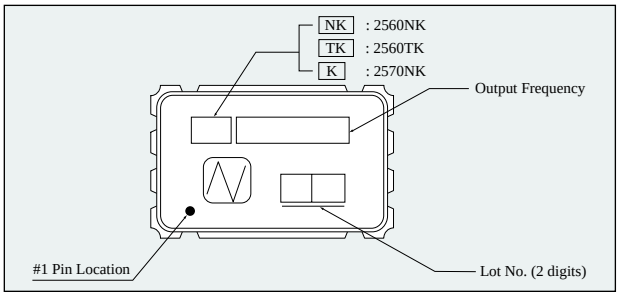


1800 Series:

- Including decimal point, 7 digits are marked.
  [EX] $14.31818^{MHz} \rightarrow 14.3181$

MARKING

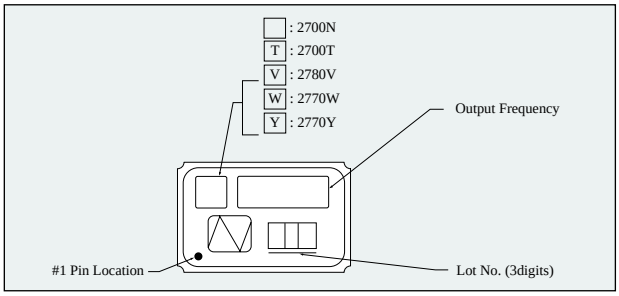
2500 Series



2500 Series:

- Including decimal point, 6 digits are marked.
  [EX] 14.31818^{MHz} → 14.318

2700 Series



2700 Series:

- Including decimal point, 6 digits are marked.
  [EX] 14.31818^{MHz} → 14.318