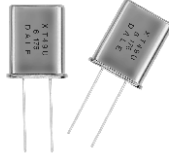


## Resistance Welded Holder Type Crystal Unit



The XT49U series is an industry standard AT cut crystal housed in a HC-49U package. It is our standard resistance weld type quartz crystal.

### FEATURES

- Low cost
- Industry standard
- Excellent aging
- Wide frequency range
- “AT” cut crystal
- 100 % Lead (Pb)-free and RoHS compliant

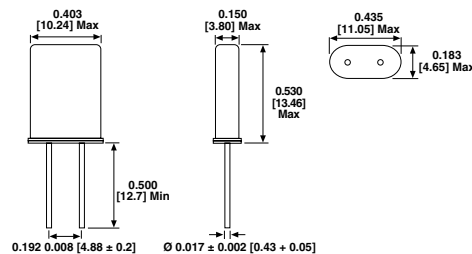


**RoHS**  
COMPLIANT

STANDARD ELECTRICAL SPECIFICATIONS						
PARAMETER	SYMBOL	CONDITION	UNIT	MIN	TYPICAL	MAX
Frequency Range	$F_O$		MHz	1.8432		125
Frequency Tolerance	$\Delta F/F_O$	at 25 °C	ppm	$\pm 10$	$\pm 30$	$\pm 50$
Temperature Stability	TC	ref to 25 °C	ppm	$\pm 10$	$\pm 30$	$\pm 50$
Operating Temperature Range	$T_{OPR}$		°C	- 20		+ 70
Storing Temperature Range	$T_{STG}$		°C	- 40		+ 85
Shunt Capacitance	$C_O$		pF			7
Load Capacitance	CL	Customer Specified	pF	10		Series
Insulator Resistance	IR	100 $V_{DC}$	$M\Omega$	500		
Drive Level	DL		$\mu W$		100	500
Aging	Fa	at 25 °C, per year	ppm	- 5.0		+ 5.0

EQUIVALENT SERIES RESISTANCE (ESR) AND MODE OF VIBRATION (MODE)					
FREQUENCY RANGE (MHz)	MAX ESR ( $\Omega$ )	MODE	FREQUENCY RANGE (MHz)	MAX ESR ( $\Omega$ )	MODE
1.8432 to 1.999	650	Fundamental	6.000 to 7.999	50	Fundamental
2.000 to 2.999	500	Fundamental	8.000 to 12.999	35	Fundamental
3.000 to 3.499	250	Fundamental	13.000 to 32.000	25	Fundamental
3.500 to 3.999	150	Fundamental	24.000 to 29.999	60	3 <sup>rd</sup> Overtone
4.000 to 4.999	100	Fundamental	30.000 to 79.999	40	3 <sup>rd</sup> Overtone
5.000 to 5.999	80	Fundamental	80.000 to 125.000	90	5 <sup>th</sup> Overtone

### DIMENSIONS in inches [millimeters]



ORDERING INFORMATION					
<b>XT49U</b> MODEL	<b>R</b> OTR Blank = Standard R = - 40 °C to + 85 °C	<b>-20</b> LOAD Blank = Series - 16 = 16 pF - 20 = 20 pF - 30 = 30 pF - 32 = 32 pF	<b>SP</b> OPTIONS Blank = Standard SL = Sleeve SP = Spacer	<b>M</b> FREQUENCY/MHz	<b>e2</b> JEDEC LEAD (Pb)-FREE STANDARD

GLOBAL PART NUMBER										
X	T	9	U	2	0	A	N	A	4	M
MODEL				LOAD STABILITY		PACKAGE CODE	OPTIONS		FREQUENCY	



### GLOBAL PART NUMBERING

<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;">X</td> <td style="text-align: center;">T</td> <td style="text-align: center;">9</td> <td style="text-align: center;">S</td> </tr> </table>	X	T	9	S	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;">2</td> <td style="text-align: center;">0</td> </tr> </table>	2	0	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;">A</td> </tr> </table>	A	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;">N</td> <td style="text-align: center;">A</td> </tr> </table>	N	A	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;">4</td> <td style="text-align: center;">0</td> <td style="text-align: center;">M</td> </tr> </table>	4	0	M	
X	T	9	S														
2	0																
A																	
N	A																
4	0	M															
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="text-align: center;">MODEL NUMBER</th> </tr> <tr> <td style="padding: 5px;">                     XT9U = XT49U                      XT9S = XT49S                      XT9SL = XT49SL                      XT9M = XT49M                      XT9ML = XT49ML                      XTU1 = XTUM1                 </td> </tr> </table>	MODEL NUMBER	XT9U = XT49U XT9S = XT49S XT9SL = XT49SL XT9M = XT49M XT9ML = XT49ML XTU1 = XTUM1	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="text-align: center;">LOAD CAPACITANCE</th> </tr> <tr> <td style="padding: 5px;">                     18 = 18 pF                      20 = 20 pF                      NL = Series to be specified by customer                 </td> </tr> </table>	LOAD CAPACITANCE	18 = 18 pF 20 = 20 pF NL = Series to be specified by customer	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="text-align: center;">PACKAGE CODE</th> </tr> <tr> <td style="padding: 5px;"> <b>TAPE AND REEL</b>                      G = RF5 (XT9U, XT9S, XT9SL)                       H = RF7 (XT9M, XT9ML)   <b>BULK</b>                      A = B04 (all models)                 </td> </tr> </table>	PACKAGE CODE	<b>TAPE AND REEL</b> G = RF5 (XT9U, XT9S, XT9SL)  H = RF7 (XT9M, XT9ML)  <b>BULK</b> A = B04 (all models)	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="text-align: center;">OPTIONS</th> </tr> <tr> <td style="padding: 5px;">                     NA = No Additional Options                      RR = Extended Temperature of -40 °C to +85 °C                      Contact factory for all other options                 </td> </tr> </table>	OPTIONS	NA = No Additional Options RR = Extended Temperature of -40 °C to +85 °C Contact factory for all other options	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="text-align: center;">FREQUENCY</th> </tr> <tr> <td style="padding: 5px;">                     4M = 4 MHz                      40M = 40 MHz                      100M = 100 MHz                      12M288 = 12.288 MHz                      M is used as decimal place holder in frequency                 </td> </tr> </table>	FREQUENCY	4M = 4 MHz 40M = 40 MHz 100M = 100 MHz 12M288 = 12.288 MHz M is used as decimal place holder in frequency			
MODEL NUMBER																	
XT9U = XT49U XT9S = XT49S XT9SL = XT49SL XT9M = XT49M XT9ML = XT49ML XTU1 = XTUM1																	
LOAD CAPACITANCE																	
18 = 18 pF 20 = 20 pF NL = Series to be specified by customer																	
PACKAGE CODE																	
<b>TAPE AND REEL</b> G = RF5 (XT9U, XT9S, XT9SL)  H = RF7 (XT9M, XT9ML)  <b>BULK</b> A = B04 (all models)																	
OPTIONS																	
NA = No Additional Options RR = Extended Temperature of -40 °C to +85 °C Contact factory for all other options																	
FREQUENCY																	
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																	
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;">X</td> <td style="text-align: center;">T</td> <td style="text-align: center;">2</td> <td style="text-align: center;">6</td> <td style="text-align: center;">T</td> </tr> </table>	X	T	2	6	T	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;">T</td> </tr> </table>	T	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;">A</td> </tr> </table>	A	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;">3</td> <td style="text-align: center;">2</td> <td style="text-align: center;">K</td> <td style="text-align: center;">7</td> <td style="text-align: center;">6</td> <td style="text-align: center;">8</td> </tr> </table>	3	2	K	7	6	8	
X	T	2	6	T													
T																	
A																	
3	2	K	7	6	8												
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="text-align: center;">MODEL NUMBER</th> </tr> <tr> <td style="padding: 5px;">                     XT26T = XT26T                      XT38T = XT38T                 </td> </tr> </table>	MODEL NUMBER	XT26T = XT26T XT38T = XT38T	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="text-align: center;">OPERATING TEMPERATURE (OTR)</th> </tr> <tr> <td style="padding: 5px;">                     T = -10 °C to +60 °C                 </td> </tr> </table>	OPERATING TEMPERATURE (OTR)	T = -10 °C to +60 °C	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="text-align: center;">PACKAGE CODE</th> </tr> <tr> <td style="padding: 5px;"> <b>BULK</b>                      A = B04 (all models)                 </td> </tr> </table>	PACKAGE CODE	<b>BULK</b> A = B04 (all models)	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="text-align: center;">FREQUENCY</th> </tr> <tr> <td style="padding: 5px;">                     32K768 = 32.768 kHz                      K is used as decimal place holder in frequency                 </td> </tr> </table>	FREQUENCY	32K768 = 32.768 kHz K is used as decimal place holder in frequency						
MODEL NUMBER																	
XT26T = XT26T XT38T = XT38T																	
OPERATING TEMPERATURE (OTR)																	
T = -10 °C to +60 °C																	
PACKAGE CODE																	
<b>BULK</b> A = B04 (all models)																	
FREQUENCY																	
32K768 = 32.768 kHz K is used as decimal place holder in frequency																	
Example: XT26T 32.768K																	
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;">X</td> <td style="text-align: center;">T</td> <td style="text-align: center;">5</td> <td style="text-align: center;">7</td> </tr> </table>	X	T	5	7	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;">2</td> <td style="text-align: center;">0</td> </tr> </table>	2	0	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;">A</td> </tr> </table>	A	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;">4</td> <td style="text-align: center;">0</td> <td style="text-align: center;">M</td> </tr> </table>	4	0	M				
X	T	5	7														
2	0																
A																	
4	0	M															
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="text-align: center;">MODEL NUMBER</th> </tr> <tr> <td style="padding: 5px;">                     XT57 = XT57C                      XT46 = XT46C                      XT36 = XT36C                 </td> </tr> </table>	MODEL NUMBER	XT57 = XT57C XT46 = XT46C XT36 = XT36C	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="text-align: center;">LOAD CAPACITANCE</th> </tr> <tr> <td style="padding: 5px;">                     18 = 18 pF                      20 = 20 pF                      NL = Series to be specified by customer                 </td> </tr> </table>	LOAD CAPACITANCE	18 = 18 pF 20 = 20 pF NL = Series to be specified by customer	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="text-align: center;">PACKAGE CODE</th> </tr> <tr> <td style="padding: 5px;"> <b>TAPE AND REEL</b>                      H = RF7   <b>BULK</b>                      A = B04 (all models)                 </td> </tr> </table>	PACKAGE CODE	<b>TAPE AND REEL</b> H = RF7  <b>BULK</b> A = B04 (all models)	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="text-align: center;">FREQUENCY</th> </tr> <tr> <td style="padding: 5px;">                     4M = 4 MHz                      40M = 40 MHz                      100M = 100 MHz                      12M288 = 12.288 MHz                      M is used as decimal place holder in frequency                 </td> </tr> </table>	FREQUENCY	4M = 4 MHz 40M = 40 MHz 100M = 100 MHz 12M288 = 12.288 MHz M is used as decimal place holder in frequency						
MODEL NUMBER																	
XT57 = XT57C XT46 = XT46C XT36 = XT36C																	
LOAD CAPACITANCE																	
18 = 18 pF 20 = 20 pF NL = Series to be specified by customer																	
PACKAGE CODE																	
<b>TAPE AND REEL</b> H = RF7  <b>BULK</b> A = B04 (all models)																	
FREQUENCY																	
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																	



## Disclaimer

All product specifications and data are subject to change without notice.

Vishay Intertechnology, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, "Vishay"), disclaim any and all liability for any errors, inaccuracies or incompleteness contained herein or in any other disclosure relating to any product.

Vishay disclaims any and all liability arising out of the use or application of any product described herein or of any information provided herein to the maximum extent permitted by law. The product specifications do not expand or otherwise modify Vishay's terms and conditions of purchase, including but not limited to the warranty expressed therein, which apply to these products.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Vishay.

The products shown herein are not designed for use in medical, life-saving, or life-sustaining applications unless otherwise expressly indicated. Customers using or selling Vishay products not expressly indicated for use in such applications do so entirely at their own risk and agree to fully indemnify Vishay for any damages arising or resulting from such use or sale. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

Product names and markings noted herein may be trademarks of their respective owners.