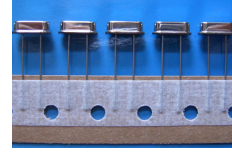


■ Features

- Available in 49SL ( 2.5mm height ) & 49S ( 3.5mm height )
- Low cost and light weight
- RoHS/Green Compliant (6/6)



General Specifications

Item / Type	49LS ( 10.7 * 4.3 * 2.5mm ) , 49S ( 10.7 * 4.3 * 3.5mm ) series
Frequency Range & Crystal Cut	3.2.000 ~ 48.000 MHz , AT-cut , Fundamental Mode ( see Table 1 )
	27.000 ~ 70.000 MHz , AT-cut , 3rd overtone ( see Table 1 )
	24.000 ~ 48.000 MHz , BT-cut , Fundamental Mode ( see Table 1 )
Load Capacitance	Series Resonance or Parallel ( 8 to 32 pF typical )
Drive Level	100μ W ( 500μ W max. )
Frequency Tolerance	± 5 ppm , ± 10 ppm , ± 20 ppm or ± 30 ppm at 25°C
Frequency Stability	See Table 2
Aging	ΔF / F : ±3 ppm ( max. )
Storage Temperature Range	- 50°C to 105°C

Table 1  
Series Resistance ( max. )

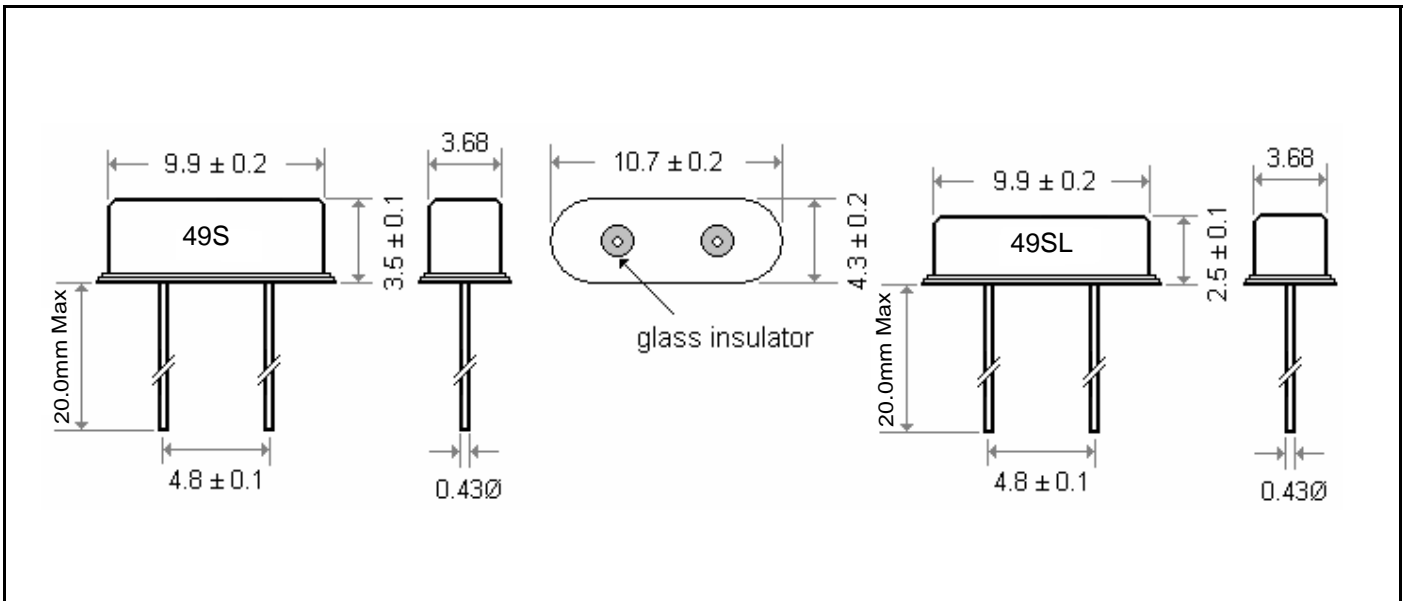
Freq.(MHz)	Osc. Mode	E.S.R.	Freq.(MHz)	Osc. Mode	E.S.R.
3.2 ~ 3.4	AT , Fund.	300 Ω	24.0~ 48.0	BT , Fund.	40 Ω
3.5 ~ 6.0	AT , Fund.	120 Ω	27.0~ 30.0	AT , 3rd	150 Ω
6.1~ 10.0	AT , Fund.	60 Ω	30.1~50.0	AT , 3rd	100 Ω
10.1~ 30.0	AT , Fund.	40 Ω	50.1~70.0	AT , 3rd	80 Ω

Table 2  
Frequency stability Vs Operating temperature range

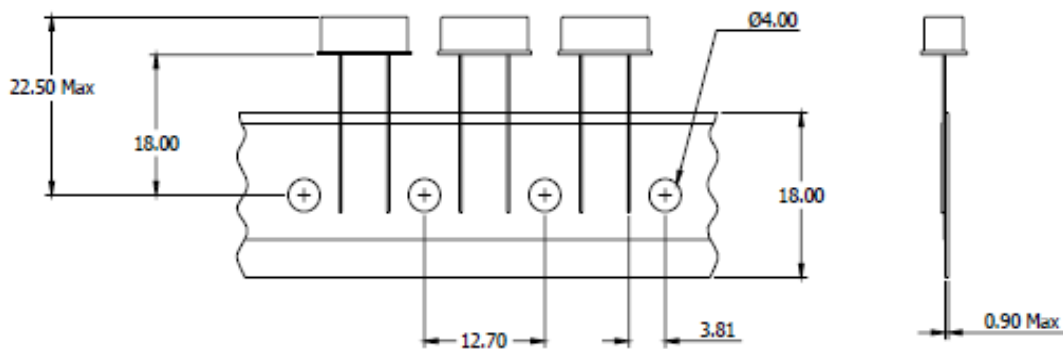
Temp. (°C) \ ppm		± 10	± 15	± 20	± 25	± 30
X	-10 to 60°C	○	○	○	○	○
Y	-20 to 70°C		○	○	○	○
I	-40 to 85°C		○	○	○	○

○ : available

Outline Dimensions ( Unit : mm )



# PACKAGING INFORMATION



## ENVIRONMENTAL SPECIFICATIONS

Temperature Cycle:	400 cycles from $-55^{\circ}\text{C}$ to $+125^{\circ}\text{C}$ , 10 minute dwell at each temperature, 1 minute transfer time between temperatures.
Mechanical Shock:	1,500g's, 0.5mS duration, $\frac{1}{2}$ sinewave, 3 shocks each direction along 3 mutually perpendicular planes (18 total shocks).
Sinusoidal Vibration:	0.06 inches double amplitude, 10 to 55 Hz and 20g's, 55 to 2,000 Hz, 3 cycles each in 3 mutually perpendicular planes (9 times total).
Gross Leak:	No leak shall appear while immersed in an FC40 or equivalent liquid at $+125^{\circ}\text{C}$ for 20 seconds.
Fine Leak:	Mass spectrometer leak rates less than $2 \times 10^{-8}$ ATM cc/sec air equivalent.
Resistance to Solder Heat:	Product must survive 3 reflows of $+250^{\circ}\text{C}$ maximum, 10 seconds maximum.
High Temperature Operating Bias:	2,000 hours at $+125^{\circ}\text{C}$ , disregarding frequency shift.
Frequency Aging:	1,000 hours at $+85^{\circ}\text{C}$ , maximum $\pm 5$ ppm shift.
Insulation Resistance:	500M Ohms @ $100V_{\text{DC}} \pm 15V_{\text{DC}}$ .
Moisture Sensitivity Level:	Level 1 per JEDEC J-STD-020.