

Crystals

Order code	Manufacturer code	Description
90-1900	n/a	3.579545MHZ S/MOUNT CRYSTAL RC
90-1902	n/a	3.6864MHZ S/MOUNT CRYSTAL (RC)
90-1904	n/a	4.0MHZ S/MOUNT CRYSTAL (RC)
90-1906	n/a	4.194304MHZ S/MOUNT CRYSTAL (RC)
90-1908	n/a	4.433619MHZ S/MOUNT CRYSTAL
90-1910	n/a	4.9152MHZ S/MOUNT CRYSTAL RC
90-1912	n/a	6.0MHZ S/MOUNT CRYSTAL (RC)
90-1914	n/a	7.3728MHZ S/MOUNT CRYSTAL RC
90-1916	n/a	8.0MHZ S/MOUNT CRYSTAL (RC)
90-1918	n/a	10.0MHZ S/MOUNT CRYSTAL RC
90-1920	n/a	11.0592MHZ S/MOUNT CRYSTAL RC
90-1922	n/a	12.0MHZ S/MOUNT CRYSTAL RC
90-1924	n/a	14.7456MHZ S/MOUNT CRYSTAL (RC)
90-1926	n/a	19.6608MHZ S/MOUNT CRYSTAL RC
90-1928	n/a	24.0MHZ S/MOUNT CRYSTAL (RC)
90-1930	n/a	40.0MHZ S/MOUNT CRYSTAL RC
90-1932	n/a	16MHZ SMD CRYSTAL (RC)
90-2200	n/a	4.096MHZ S/MOUNT CRYSTAL RC
90-2202	n/a	5.00MHZ S/MOUNT CRYSTAL RC
90-2204	n/a	9.8304MHZ S/MOUNT CRYSTAL (RC)
90-2206	n/a	12.288MHZ S/MOUNT CRYSTAL
90-2210	n/a	18.432MHZ S/MOUNT CRYSTAL RC
90-2212	n/a	20.00MHZ S/MOUNT CRYSTAL RC
90-2214	n/a	22.1184MHZ S/MOUNT CRYSTAL (RC)
90-2216	n/a	24.576MHZ S/MOUNT CRYSTAL
90-2218	n/a	25.00MHZ S/MOUNT CRYSTAL (RC)
90-2220	n/a	50.00MHZ S/MOUNT CRYSTAL RC
90-2224	n/a	7.68MHZ S/MOUNT CRYSTAL (RC)
90-2226	n/a	8.192MHZ S/MOUNT CRYSTAL (RC)
90-2228	n/a	13.00MHZ S/MOUNT CRYSTAL
90-2230	n/a	13.56MHZ S/MOUNT CRYSTAL RC
90-2232	n/a	13.58MHZ S/MOUNT CRYSTAL
90-2234	n/a	27.00MHZ S/MOUNT CRYSTAL (RC)

Crystals	Page 1 of 3
The enclosed information is believed to be correct, Information may change without notice due to product improvement. Users should ensure that the product is suitable for their use. E. & O. E.	Revision A 20/02/2007

ACT HC49/US-SMX (Standard Packages)

Compatible with Eu Directive
2002/EC - RoHS

The ACT HC49/US-SMX is one of the most cost effective and popular surface mount crystals available. With its wide range of frequencies, stabilities and operating temperatures it is still small enough to fit most applications including many hand held units and is the economical solution for automatic assembly. With its wide range of specification options, the HC49/US-SMX is a favoured choice in many applications, including Communications, Industrial Controls, Microprocessor Systems, Vending, Security and Access Control. There are two heights available : "H" 4.0±0.2mm (PO Series) & "h" 3.0±0.2mm (AT Series)



Specification

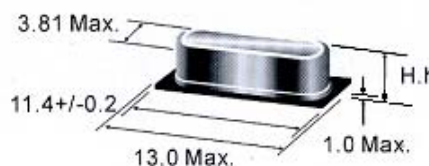
Parameter	Symbol	Specification	Condition
Frequency	fo	3.00 ~ 100.00MHz	Please specify
Frequency Tol. (@ 25°C)	Δf/fo	±5ppm ~ ±100ppm	Please specify
Mode		See table 1	Please specify
Stability over Temp Range	Tc	See table 2	Dependent upon Operating Temperature
Temp Operating Range	Topr	-10~+60°C, -20~+70°C & -40~+85°C	Others available - Please specify
Temp Storage Range	Tstg	-40 ~ +85°C	
Equivalent Series Resistance	ESR	See table 1	
Shunt Capacitance	CO	7pFmax	
Load Capacitance	CL	5pF ~ 55pF & Series Resonance	Please specify
Drive Level	DL max	100μW typical	Custom options available - Please enquire
Drive Level Dependency	DLD	Δ Freq & ESR	0.01, 0.1, 1, 10, 50, 100 μW steps
Insulation Resistance	IR	500MΩ	min at 100Vdc
Aging	Fa	±3ppm per year @25°C	@ 25°C

Table 1

Frequency (MHz)	ESR (Ω) max	Mode	Frequency (MHz)	ESR (Ω) max	Mode
3.000 ~ 3.500	150	AT Fundamental	24.000 ~ 40.320	40	BT Fundamental
3.579545 ~ 5.999	150	AT Fundamental	24.000 ~ 29.999	100	3 rd Overtone
6.000 ~ 7.999	60	AT Fundamental	30.000 ~ 49.999	80	3 rd Overtone
8.000 ~ 15.999	50	AT Fundamental	50.000 ~ 100.000	60	3 rd Overtone
16.000 ~ 30.000	40	AT Fundamental			

Example Standard Frequencies

3.579545	7.680	14.7456	22.1184
3.6864	8.192	15.000	22.5792
4.000	9.000	16.660	23.040
4.096	9.8304	16.670	24.000
4.9152	10.000	16.9344	25.000
5.000	10.240	17.734475	27.000
6.000	11.000	18.000	28.625
6.144	11.0592	18.432	28.636363
6.5539	12.000	19.6608	33.330
6.605	12.288	20.000	40.000
6.750	13.560	20.00014	48.000
7.3728	14.31818	22.080	50.000



H.h: Overall Height:
4.0+/-0.2 (PO Series)
3.0+/-0.2 (AT Series)

Lead Finish
Sn/Ag

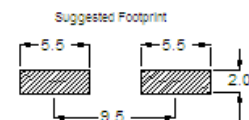
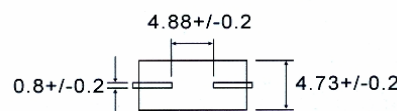


Table 2

Frequency Stabilities VS Operating Temperatures

Stability Temp	±10ppm	±15ppm	±20ppm	±25ppm	±30ppm	±50ppm
-10 ~ + 60°C	★	★	★	★	★	★
-20 ~ + 70°C	★	★	★	★	★	★
-40 ~ + 85°C		★	★	★	★	★

Please note that all parameters can not necessarily be specified in the same device

Customer to specify : Height, Frequency Tolerance, Operating Temperature, Temperature Stability, Load Capacitance & Mode/cut

In line with our ongoing policy of product evolution and improvement, the above specification may be subject to change without notice

ISO9001:2000 Registered

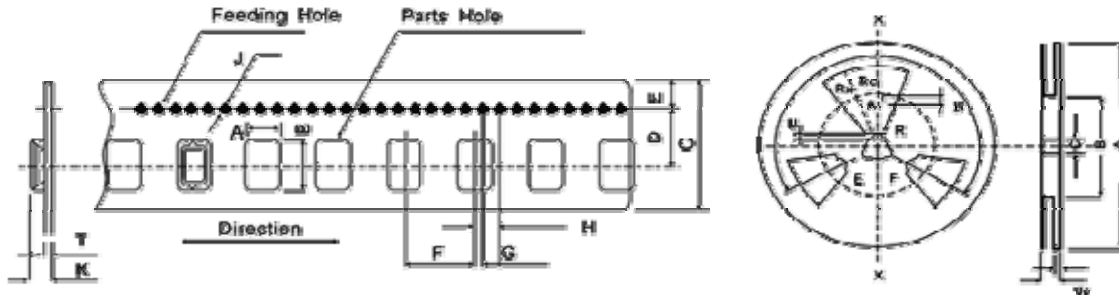
For quotations or further information please contact us at:

3 The Business Centre, Molly Millars Lane, Wokingham, Berkshire, RG41 2EY, UK

<http://www.actcrystals.com>

Issue 5 SCA
Date : 11/4/06

ACT HC49US_SMX TAPE DIMENSIONS (mm)
 STANDARD REEL QUANTITY 1000PCS



REEL DIMENSIONS (mm)

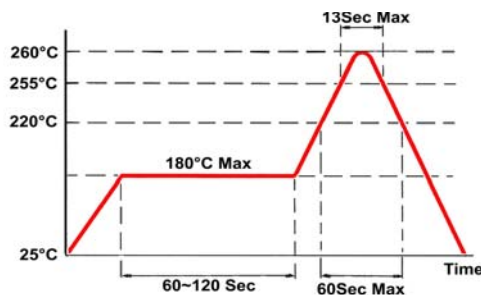
Description		Code	Dimensions	
Flanges	Diameter	A	$\phi 330 \pm 2.0$	
	Thickness	t	2.4 ± 0.2	
	Width between Flanges	W	24.4 ± 0	
Flanges	Outline Diameter	B	$\phi 100 \pm 2.0$	
	Width	F	2.3 ± 1.0	
		V	6.0 ± 1.0	
	Center Core Position	Q	$120^\circ \pm 3.0^\circ$	
	Spindle Diameter	C	$\phi 13.0 \pm 0.5$	
	Key Seats	Width	E	2.5
		Depth	U	5.0 ± 0.5
Key Seats	Position	Q	$120^\circ \pm 3^\circ$	
	Outline Radius	R _o	$R90 \pm 1.0$	
Flanges	Inline Radius	R _i	$R40 \pm 1.0$	
	Rounded Corners	R _c	$R5 \pm 0$	
Fenestrate	Open Angle	R	$40^\circ \pm 2^\circ$	

TAPE DIMENSIONS (mm)

Code	Dimension	Code	Dimension	Code	Dimension
A	5.0 ± 0.1	E	1.75 ± 0.1	J	$\phi 1.5 \pm 0.1-0$
B	15.0 ± 0.2	F	$8.0 \pm 0.1 / 12.0 \pm 0.1$	K	5.0 ± 0.1
C	24.0 ± 0.3	G	2.0 ± 0.1	T	5.0 ± 0.1
D	11.05 ± 0.1	H	4.0 ± 0.1		

NB: Dimension "F"
 12.0mm Standard
 8.0mm "Custom"

Maximum Re-Flow Profile



Note: No more than 2 re-flow cycles

In line with our ongoing policy of product evolution and improvement, the above specification may be subject to change without notice

ISO9001:2000 Registered

For quotations or further information please contact us at:
 3 The Business Centre, Molly Millars Lane, Wokingham, Berkshire, RG41 2EY, UK
<http://www.actcrystals.com>

Issue : 5 SCA
 Date : 11/04/06