Tuning Fork Crystal



FEATURES

- Miniature package
- Low cost
- kHz frequency
- Tight tolerance
- 100 % Lead (Pb)-free and RoHS compliant

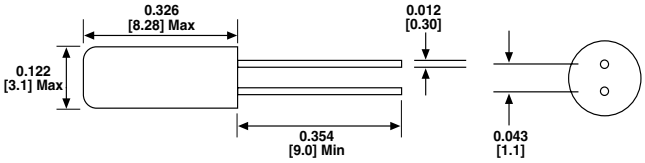
Pb-free
RoHS COMPLIANT

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.

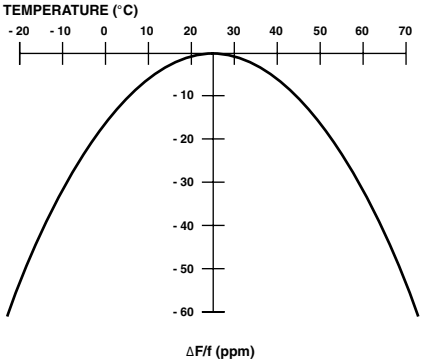
STANDARD ELECTRICAL SPECIFICATIONS

PARAMETER	SYMBOL	CONDITION	UNIT	MIN	TYPICAL	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/(Δ°C)^2			- 0.042
Operating Temperature Range	T_{OPR}		°C	- 10		+ 60
Storing Temperature Range	T_{STG}		°C	- 20		+ 70
Shunt Capacitance	C_O		pF		0.85	2
Motional Capacitance	C_1		fF	1	2	4
Load Capacitance	CL		pF		12.5	
Insulation Resistance	IR	100 V_{DC}	MΩ	500		
Drive Level	DL		µW			1
Aging (first year)	Fa	at 25 °C ± 3 °C	ppm	- 5.0		+ 5.0
Equivalent Series Resistance(ESR)	Rs		KΩ			35

DIMENSIONS in inches [millimeters]



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 - 25 = 20 °C
2) Change in Frequency = - 0.042 ppm*(Δ°C)
= - 0.042 ppm*(20)^2
= - 16.8 ppm (max)

ORDERING INFORMATION

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

GLOBAL PART NUMBER

X	T	3	8	T	T	A	3	2	K	7	6	8
MODEL					OPERATING TEMP.	PACKAGE CODE	FREQUENCY					

GLOBAL PART NUMBERING

X	T	9	S	2	0	A	N	A	4	0	M

MODEL NUMBER	LOAD CAPACITANCE	PACKAGE CODE	OPTIONS	FREQUENCY
XT9U = XT49U XT9S = XT49S XT9SL = XT49SL XT9M = XT49M XT9ML = XT49ML XTU1 = XTUM1	18 = 18 pF 20 = 20 pF NL = Series to be specified by customer	**TAPE AND REEL** G = RF5 (XT9U, XT9S, XT9SL) H = RF7 (XT9M, XT9ML) **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	2	6	T	T	A	3	2	K	7	6	8

MODEL NUMBER	OPERATING TEMPERATURE (OTR)	PACKAGE CODE	FREQUENCY
XT26T = XT26T XT38T = XT38T	T = - 10 °C to + 60 °C	**BULK** A = B04 (all models)	32K768 = 32.768 kHz K is used as decimal place holder in frequency

Example: XT26T 32.768K

X	T	5	7	2	0	A	4	0	M

MODEL NUMBER	LOAD CAPACITANCE	PACKAGE CODE	FREQUENCY
XT57 = XT57C 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: XT57C-20 40M

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