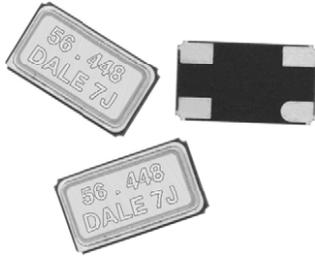


## Surface-Mount Crystal



### FEATURES

- Ultra-miniature size: 6.0 x 3.5 x 1.0 (mm)
- Seam sealing
- Ceramic package
- Emboss tapping
- Reflow soldering
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)


**RoHS**  
COMPLIANT

This part is an ultra miniature package with size of 6.0 mm x 3.5 mm x 1.0 mm. With its ceramic base and metal cover it provides the durability and reliability necessary for strenuous process like infrared and vapor phase reflow.

STANDARD ELECTRICAL SPECIFICATIONS						
PARAMETER	SYMBOL	CONDITION	UNIT	MIN.	TYP.	MAX.
Frequency range	$F_O$		MHz	10.000	-	30.000
Frequency tolerance	$\Delta F/F_O$	at 25 °C	ppm	-	± 30	-
Temperature stability	$T_C$	ref. to 25 °C	ppm	-	± 30	-
Operating temperature range	$T_{OPR}$		°C	-10	-	+60
Storage temperature range	$T_{STG}$		°C	-40	-	+85
Shunt capacitance	$C_0$		pF	-	-	7
Load capacitance	$C_L$	customer specified	pF	10	-	series
Insulation resistance	$I_R$	100 V <sub>DC</sub>	MΩ	500	-	-
Drive level	$D_L$		μW	-	10	100
Aging	$F_a$	at 25 °C, per year	ppm	-5	-	+5

EQUIVALENT SERIES RESISTANCE (ESR) AND MODE OF VIBRATION (MODE)					
FREQUENCY RANGE (MHz)	MAX. ESR (Ω)	MODE	FREQUENCY RANGE (MHz)	MAX. ESR (Ω)	MODE
10.000 to 11.999	60	fundamental	19.000 to 19.999	40	fundamental
12.000 to 12.099	50	fundamental	20.000 to 29.999	35	fundamental
13.000 to 18.999	45	fundamental	30.000	30	fundamental

DIMENSIONS in inches [millimeters]	
<p><b>Note</b> Pin #2 and pin #4 are connected through cover, in case connected to GND. Frequency might be drifted.</p>	



**PART NUMBER CONFIGURATIONS** (to be used on all New Designs)

<b>X</b>	<b>T</b>	<b>4</b>	<b>6</b>	<b>C</b>	<b>2</b>	<b>0</b>	<b>H</b>	<b>J</b>	<b>R</b>	<b>G</b>	<b>X</b>	<b>8</b>	<b>M</b>	<b>1</b>	<b>9</b>	<b>2</b>	<b>E</b>
Crystal	Package / Size	Load Cap.	Pack Code	Freq. Tolerance	Operating Temp.	Temp. Stability	Options	Frequency	Lead (Pb)-free								
	46 C	20 = std. SE = series	A = bulk H = tape and reel	G = ± 30 ppm E = ± 25 ppm H = ± 20 ppm I = ± 15 ppm J = ± 10 ppm	S = -10 °C to +70 °C R = -40 °C to +85 °C	C = ± 100 ppm D = ± 50 ppm F = ± 35 ppm G = ± 30 ppm E = ± 25 ppm H = ± 20 ppm	X = no options  Contact factory for available options	Use "M" as decimal place holder  Frequency must be five digits - complete with "0" at the end	E = lead (Pb)-free								

Previous / legacy part number information: still valid for existing designs;  
**all New Designs should use the new part configuration above**

**PREVIOUS / LEGACY GLOBAL PART NUMBERING**

<b>X</b>	<b>T</b>	<b>9</b>	<b>S</b>	<b>2</b>	<b>0</b>	<b>A</b>	<b>N</b>	<b>A</b>	<b>4</b>	<b>0</b>	<b>M</b>
<b>MODEL NUMBER</b>				<b>LOAD CAPACITANCE</b>		<b>PACKAGE CODE</b>		<b>OPTIONS</b>		<b>FREQUENCY</b>	
XT9C = XT49C				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		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	
<b>XT49C</b> MODEL				<b>-20</b> LOAD blank = series -20 = 20 pF standard -32 = 32 pF				<b>25M</b> FREQUENCY/MHz		<b>e4</b> JEDEC® LEAD (Pb)-FREE STANDARD	



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