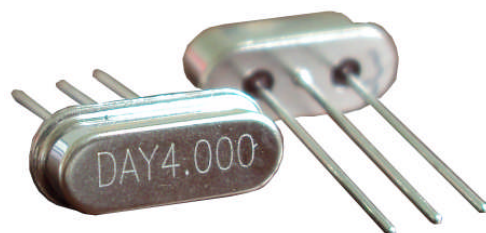


Quartz Crystal Series	
HC-49/TS (49TS) HC-49/TSS (49TSS)	Features ◆RoHS Compliant ◆Low profile type



Electrical Specifications

Item	Specifications	Remarks
Nominal Frequency Range	3.000MHz to 30.000MHz	Fund.; AT-Cut
	20.000MHz to 48.000MHz	Fund.; BT-Cut
	30.000MHz to 110.000MHz	3 rd O.T.; AT-Cut
Frequency Tolerance	±20ppm(Standard) at 25℃±3℃	Others are offered
Load Capacitance	Fund.:10pF to ∞, O.T.:5pF to ∞	Please specify
Series Resistance	As ESR table	
Shunt Capacitance	7pF Max	
Drive Level	10μW to 100μW	1000μW Max
Operating Temperature	-20℃ to +70℃(Standard)	Others are offered
Storage Temperature	-55℃ to +125℃ / -65℃ to +135℃	
Stability vs. Temperature	±20ppm(Standard)	Others are offered
Insulated Resistance	500MΩ	Minimum at 100Vdc
Aging	±2ppm/year	Maximum

ESR(Series Resistance)

Frequency(MHz)	Mode	Ohm Max	Frequency(MHz)	Mode	Ohm Max
3.0~3.999	Fund.	120	10.0~12.999	Fund.	40
4.0~4.999	Fund.	90	13.0~19.999	Fund.	35
5.0~5.999	Fund.	90	20.0~30.0	Fund.	25
6.0~6.999	Fund.	65	20.0~48.0(BT)	Fund.	25
7.0~7.999	Fund.	55	29.999~49.999	3 rd O.T.	100
8.0~8.999	Fund.	50	50.0~89.999	3 rd O.T.	80
9.0~9.999	Fund.	45	90.0~110.0	3 rd O.T.	120

Stability vs. Temperature

◆ Standard		1	2	3	5	6	7	Remarks
◇ Please specify		±10ppm	±20ppm	±30ppm	±50ppm	±100ppm	±150ppm	
B	-10℃ to +60℃	◇	◇	◇				
C	-20℃ to +70℃	◇	◆	◇	◇	◇	◇	Standard
D	-40℃ to +85℃	◇	◇	◇	◆	◇	◇	
E	-45℃ to +125℃			◇	◇	◆	◇	

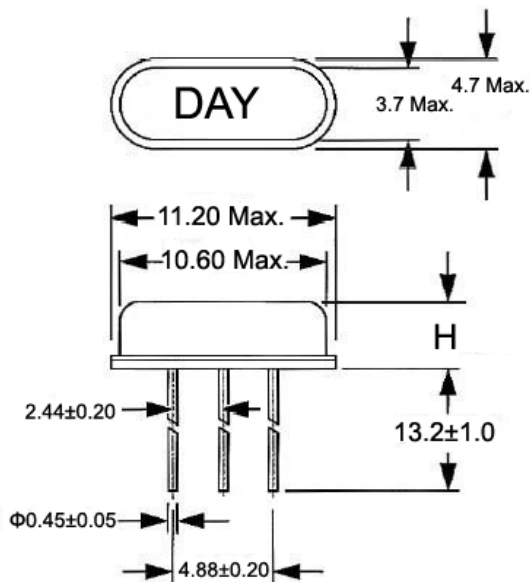
Quartz Crystal Series

HC-49/TS (49TS)
HC-49/TSS (49TSS)

Ordering Information

Q	R	Type	Pin	XX.XXXX	M	Mode	CL pF	Freq.Tolerance at 25°C	Operating Temp.	Stability Vs.Temp.	Option
											F:Lead Free T:T&R Blank:Bulk
Q:Quartz R:Resonator	49TS 49TSS	Blank:3	Center frequency 3.0 to 110.0MHz	M: MHz	F:Fund.;AT O: 3 rd O.T.;AT	See Table	±10ppm to ±150ppm	See Table	See Table		
Example:QR49TS16.0000MFK2C2FT (Crystal,HC-49/TS,16.0000MHz,3pins,20pF,+/-20ppm,-20 to +70deg,+/-20ppm. Lead free ,T&R)											

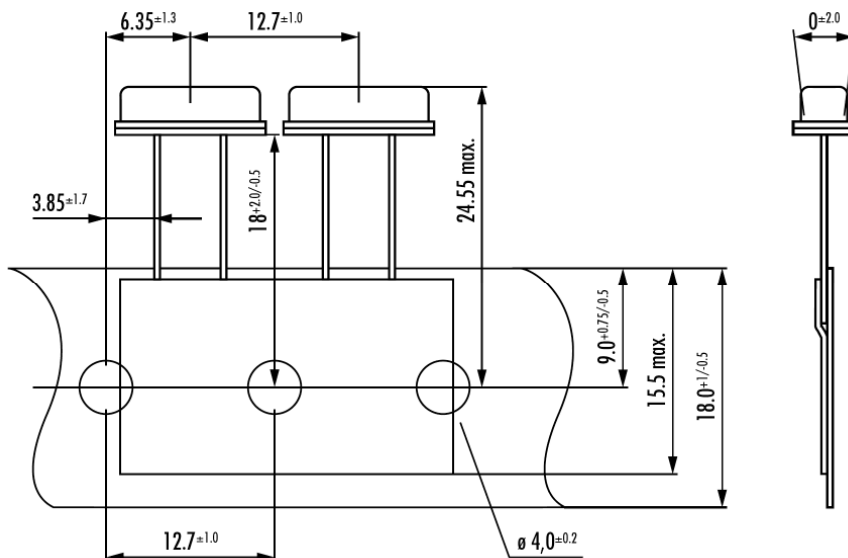
Dimensions



TYPE		H
49TS	HC-49/TS	3.68 Max.
49TSS	HC-49/TSS	2.50 Max.

Unit:mm

Taping Specification

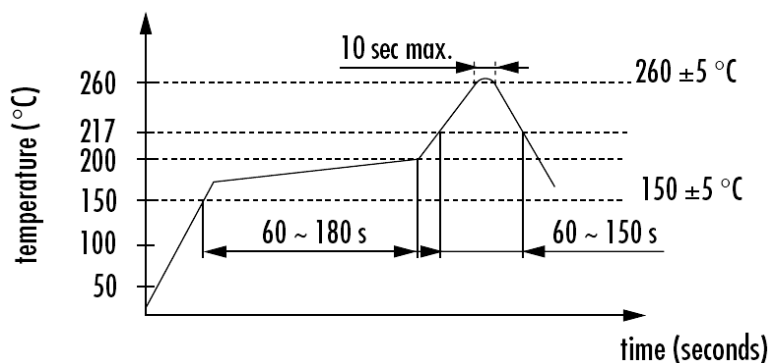


1000pcs/Reel

Quartz Crystal Series

HC-49/TS (49TS)
HC-49/TSS (49TSS)

Reflow Soldering Profile



Load Capacitance Codes

7pF:	E	8pF:	F	9pF:	B	10pF:	R
12pF:	T	15pF:	H	16pF:	I	18pF:	J
20pF:	K	22pF:	L	25pF:	G	27pF:	M
30pF:	N	32pF:	P	33pF:	W	Series:	S