



**Data Sheet**



Product Category: Quartz Crystals

Series Number	Package	Description	Last Modified
151	HC-49US	Weld Type Quartz	July. 01 2005

**Quartz Crystal FEATURES**

- Industry standard package
- Wide frequency range
- Low profile
- Excellent reliability/aging
- "AT Strip" blank technology
- Cost effective
- RoHs / Lead Free compliant



**OPERATING CONDITIONS / ELECTRICAL CHARACTERISTICS**

PARAMETERS	CONDITIONS	CHARACTERISTICS	UNITS
Frequency Range	$f_O$	3.000 ~ 75.00	MHz
Frequency Tolerance	Ref @ +25°C	±30 std. (±5 ~ ±100 avail.)	PPM
Temperature Tolerance	$T_L$	±50 std. (See Table 2)	PPM
Operating Temperature	$T_{OPR}$	-10 ~ +60 std. (See Table 2)	°C
Storage Temperature	$T_{STG}$	-55 ~ +125	°C
Shunt Capacitance	$C_O$	7.0 max.	pF
Load Capacitance	$C_L$	20.0 std. (8 ~ 50 and Series avail.)	pF
Drive Level	$D_L$	0.1 ~ 1.0	mW
Aging (First Year)	@ +25°C	±5.0	PPM/Y
Insulation Resistance	$I_R$	500 (DC100 ±10V) min.	Mohm

**TABLE 1 - MODE OF OSCILLATION AND EQUIVALENT SERIES RESISTANCE**

FREQUENCY RANGE (MHz)	MODE	ohm max.	FREQUENCY RANGE (MHz)	MODE	ohm max.
3.000 ~ 3.500	Fundamental	300	8.000 ~ 10.000	Fundamental	60
3.500 ~ 3.800	Fundamental	150	10.000 ~ 12.000	Fundamental	50
3.800 ~ 4.100	Fundamental	120	12.000 ~ 28.000	Fundamental	40
4.100 ~ 5.000	Fundamental	100	28.000 ~ 33.500 †	Fundamental	50
5.000 ~ 6.000	Fundamental	80	26.000 ~ 40.000 †	3rd OT	100
6.000 ~ 8.000	Fundamental	70	40.000 ~ 75.000	3rd OT	80

† Frequency range 26.0 ~ 33.5 MHz is avail. in both Fund. and 3rd OT Mode. Be sure to specify Mode in Part Number Coding below

**TABLE 2 - FREQUENCY - TEMPERATURE TOLERANCE**

Cutting	Temperature Range	Tolerance (PPM)					
		±5.00	±10.0	±15.0	±20.0	±30.0	±50.0
	0 ~ +50°C	x	x	x	x	x	x
	-10 ~ +60°C	-	x	x	x	O	x

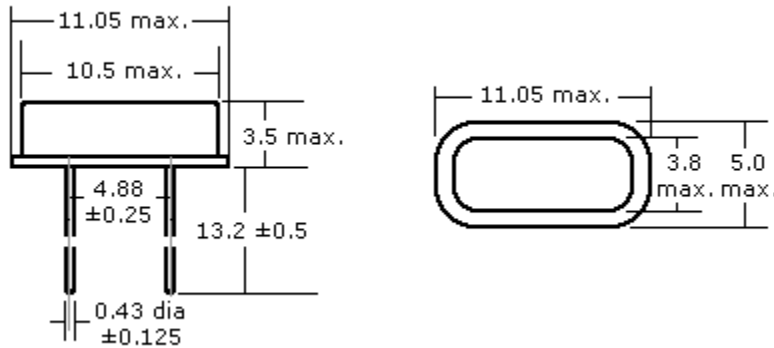


AT	-20 ~ +70°C			x	x	x	O
	-30 ~ +80°C	-	-	-	x	x	x
	-40 ~ +85°C						x
BT	Within a range of ±80 ~ ±120 PPM						

x	available
O	recommended

**PACKAGE DIMENSIONS (mm)**



**PART NUMBER GUIDE**

Series Number	Frequency	Load Capacitance	Tolerance @ +25oC	Tolerance Over Temp ( oC )	Operating Temp ( oC )	Value Added
151	-12.096M	-SR	- 05	K	P	- VS
HC-49US	See table below for standard freq and enter here e.g. 4.032 M OR enter any desired frequency. For 3rd Overtone Mode, add "3". e.g 28.0M3 . (applicable to freq. range 26.0 to 33.5 MHz only) **	Enter desired load capacitance. See table below for standard load capacitances Enter SR for series.	Blank * = ±30 PPM or Fill in E.G 05 = ±5 PPM 25 = ±25 PPM Avail. = ±5 ~ ±100	Blank* = ±50 PPM G = ±30 PPM H = ±20 PPM K = ±15 PPM L = ±10 PPM M = ±5 PPM N = ±100 PPM	P = 0~+50 R = -10~+60 S = -20~+70 T = -30~+80 W = -40~+85	Blank * = Standard IT = Insulator Tab TL = Third Lead L2 = Alt. Third Lead VS = Vinyl Sleevling

**NOTE:** Deviations on all parameters available. Please consult Oscilent for details.

**DEFINITIONS:** Click on the characteristic names above for definition of that particular characteristic.

**\*STANDARDS:** "Blank" part number selections indicate standard variables for that particular characteristic.

**PACKAGING:** Add -TR for Tape/Reel. Click here for tape/reel specifications

**\*\*3rd OVERTONE** Freq. range above 33.50 Mhz is standard in 3rd Overtone. Adding "3" to part number not required.

**STANDARD FREQUENCIES / LOAD CAPACITANCE - FOR GUIDE ONLY/OTHER FREQ/LOADS**

AVAILABLE

FREQUENCY (MHz)	LOAD (pF)							
	Series	12	13	16	17	18	20	32
3.579545	Std.	-	-	-	Std.	-	-	-
3.6864	Std.	-	-	-	-	Std.	-	-
4.000	Std.	-	-	-	-	-	Std.	-
4.032	Std.	-	-	-	-	-	-	-
4.096	-	-	-	-	-	-	Std.	-
4.194304	-	Std.	-	Std.	-	-	-	-
4.433618	-	-	-	-	-	-	Std.	-
4.9152	Std.	-	-	-	-	-	Std.	-

5.000	Std.	-	-	-	-	-	Std.	-
5.0688	Std.	-	-	-	-	-	Std.	-
5.185	Std.	-	-	-	-	-	-	Std.
5.9904	Std.	-	-	-	-	-	Std.	-
6.000	Std.	-	-	-	-	-	Std.	Std.
6.144	-	-	-	-	-	-	-	Std.
6.500	-	-	-	-	-	-	Std.	-
7.3728	Std.	-	-	-	-	-	Std.	-
8.000	Std.	-	-	-	-	Std.	-	Std.
9.216	Std.	-	-	-	-	-	Std.	-
9.540	Std.	-	-	-	-	-	-	-
9.8304	Std.	-	-	-	-	-	Std.	-
10.000	Std.	-	-	-	-	Std.	-	-
10.738635	Std.	-	-	-	-	-	-	-
11.000	Std.	-	-	-	-	-	-	-
11.0592	Std.	-	-	Std.	-	-	Std.	Std.
11.520	Std.	-	-	-	-	Std.	-	-
11.98135	Std.	-	-	-	-	-	-	-
12.000	Std.	-	-	-	-	-	Std.	Std.
12.000393	-	-	-	-	-	Std.	-	-
12.096	Std.	-	-	-	-	-	-	-
12.288	Std.	-	-	-	-	-	Std.	-
12.960	-	Std.	-	-	-	Std.	-	-
14.31818	Std.	-	-	-	-	-	Std.	-
14.7456	Std.	-	-	-	-	-	Std.	-
15.000	Std.	-	-	-	-	-	-	-
15.360	Std.	-	-	-	-	-	Std.	-
16.000	Std.	-	-	Std.	-	-	Std.	-
16.000312	-	-	-	-	-	Std.	-	-
16.257	Std.	-	-	-	-	-	Std.	-
16.9344	-	-	-	-	-	-	Std.	-
17.734475	Std.	-	-	-	-	-	-	-
18.000	Std.	-	-	-	-	-	Std.	-
18.432	Std.	-	-	-	-	Std.	Std.	-
19.6608	Std.	-	-	-	-	-	Std.	-
20.000	Std.	-	-	-	-	-	Std.	-
21.47727	Std.	-	-	-	-	-	-	-
22.1184	Std.	-	-	-	-	-	-	-

24.000(F)	Std.	-	-	Std.	-	-	Std.	-
24.00014 (F)	-	-	-	-	-	Std.	-	-
FREQUENCY (MHz)	Series	12	13	16	17	18	20	32
	LOAD (pF)							
<b>F = Fundamental   OT = 3RD Overtone</b>								
<b>NOTE:</b> Other frequencies and load capacitance available. PLEASE SPECIFY IN PART NUMBER GUIDE								

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**Series No.:** [151](#)

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