

Tuning Fork Crystal



FEATURES

- Miniature package
- Low cost
- kHz frequency
- Tight tolerance
- Compliant to RoHS directive 2002/95/EC

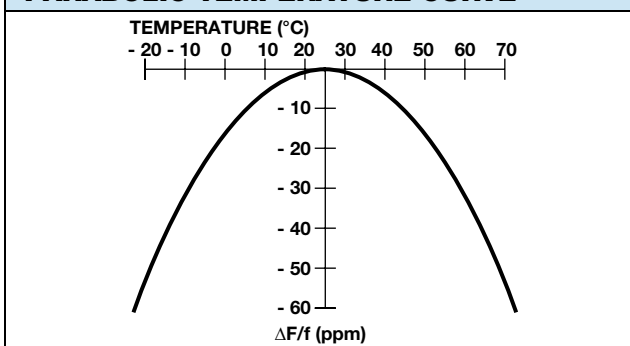

RoHS
COMPLIANT

The tuning fork type quartz crystal provides ultimate in size, performance and economic trade-offs. So it is used as a clock source in communication equipment, measuring instrument, microprocessor and other time management applications.

STANDARD ELECTRICAL SPECIFICATIONS

PARAMETER	SYMBOL	CONDITION	UNIT	MIN.	TYP.	MAX.
Frequency range	F_O		kHz	-	32.768	-
Frequency tolerance	$\Delta F/F_O$	at 25 °C	ppm	-	± 20	-
Frequency coefficient	K	ref. to 25 °C	ppm/(ΔC) ²	-	-	- 0.042
Operating temperature range	T_{OPR}		°C	- 10	-	+ 60
Storage temperature range	T_{STG}		°C	- 20	-	+ 70
Shunt capacitance	C_0		pF	-	0.85	2
Motional capacitance	C_1		fF	1	2	4
Load capacitance	C_L	customer specified	pF	-	12.5	-
Insulation resistance	I_R	100 V _{DC}	M Ω	500	-	-
Drive level	D_L		μ W	-	-	1
Aging (first year)	Fa	at 25 °C \pm 3 °C	ppm	- 5	-	+ 5
Equation series resistance (ESR)	R_s		k Ω	-	-	35

PARABOLIC TEMPERATURE CURVE

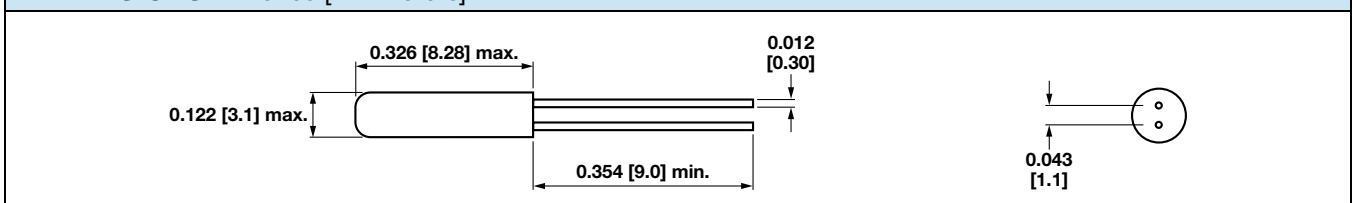


To determine frequency stability, use parabolic curvature (k).

For example: What is stability at 45 °C?

1. Change in temperature (°C) = 45 °C - 25 °C = 20 °C
2. Change in frequency = - 0.042 ppm x (ΔC)
 = - 0.042 ppm x (20)²
 = - 16.8 ppm (max.)

DIMENSIONS in inches [millimeters]





ORDERING INFORMATION		
XT38T MODEL	32.768 kHz FREQUENCY/kHz	e2 JEDEC LEAD (Pb)-FREE STANDARD

GLOBAL PART NUMBER					
X	T	3	8	T	T
MODEL				OPERATING TEMPERATURE	PACKAGE CODE
			3	2	K 7 6 8
			FREQUENCY		

GLOBAL PART NUMBERING											
X	T	9	S	2	0	A	N	A	4	0	M
MODEL NUMBER				LOAD CAPACITANCE		PACKAGE CODE		OPTIONS		FREQUENCY	
XT9S = XT49S XT9M = XT49M XTU1 = XTUM1				18 = 18 pF 20 = 20 pF NL = series to be specified by customer		Tape and reel G = RF5 (XT9S) H = RF7 (XT9M) Bulk A = B04 (all models)		NA = no additional options RR = extended temperature of - 40 °C to + 85 °C Contact factory for all other options		4M = 4 MHz 40M = 40 MHz 100M = 100 MHz 12M288 = 12.288 MHz M is used as decimal place holder in frequency	
Example: XT49S-20 40M											
X	T	3	6	2	0	A			1	2	M
MODEL NUMBER				LOAD CAPACITANCE		PACKAGE CODE		FREQUENCY			
XT46 = XT46C XT36 = XT36C				18 = 18 pF 20 = 20 pF NL = series to be specified by customer		Tape and reel H = RF7 Bulk A = B04 (all models)		4M = 4 MHz 40M = 40 MHz 100M = 100 MHz 12M288 = 12.288 MHz M is used as decimal place holder in frequency			
Example: XT36C-20 12M											



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