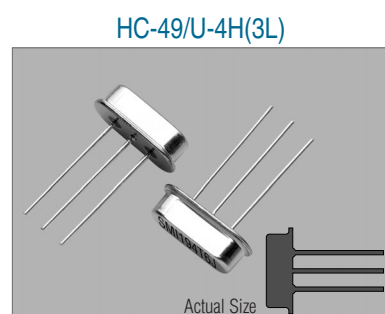
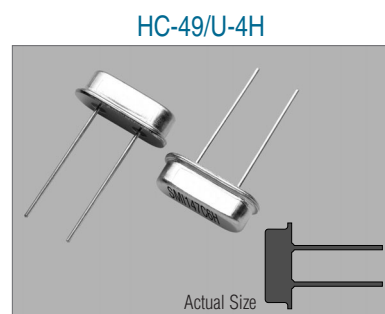
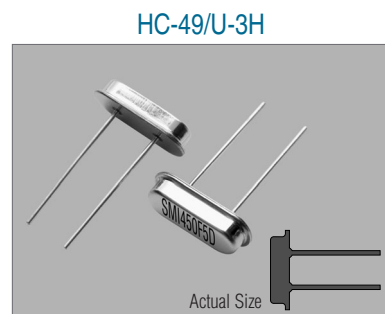
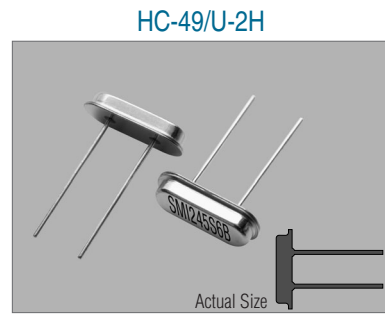


HC-49/U-2H, HC-49/U-3H & HC-49/U-4H FAMILY

STANDARD THROUGH-HOLE CRYSTALS

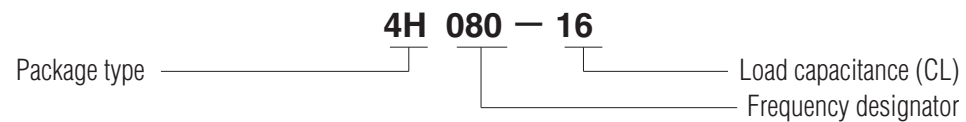
XTAL



STANDARD SPECIFICATIONS

1. Package type HC-49/U-2H, HC-49/U-3H, HC-49/U-4H & HC-49/U-4H(3L)
2. Frequency range 3.579545 MHz to 60.000 MHz
3. Frequency tolerance ± 50 ppm at $+25^{\circ}\text{C} \pm 3^{\circ}\text{C}$
4. Temperature stability (referred to $+25^{\circ}\text{C}$) ± 50 ppm over -20°C to $+70^{\circ}\text{C}$
5. Load capacitance (CL) 16 pF, Typical
6. Shunt capacitance (Co) 7 pF max.
7. Drive level (P) 100 μW max. (10 μW for testing)
8. Aging ± 5 ppm max. at $+25^{\circ}\text{C} \pm 3^{\circ}\text{C}$ per year
9. Cut/Oscillation mode AT-Cut/Fundamental (3.579545 MHz to 40.000 MHz)
BT-Cut/Fundamental (28.636363 MHz to 50.000 MHz)
AT-Cut/3rd overtone (26.690000 MHz to 60.000 MHz)

PART NUMBERING GUIDE

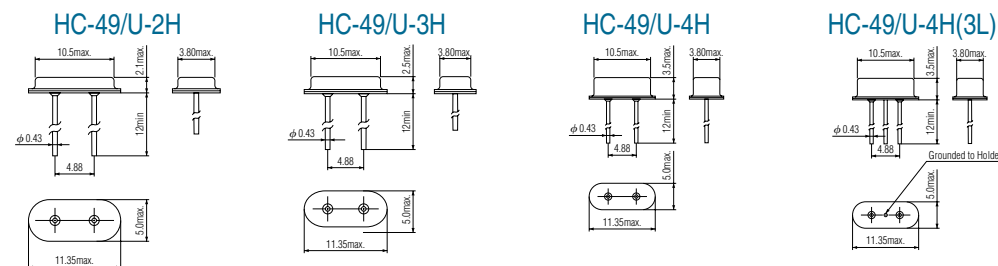


EXAMPLE

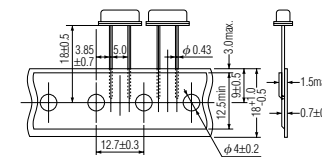
SMI PART NO.	Package	Frequency	Circuit Calibration Condition
4H080-16	4H = HC-49/U-4H	080 = 8.000 MHz	Parallel resonance CL = 16 pF
2H221-18	2H = HC-49/U-2H	221 = 22.11840 MHz	Parallel resonance CL = 18 pF
3H450S	3H = HC-49/U-3H	450 = 45.000 MHz	S = Series resonance
4H135-12(3L)	4H(3L) = HC-49/U-4H(3L)	135 = 13.500 MHz	Parallel resonance CL = 12pF
4H100-16TR	4H = HC-49/U-4H on tape and reel (TR)	100 = 10.000 MHz	Parallel resonance CL = 16pF

PACKAGE DATA

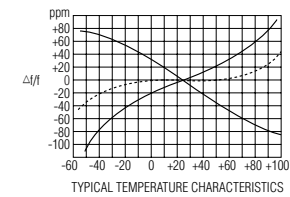
Package Item	HC-49/U-2H	HC-49/U-3H	HC-49/U-4H	HC-49/U-4H(3L)
Cover	Metal	Metal	Metal	Metal
Base	Glass	Glass	Glass	Glass
Sealing	Resistance	Resistance	Resistance	Resistance
Terminal lead	Alloy (FeNiCo)	Alloy (FeNiCo)	Alloy (FeNiCo)	Alloy (FeNiCo)
Terminal plating	SnCu	SnCu	SnCu	SnCu
RoHS	Compliant(Pb-free)	Compliant(Pb-free)	Compliant(Pb-free)	Compliant(Pb-free)



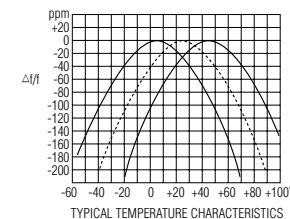
HC-49/U-2H, HC-49/U-3H OR HC-49/U-4H ON TAPE (TR)



AT-CUT



BT-CUT



HC-49/U-2H, HC-49/U-3H & HC-49/U-4H STANDARD FREQUENCIES

FREQUENCY MHz	FREQUENCY DESIGNATOR	MAX EQUIVALENT SERIES RESISTANCE OHMS(Ω) ESR	FREQUENCY MHz	FREQUENCY DESIGNATOR	MAX EQUIVALENT SERIES RESISTANCE OHMS(Ω) ESR
3.579545	035	200	14.000000	140	50
3.648000	0364	200	14.318180	143	50
3.686400	0368	200	14.400000	144	50
3.840000	0384	200	14.745600	147	50
3.932160	039	200	15.000000	150	50
4.000000	040	150	15.360000	153	50
4.032000	0403	150	16.000000	160	50
4.096000	0409	150	16.384000	163	50
4.194304	041	150	17.700000	177	50
4.433619	044	150	17.734475	1773	50
4.500000	045	150	18.000000	180	50
4.608000	046	150	18.432000	184	50
4.800000	048	150	19.069929	1906	50
4.906250	04906	150	19.312000	193	50
4.915200	049	150	19.440000	194	50
5.000000	050	120	19.660800	196	50
5.333000	053	120	20.000000	200	40
5.699623	056	120	20.480000	204	40
6.000000	060	100	22.118400	221	40
6.144000	061	100	23.000000	230	40
6.176000	0617	100	24.000000	240	40
6.745800	0674	100	24.576000	245	40
6.764380	0676	100	25.000000	250	40
7.372800	073	80	26.540000	265	40
7.500000	075	80	27.000000	270	40
7.680000	076	80	27.586000	275	40
8.000000	080	80	28.000000	280	40
8.192000	081	80	28.636363	2863	40
8.400000	084	80	29.000000	290	40
9.000000	090	60	29.491200	294	40
9.216000	092	60	30.000000	300	40
9.600000	096	60	30.800000	308	40
9.830400	098	60	32.000000	320	40
9.843750	0984	60	33.000000	330	40
10.000000	100	60	33.333000	333	40
10.368000	103	60	33.868800	338	40
10.202000	102	60	35.468950	354	40
10.245000	10245	60	36.000000	360	40
11.000000	110	60	36.864000	368	40
11.059200	1105	60	37.745000	377	40
12.000000	120	60	38.000000	380	40
12.288000	122	60	40.000000	400	40
12.296000	1229	60	45.000000	450	40 (BT-Cut)
13.000000	130	50	48.000000	480	40 (BT-Cut)
13.248000	132	50	50.000000	500	40 (BT-Cut)
13.500000	135	50			