

FEATURES

- Plastic mold package incorporated tubular type quartz crystal.
- Suitable for automatic and high density surface mounting.
- Excellent shock and heat resistance.

APPLICATIONS

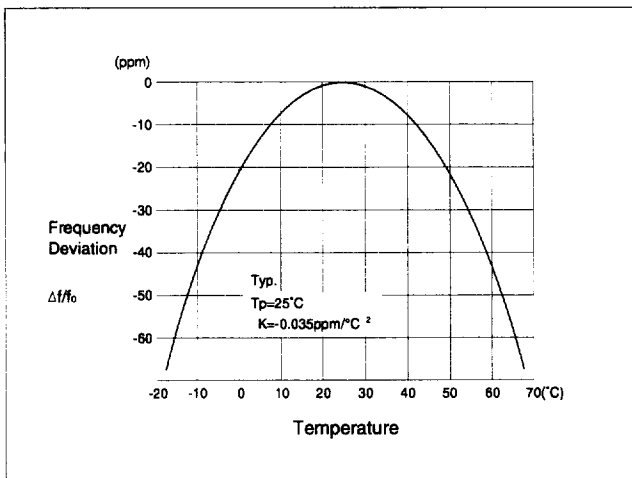
- Radio Communication Equipment, Pagers, Cellular Phones, Camcorders, Portable Applications, Clock Source for Micro-Computers

STANDARD SPECIFICATION

Conditions without notice (Temperature: +25°C±2°C)

Item	Symbol	SP-T1A/B, SP-T2A/B			Conditions / Note
		32.768kHz	24kHz to 350kHz	351kHz to 615kHz	
Nominal Frequency	f_0	32.768kHz	24kHz to 350kHz	351kHz to 615kHz	
Frequency Tolerance	$\Delta f/f_0$	±20ppm, ±50ppm, ±100ppm			
Turnover Temperature	T_p	+25°C±5°C	+25°C±8°C	+25°C±15°C	
Temperature Coefficient	K	(-3.5±0.8)×10 ⁻⁸ /°C ²			
Load Capacitance	C_L	6.0 to 12.5pF			
Equivalent Series Resistance	R_1	50kΩ max.	50kΩ max.	20kΩ max.	
Excitation Level	DL	1μW max.			
Shunt Level	C_0	1.0pF typ.	0.95pF typ.	0.9pF typ.	
Aging	$\Delta f/f_0$	±5ppm max.			+25°C±3°C, First Year
Operating Temperature Range	T_{ope}	-40°C ~ +85°C			
Storage Temperature Range	T_{sto}	-55°C ~ +125°C			
Reflow Profile	T_{sol}	230°C max., 20sec. max. x 2times			IR Reflow

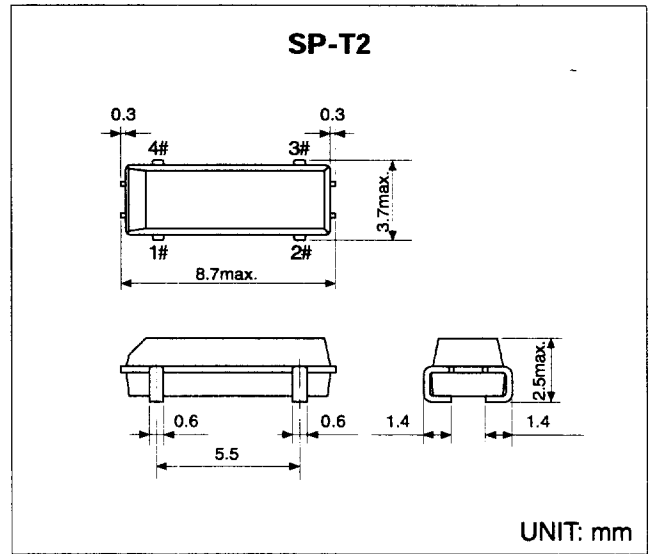
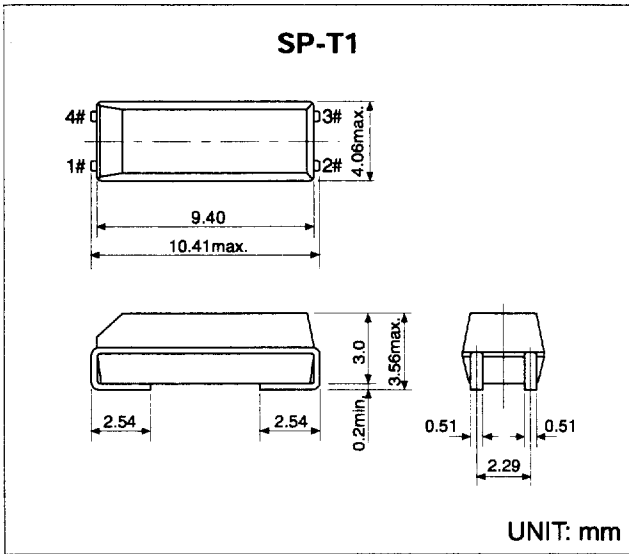
FREQUENCY-TEMPERATURE CURVE



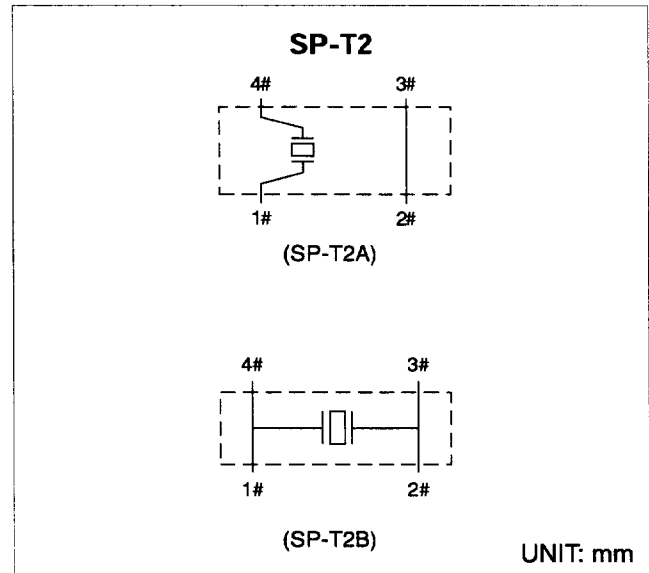
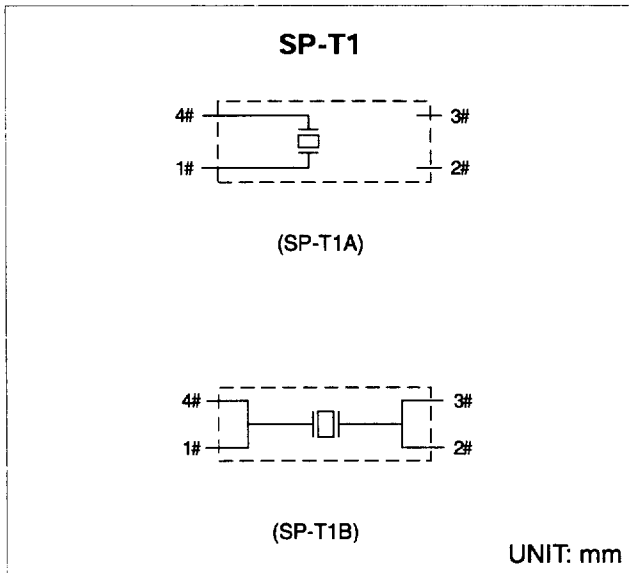
STANDARD FREQUENCIES (kHz)

SP-T1/SP-T2			
24.000	40.000	77.500	150.000
26.667	65.536	96.000	153.600
31.200	75.000	99.660	200.000
32.000	76.800	100.000	307.200
32.768	77.025	106.000	614.400
38.000	770.40	130.000	
38.400	77.056	131.072	

DIMENSIONS (For details, please refer to individual specification)

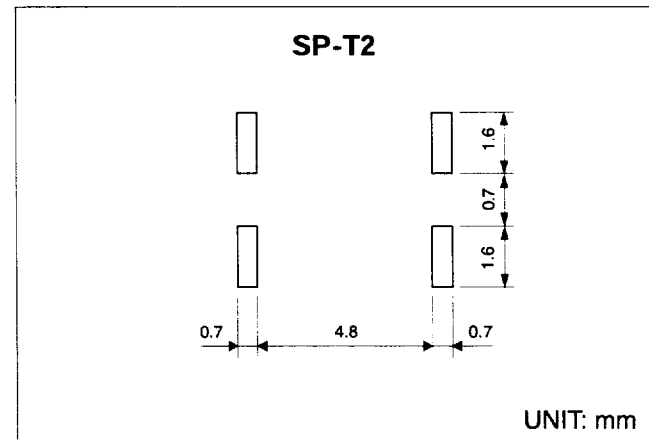
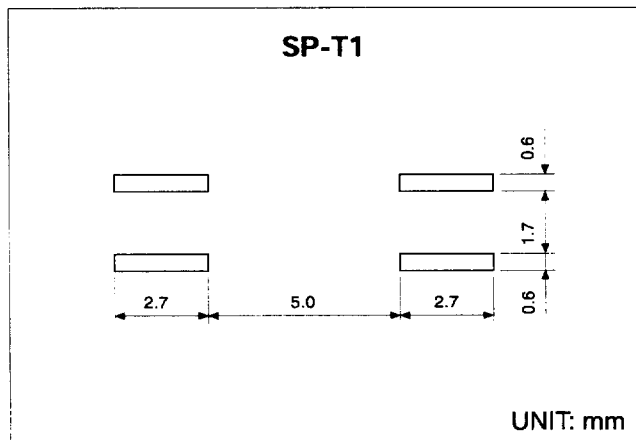


LEAD CONNECTION



Note: Do not connect terminals #2, #3 of T1A and T2A to the outside electrode. These are dummy terminals.

TERMINAL LAND AREA (Projection to the PCB surface of the electrode lead)



Note: The drawings are not a PCB layout.