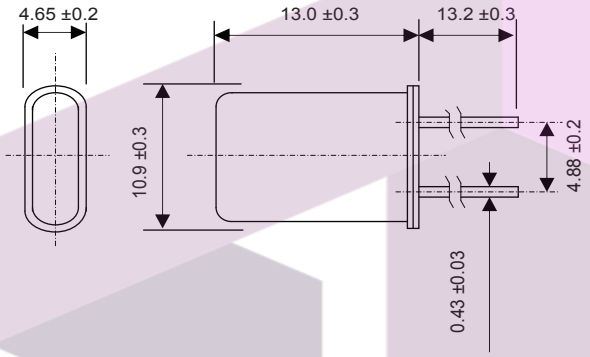
Crystal Unit - HC-49/U

Outline Drawing

Dimension (Unit=mm)



Features & Applications:

- General, industrial, microcontrollers
- RoHS Compliant
- Cost Effective
- Well established product
- Wide frequency range
- Superior resistance weld HC-49/U metal case

Supplied loose as standard. Taped product available to special order.

Specification

Nominal Frequency Range	1.8 to 32MHz	24 to 75MHz	75 to 200MHz
Vibration Mode	Fundamental (AT)	3rd Overtone (AT)	5th Overtone (AT)
Frequency Tolerance @25°C	±20 or ± 30 ppm		
Temperature Stability	±30 or ± 50 ppm		
Operating Temperature Range	-10°C to +60°C (Option: -20°C to +70°C)		
Storage Temperature Range	-20°C to +70°C (Option: -30°C to +80°C)		
Load Capacitance	8pF to 32pF or series		
Equivalent Series Resistance	see ESR table below		
Shunt Capacitance	5pF max.(≤18MHz) or 7pF max. (>18MHz)		
Drive Level	200 µW max (≤5MHz) 100µW max (>5MHz)		
Insulation Resistance	500MΩmin @ 100V DC		
Aging	±5ppm per year		

ESR Table

Case Frequency	Vibration Mode	HC 49U Ω Max
1.0-1.8MHz	F	3000
1.8-2.00MHz	F	500
2.01-2.399MHz	F	450
2.4-2.99Mhz	F	300
3.0-3.5MHz	F	150
3.5-3.99MHz	F	90
4.0-4.99MHz	F	80
5.0-5.99MHz	F	70
6.0-6.99MHz	F	60
7.0-7.99MHz	F	50
8.0-9.99Mhz	F	40
10-13.99MHz	F	35
14-23.99MHz	F	25
24-25.0MHz	F/3	25/50
25-30.0MHz	F/3	25/50
30-75.0MHz	3	50
75-125.0MHz	5	80
125-150MHz	5	100
150-200MHz	5	120

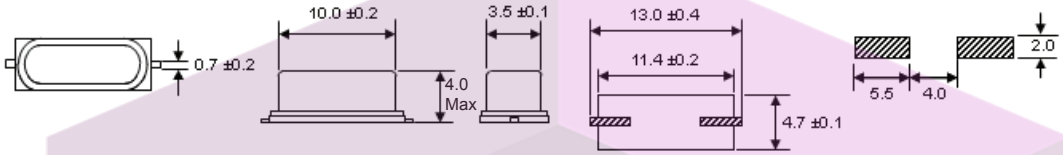
Part Number Guide:

Case	Frequency (MHz)	Freq. Tol (PPM)	Temp Stab (PPM)	Temp Range 60 = -10~+60 70 = -20~+70	Load Cap pf 00 = Series	Vibration Mode AT Cut F=Fund.3 Overtone	Ant Part No.
HC49U	1.8432	20	50	60	30	ATF	XTL-1012
HC49U	2	50	100	60	20	ATF	XTL-1014
HC49U	2.4576	20	50	60	30	ATF	XTL-1017
HC49U	3.2768	20	30	60	12	ATF	XTL-1020
HC49U	3.579545	20	50	60	20	ATF	XTL-1021
HC49U	3.6864	20	50	60	30	ATF	XTL-1023
HC49U	3.6864	30	50	70	30	ATF	XTL-1024
HC49U	4	20	10	70	30	ATF	XTL-1027
HC49U	4	20	50	60	30	ATF	XTL-1028
HC49U	4	30	50	70	30	ATF	XTL-1029
HC49U	4.096	20	20	70	30	ATF	XTL-1031
HC49U	4.096	30	50	70	30	ATF	XTL-1032
HC49U	4.194304	20	30	60	12	ATF	XTL-1033
HC49U	4.608	20	50	60	30	ATF	XTL-1037
HC49U	4.9152	20	50	60	30	ATF	XTL-1040
HC49U	4.9152	30	50	70	30	ATF	XTL-1041
HC49U	5	20	50	60	30	ATF	XTL-1043
HC49U	5.0688	20	50	60	00	ATF	XTL-1044
HC49U	6	20	50	60	30	ATF	XTL-1051
HC49U	6	30	50	70	30	ATF	XTL-1053
HC49U	6.144	20	50	60	30	ATF	XTL-1055
HC49U	6.5536	20	30	60	12	ATF	XTL-1057
HC49U	7.3728	20	50	60	30	ATF	XTL-1059
HC49U	8	20	50	60	30	ATF	XTL-1062
HC49U	8	30	50	70	30	ATF	XTL-1064
HC49U	10	20	10	70	30	ATF	XTL-1069
HC49U	10	20	50	60	30	ATF	XTL-1070
HC49U	11	20	30	60	30	ATF	XTL-1073
HC49U	11.0592	20	30	60	20	ATF	XTL-1074
HC49U	12	20	30	60	30	ATF	XTL-1079
HC49U	12.288	20	50	60	30	ATF	XTL-1081
HC49U	14.31818	20	50	60	00	ATF	XTL-1083
HC49U	14.7456	20	30	60	30	ATF	XTL-1087
HC49U	16	20	30	60	30	ATF	XTL-1089
HC49U	19.6608	20	50	60	30	ATF	XTL-1096
HC49U	20	20	30	60	00	ATF	XTL-1098
HC49U	22.1184	20	50	60	30	ATF	XTL-1114
HC49U	24	20	50	60	00	ATF	XTL-1120
HC49U	32	20	30	60	00	ATF	XTL-1131

Crystal Unit - HC-49/SM

Outline Drawing

Dimension (Unit=mm)



Features & Applications:

Designed for applications where board height is critical

• General, industrial, microcontrollers • Cost effective • Suface mount • Low profile (4mm height)

• Superior resistance weld HC49/4SMX metal case • Supplied taped and reeled.

Specification

Nominal Frequency Range	3.5 to 32MHz	24 to 70MHz
Vibration Mode	Fundamental (AT)	3rd Overtone (AT)
Frequency Tolerance @25°C	±20, ± 30 or ±50ppm (Options: ±10, ±15ppm)	
Temperature Stability	±30 or ± 50 ppm	
Operating Temperature Range	-10°C to +60°C or -20°C to +70°C	
Storage Temperature Range	-20°C to +70°C or -30°C to +80°C	
Load Capacitance	8pF to 33pF or series	
Equivalent Series Resistance	see ESR table below	
Shunt Capacitance	5pF max.(≤18MHz) or 7pF max. (>18MHz)	
Drive Level	200 µW max (≤5MHz) 100µW max (>5MHz)	
Insulation Resistance	500MΩmin @ 100V DC	
Aging	±5ppm per year	

ESR Table

Case Frequency	Vibration Mode	HC 49SM Ω Max
3.5-3.99MHz	F	150
4.0-4.99MHz	F	120
5.0-5.99MHz	F	100
6.0-6.99MHz	F	80
7.0-7.99MHz	F	80
8.0-9.99Mhz	F	70
10-13.99MHz	F	50
14-23.99MHz	F	40
24-25.0MHz	F/3	40/80
25-30.0MHz	F/3	40/80
30-70.0MHz	3	80

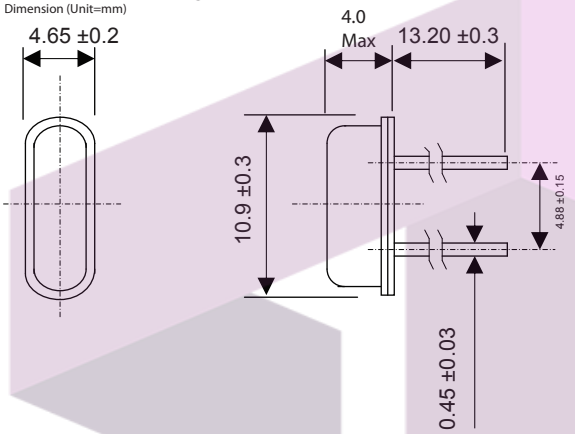
Part Number Guide:

Case	Frequency (MHz)	Freq. Tol (PPM)	Temp Stab (PPM)	Temp Range 60 = -10~+60 70 = -20~+70	Load Cap pf 00 = Series	Vibration Mode AT Cut F=Fund.3 Overtone	Ant Part No.
HC49SM	3.579545	30	50	60	16	ATF	XTL-5014
HC49SM	3.6864	30	50	60	16	ATF	XTL-5014
HC49SM	4	30	50	60	16	ATF	XTL-5021
HC49SM	4.9152	30	50	60	16	ATF	XTL-5025
HC49SM	6	30	50	60	30	ATF	XTL-5032
HC49SM	8	30	50	60	16	ATF	XTL-5038
HC49SM	10	30	50	60	16	ATF	XTL-5043
HC49SM	11.0592	30	50	60	16	ATF	XTL-5048
HC49SM	12	30	50	60	16	ATF	XTL-5050
HC49SM	16	30	50	60	16	ATF	XTL-5055
HC49SM	20	30	50	60	16	ATF	XTL-5062

Crystal Unit - HC-49/S

Outline Drawing

Dimension (Unit=mm)



Features & Applications:

Designed for applications where board height and space is critical

- General, industrial, microcontrollers
- Cost effective
- Low profile (4mm height)
- Superior resistance weld HC49/4H metal case

Supplied loose as standard. Taped product available to special order.

Specification

Nominal Frequency Range	3.5 to 32MHz	24 to 70MHz
Vibration Mode	Fundamental (AT)	3rd Overtone (AT)
Frequency Tolerance @25°C	±20, ± 30 or ±50ppm (Options: ±10, ±15ppm)	
Temperature Stability	±30 or ± 50 ppm	
Operating Temperature Range	-10°C to +60°C (Option: -20°C to +70°C)	
Storage Temperature Range	-20°C to +70°C (Option: -30°C to +80°C)	
Load Capacitance	8pF to 32pF or series	
Equivalent Series Resistance	see ESR table below	
Shunt Capacitance	5pF max.(≤18MHz) or 7pF max. (>18MHz)	
Drive Level	200 µW max (≤5MHz) 100µW max (>5MHz)	
Insulation Resistance	500MΩmin @ 100VDC	
Aging	±5ppm per year	

ESR Table

Case Frequency	Vibration Mode	HC 49S Ω Max
3.5-3.99MHz	F	150
4.0-4.99MHz	F	120
5.0-5.99MHz	F	100
6.0-6.99MHz	F	80
7.0-7.99MHz	F	80
8.0-9.99Mhz	F	70
10-13.99MHz	F	50
14-23.99MHz	F	40
24-25.0MHz	F/3	40/80
25-30.0MHz	F/3	40/80
30-70.0MHz	3	80

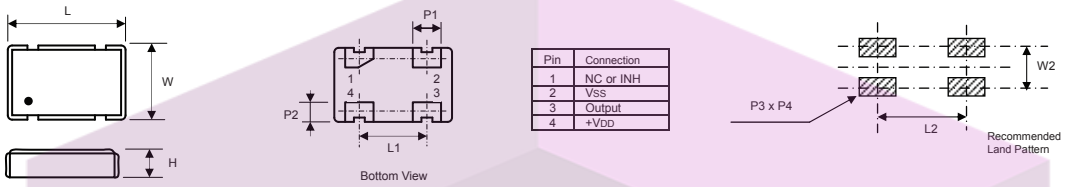
Part Number Guide:

Case	Frequency (MHz)	Freq. Tol (PPM)	Temp Stab (PPM)	Temp Range 60 = -10~+60 70 = -20~+70	Load Cap pf 00 = Series	Vibration Mode AT Cut F=Fund.3 Overtone	Ant Part No.
HC49S	3.579545	30	50	70	20	ATF	XTL-3012
HC49S	3.6864	30	50	70	30	ATF	XTL-3015
HC49S	4	20	50	60	30	ATF	XTL-3018
HC49S	4.194304	30	50	60	30	ATF	XTL-3024
HC49S	4.433619	30	50	60	20	ATF	XTL-3026
HC49S	4.9152	30	50	70	30	ATF	XTL-3028
HC49S	6	30	50	60	30	ATF	XTL-3035
HC49S	7.3728	15	30	60	18	ATF	XTL-3039
HC49S	7.68	30	50	60	30	ATF	XTL-3042
HC49S	8	30	50	70	30	ATF	XTL-3044
HC49S	9.8304	30	50	60	30	ATF	XTL-3048
HC49S	10	30	50	70	30	ATF	XTL-3052
HC49S	11.0592	30	50	70	30	ATF	XTL-3060
HC49S	12	30	50	70	30	ATF	XTL-3064
HC49S	16	30	50	70	30	ATF	XTL-3069
HC49S	18.432	30	50	60	30	ATF	XTL-3074
HC49S	20	30	50	70	12	ATF	XTL-3078
HC49S	24	50	50	60	30	ATF	XTL-3085

SMD Clock Oscillator - DXO-57

Outline Drawing

Dimension (Unit=mm)

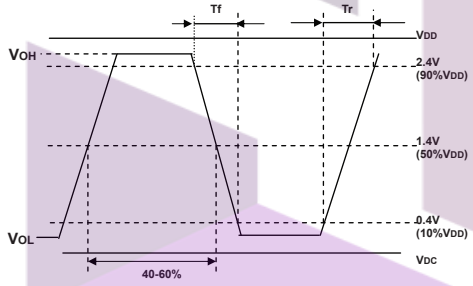


Pin	Connection
1	NC or INH
2	Vss
3	Output
4	+VDD

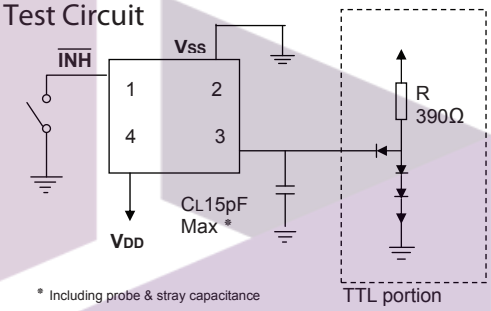
Type	L	W	H	L1	P1	P2	L2	W2	P3	P4
DXO-75	7.0 ±0.15	5.0 ±0.15	1.4 ±0.2	5.08±0.15	1.4±0.1	1.2±0.1	6.4±0.15	2.54±0.15	2.2±0.1	1.4±0.1

Quartz crystal oscillators house a small 5x7mm package. Choice of 3.3V and 5V supply versions.
• General, Microprocessor • Ultra Thin Ceramic Package • Cost effective • Surface mount •
• HCMOS/TTL output • Tri-state option • Supplied taped and reeled.

Output Waveform



Test Circuit



Specification

Nominal Frequency Range	1.5 to 23.99MHz	24 to 49.99MHz	50 to 80MHz
Frequency Toleration	±50ppm (Options: ±25, ±100ppm)		
Operating Temperature Range	0°C to +70°C		
Storage Temperature Range	-40°C to +85°C		
Supply Voltage (V_{DD})	3.3V or 5V ±10%		
Current Consumption (max.)	25mA	40mA	50mA
Output Symmetry at 1/2V_{DD}	40% to 60% (standard), 45% to 55% tight		
Output Load	15pF HCMOS or 10TTL		
Output Level "L" (max.)	10% V_{DD} HCMOS or +0.4VDC TTL		
Output Level "H" (min.)	90% V_{DD} HCMOS or +2.4VDC TTL		
Rise/Fall Time (10%-90% V_{DD})(max.)	10ms		
Start up Time (max.)	10ms		
Stand by function	Tri State		

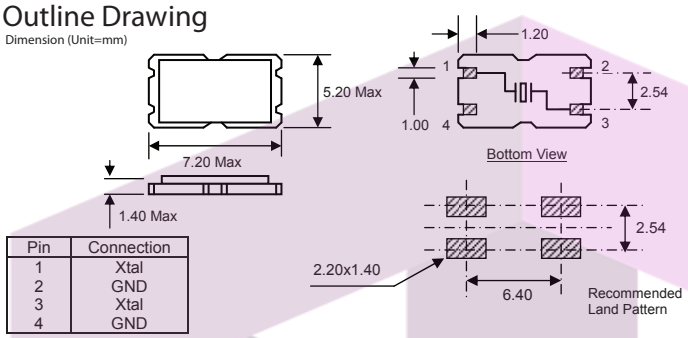
Part Number Guide:

Case	Frequency (MHz)	Freq. Tol (PPM)	Symmetry	Input Voltage	Ant Part No.
DXO57	4	50	T	3.3	DXO-2014
DXO57	8	50	T	3.3	DXO-2022
DXO57	10	50	T	3.3	DXO-2028
DXO57	12	50	T	3.3	DXO-2033
DXO57	16	50	T	3.3	DXO-2026
DXO57	20	50	T	3.3	DXO-2034
DXO57	24	50	T	3.3	DXO-2037
DXO57	32.768	50	T	3.3	DXO-2041
DXO57	40	50	T	3.3	DXO-2052
DXO57	50	50	T	3.3	DXO-2059
DXO57	60	50	T	3.3	DXO-2066
DXO57	80	50	T	3.3	DXO-2070
DXO57	100	50	T	3.3	DXO-2081

Crystal Unit - DX-57

Outline Drawing

Dimension (Unit=mm)



Pin	Connection
1	Xtal
2	GND
3	Xtal
4	GND

Features & Applications:

- Communication Equipment, PDA's, Wireless security systems
- Cost Effective
- Surface Mount
- Ultra thin ceramic package
- Size 5 x 7mm
- Height 1.4mm max.

Supplied taped and reeled.

Specification

Nominal Frequency Range	10 to 30MHz	30 to 60MHz
Vibration Mode	Fundamental (AT)	3rd Overtone (AT)
Frequency Tolerance @25°C	±20, ± 30 or ±50ppm	
Temperature Stability	±30 or ± 50 ppm	
Operating Temperature Range	-20°C to +70°C	
Storage Temperature Range	-30°C to +80°C	
Load Capacitance	8pF to 32pF or series	
Equivalent Series Resistance	see ESR table below	
Shunt Capacitance	7pF max	
Drive Level	100 µW max	
Insulation Resistance	500MΩmin @ 100VDC	
Aging	±5ppm per year	

ESR Table

Case Frequency	Vibration Mode	DX-57 Ω Max
10-13.99 MHz	F	60
14-30.0 MHz	F	50
30-60.0MHz	3	100

Part Number Guide:

Case	Frequency (MHz)	Freq. Tol (PPM)	Temp Stability (PPM)	Temp Range 60 = -10~+60 70 = -20~+70	Load Cap pf 00 = Series	Vibration Mode AT Cut F=Fund.3 Overtone	Ant Part No.
DX57	10	30	50	70	20	ATF	XTL-7024
DX57	11.0592	30	50	70	20	ATF	XTL-7026
DX57	12	30	50	70	20	ATF	XTL-7029
DX57	18.432	30	50	70	20	ATF	XTL-7036
DX57	19.6608	30	50	70	20	ATF	XTL-7040
DX57	24	30	50	70	20	ATF	XTL-7047
DX57	27	30	50	70	20	ATF	XTL-7052
DX57	32	30	50	70	20	AT3	XTL-7056