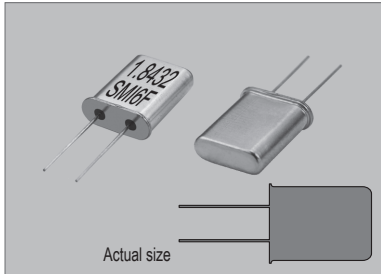


Quartz Crystal Units

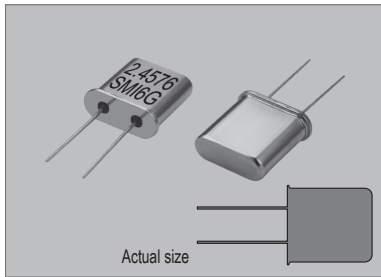
**HC-49/U & HC-49/UT FAMILY** STANDARD THROUGH-HOLE CRYSTALS

**HC-49 / U**



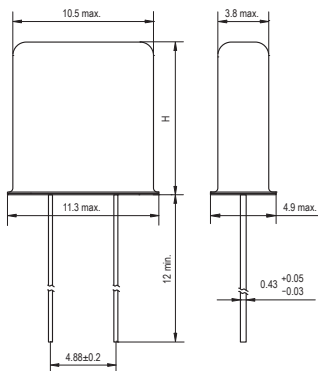
0.975 gm (wt.)

**HC-49 / UT**



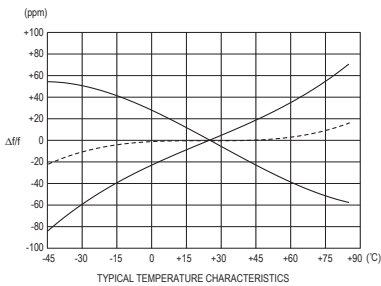
0.9075 gm (wt.)

**HC-49 / U, HC-49 / UT**



Holder	H
HC-49/U	13.5 mm max.
HC-49/UT	11.2 mm max.

**AT-CUT**



**STANDARD SPECIFICATIONS**

Item	Symbol	Specifications	
Holder type		HC-49/U      HC-49/UT	
Holder height		13.5 mm max.      11.2 mm max.	
Frequency range	F	1.8432 MHz to 200.000 MHz	
Frequency tolerance (at +25°C ±3°C)	$\Delta f/F$	J : ±5 ppm O : ±10 ppm Q : ±15 ppm R : ±20 ppm T : ±30 ppm X : ±50 ppm	
Temperature stability (referred to +25°C)		XXggg : ±50 ppm over -10°C to +60°C TTiii : ±30 ppm over -20°C to +70°C RRiii : ±20 ppm over -20°C to +70°C QQiii : ±15 ppm over -20°C to +70°C OOiii : ±10 ppm over -20°C to +70°C	
Note : Contact for other temperature stabilities and operating temperature ranges.			
Load capacitance	CL	20 pF, Typical	
Shunt capacitance	C0	7.0 pF max.	
Drive level	P	3 mW max.	
Aging (for first year)	$\Delta f/F$	±5 ppm max. at +25°C ±3°C per year	
Cut		AT-Cut	
Equivalent Series Resistance	Fundamental	ESR	1.8432 MHz+ : 500 Ω max.
			2.000 MHz+ : 400 Ω max.
			2.500 MHz+ : 250 Ω max.
	3rd overtone		20.000 to 120.000 MHz : 60 Ω max.
	5th overtone		80.000 to 200.000 MHz : 80 Ω max.
			3.000 MHz+ : 180 Ω max.
			3.500 MHz+ : 100 Ω max.
			4.000 MHz+ : 80 Ω max.
			4.500 MHz+ : 60 Ω max.
			5.000 MHz+ : 50 Ω max.
			6.000 MHz+ : 40 Ω max.
			7.000 MHz+ : 30 Ω max.
			9.000 MHz+ : 25 Ω max.
			13.000 MHz+ : 20 Ω max.

**PART NUMBERING GUIDE**

**49 M 2.4576M - 16 / T / XXggg**



**Example**

SMI Part No.	Holder	Circuit Calibration Condition	Frequency	Frequency Tolerance	Temperature Stability
49M2.4576M-16/T/XXggg	49 = HC-49/U	M = Parallel resonance CL = 16pF	2.4576 MHz	T = ±30 ppm	XXggg = ±50 ppm
49M9.84375M-20/Q/TTiii	49 = HC-49/U	M = Parallel resonance CL = 20pF	9.84375 MHz	Q = ±15 ppm	TTiii = ±30 ppm
49TS19.6608M/O/QQiii	49T = HC-49/UT	S = Series resonance	19.6608 MHz	O = ±10 ppm	QQiii = ±15 ppm

**HOLDER DATA**

Item	Holder	HC-49/U & HC-49/UT
Cover		Metal
Base		Metal
Sealing		Resistance
Terminal lead		Alloy (FeNiCo)
Terminal lead plating		SnCu
RoHS		Compliant (Pb-free)

XTAL

CLK OSC

VCXO

TCXO

OCXO

MCF