Low Profile Holder Type Crystal Units

This part is a miniature AT cut strip crystal unit with a low profile package. It is with resistance weld.

FEATURES

- Low cost
- Industry standard
- Wide frequency range
- Excellent aging
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

Pb-free

RoHS COMPLIANT

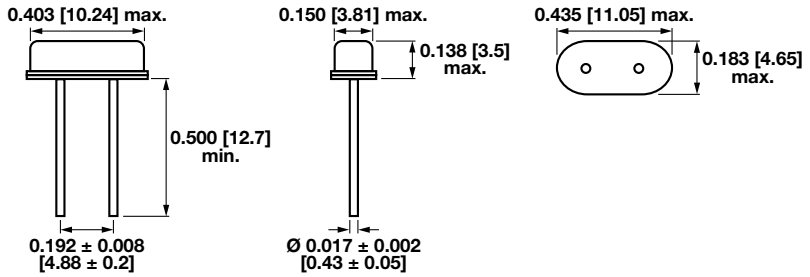
STANDARD ELECTRICAL SPECIFICATIONS

PARAMETER	SYMBOL	CONDITION	UNIT	MIN.	TYP.	MAX.
Frequency range	F_O		MHz	3.579545	-	66.000
Frequency tolerance	$\Delta F/F_O$	At 25 °C	ppm	-	± 10, ± 15, ± 20, ± 25, ± 30	-
Temperature stability	T_C	Ref. to 25 °C	ppm	-	± 20, ± 25, ± 30, ± 35, ± 50, ± 100	-
Operating temperature range	T_{OPR}		°C	-10	-	+70
Storage temperature range	T_{STG}		°C	-55	-	+125
Shunt capacitance	C_0		pF	-	-	7
Load capacitance	C_L	Customer specified	pF	10	-	Series
Insulation resistance	I_R	100 V_{DC}	MΩ	500	-	-
Drive level	D_L		µW	-	100	500
Aging (first year)	Fa	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
3.579 to 3.999	200	Fundamental / AT	10.000 to 13.999	80	Fundamental / AT
4.000 to 4.999	150	Fundamental / AT	14.000 to 39.999	50	Fundamental / AT
5.000 to 5.999	120	Fundamental / AT	40.000 to 66.000	80	3rd overtone
6.000 to 9.999	100	Fundamental / AT	-	-	-

DIMENSIONS in inches [millimeters]



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

X T	9 S	2 0	A	J	R	G	X	8 M 1 9 2	E
Crystal	Package / Size	Load Cap.	Pack Code	Freq. Tolerance	Operating Temp.	Temp. Stability	Options	Frequency	Lead (PB)-free
	9S	**20** = std. **SE** = series	**A** = bulk	**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

X T 9 S	2 0	A	N A	4 0 M
MODEL NUMBER	**LOAD CAPACITANCE**	**PACKAGE CODE**	**OPTIONS**	**FREQUENCY**
XT9S = XT49S	18 = 18 pF 20 = 20 pF NL = series to be specified by customer	**Tape and reel** 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

XT49S	R	-20	SP	12M	e2
MODEL	OTR blank = standard R = -40 °C to +85 °C	LOAD blank = series -16 = 16 pF -20 = 20 pF standard -30 = 30 pF -32 = 32 pF	OPTIONS blank = standard SP = spacer SL = sleeve	FREQUENCY/MHz	JEDEC® LEAD (Pb)-FREE STANDARD

Disclaimer

ALL PRODUCT, PRODUCT SPECIFICATIONS AND DATA ARE SUBJECT TO CHANGE WITHOUT NOTICE TO IMPROVE RELIABILITY, FUNCTION OR DESIGN OR OTHERWISE.

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 in any datasheet or in any other disclosure relating to any product.

Vishay makes no warranty, representation or guarantee regarding the suitability of the products for any particular purpose or the continuing production of any product. To the maximum extent permitted by applicable law, Vishay disclaims (i) any and all liability arising out of the application or use of any product, (ii) any and all liability, including without limitation special, consequential or incidental damages, and (iii) any and all implied warranties, including warranties of fitness for particular purpose, non-infringement and merchantability.

Statements regarding the suitability of products for certain types of applications are based on Vishay's knowledge of typical requirements that are often placed on Vishay products in generic applications. Such statements are not binding statements about the suitability of products for a particular application. It is the customer's responsibility to validate that a particular product with the properties described in the product specification is suitable for use in a particular application. Parameters provided in datasheets and / or specifications may vary in different applications and performance may vary over time. All operating parameters, including typical parameters, must be validated for each customer application by the customer's technical experts. Product specifications do not expand or otherwise modify Vishay's terms and conditions of purchase, including but not limited to the warranty expressed therein.

Hyperlinks included in this datasheet may direct users to third-party websites. These links are provided as a convenience and for informational purposes only. Inclusion of these hyperlinks does not constitute an endorsement or an approval by Vishay of any of the products, services or opinions of the corporation, organization or individual associated with the third-party website. Vishay disclaims any and all liability and bears no responsibility for the accuracy, legality or content of the third-party website or for that of subsequent links.

Vishay products are not designed for use in life-saving or life-sustaining applications or any application in which the failure of the Vishay product could result in personal injury or death unless specifically qualified in writing by Vishay. Customers using or selling Vishay products not expressly indicated for use in such applications do so at their own risk. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

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