

Quartz Crystals

H49

10.7 * 4.5 * 13.2 mm

HUS

10.7 * 4.3 * 3.5 mm

HUSL

10.7 * 4.3 * 2.5 mm

Thru - Hole

Fund.

3rd O.T.

Min.

1.8 MHz

Max.

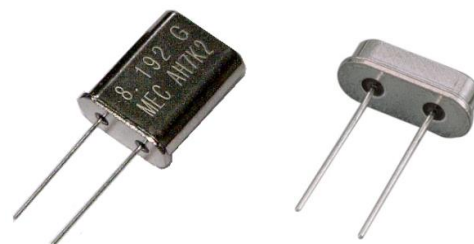
100 MHz

Features

Specifications

- Tight tolerance and stability. Ideal for communication equipment
- RoHS complian
- H49 (13.2mm height) & HUS (3.5mm height) & HUSL (2.5mm height)
- Low cost and light weight

General Specifications



Item / Type	H49 (10.7 * 4.5 * 13.2 mm) series	HUS (10.7 * 4.3 * 3.5 mm) series	HUSL (10.7 * 4.3 * 2.5 mm) series
Frequency Range & Crystal Cut	1.8432 ~ 100.000 MHz (see Table 1)	3.200 ~ 48.000 MHz , AT-cut , Fundamental Mode (see Table 2) 30.000 ~ 100.000 MHz , AT-cut , 3rd overtone (see Table 2)	
	For specific details , please feel free to contact us.		
Load Capacitance	Series or Parallel (8 to 32 pF) resonance		
Drive Level	100 μ W (typ.) 500 μ W (max.)		
Frequency Tolerance	$\pm$ 10 ppm , $\pm$ 20 ppm or $\pm$ 30 ppm (max.) at 25°C		
Frequency Stability	See Table 3		
Aging	Δ F / F : $\pm$ 5 ppm & $\pm$ 3 ppm year (max.)		
Storage Temperature Range	- 55°C to 125°C		

Table 1

H49 ESR (Equivalent Series Resistance)					
Freq.(MHz)	E.S.R.	Osc. Mode	Freq.(MHz)	E.S.R.	Osc. Mode
1.8 ~ 1.9	650 Ω	AT , Fund.	4.0 ~ 4.9	70 Ω	AT , Fund.
2.0 ~ 2.4	450 Ω		5.0 ~ 7.9	60 Ω	
2.5 ~ 2.9	350 Ω		8.0 ~ 9.9	30 Ω	
3.0 ~ 3.9	90 Ω		10.0 ~ 50.0	30 Ω	
			30.0 ~ 100.0	60 Ω	AT , 3rd

Table 2

HUS & HUSL ESR (Equivalent Series Resistance)					
Freq.(MHz)	E.S.R.	Osc. Mode	Freq.(MHz)	E.S.R.	Osc. Mode
3.2 ~ 3.4	300 Ω	AT , Fund.	30.0 ~ 50.0	100 Ω	AT , 3rd
3.5 ~ 6.0	120 Ω		50.1 ~ 100.0	80 Ω	
6.1 ~ 10.0	60 Ω				
10.1 ~ 48.0	40 Ω				

Table 3

Frequency stability vs Operating temperature range								
Stability code	Temp. (°C) \ ppm	± 5	± 10	± 15	± 20	± 25	± 30	± 50
X	-10 to 60°C	○	○	○	○	○	○	○
Y	-20 to 70°C	▲	○	○	○	○	○	○
I	-40 to 85°C		▲	○	○	○	○	○

○ : available ; ▲ : contact Mercury

Outline Dimensions (Unit : mm)

H49	HUS / HUSL						
	<table border="1"> <tr> <th>MEC P/N</th><th>H (height)</th></tr> <tr> <td>HUSL</td><td>2.5 $\pm$ 0.2 mm</td></tr> <tr> <td>HUS</td><td>3.5 $\pm$ 0.2 mm</td></tr> </table>	MEC P/N	H (height)	HUSL	2.5 $\pm$ 0.2 mm	HUS	3.5 $\pm$ 0.2 mm
MEC P/N	H (height)						
HUSL	2.5 $\pm$ 0.2 mm						
HUS	3.5 $\pm$ 0.2 mm						

Part Number Formats and Product Marking Rules

Quartz Crystals

Holder Type

SMD type : X11 X21 X22 X32 MJ MQ M49 ML49 MP5 MP4 MP25 MP24
X2012 X3215
Dip type : H49 HUS HUSL U1 U5 T38 T26

Part Number Format

	[1] Holder Type	-	[2] Center Freq.	-	[3] CL	-	[4] Freq. Tolerance	/	[5] Freq. Stability	[6] Operating Temp. Range Code	/	[7] Special ESR
Example	(1) H49	-	40.000A3	-	12	-	30	/	30	X		
	(2) X32	-	26.000	-	16	-	30	/	30	X	/	20R
	(3) MJ	-	12.000	-	20	-	10	/	10	W		
	(4) M49	-	24.000	-	18	-	20	/	30	H	/	15R

Ex (1) : H49 - 40.000A3 - 12 - 30 / 30 X [49/U type , 40.000MHz , AT-cut 3rd overtone , 12pF , ±30ppm (25°C) , ±30ppm (-10°C to 60°C)]

Ex (2) : X32 - 26.000 - 16 - 30 / 30 X / 20R [X32 type , 26.000MHz , 16pF , ±30ppm (25°C) , ±30ppm (-10°C to 60°C) , 20 Ω]

Ex (3) : MJ - 12.000 - 20 - 10 / 10 W [MJ type , 12.000MHz , 20pF , ±10ppm (25°C) , ±10ppm (0°C to 50°C)]

Ex (4) : M49 - 24.000 - 18 - 20 / 30 H / 15R [M49 type , 24.000MHz , 18pF , ±20ppm (25°C) , ±30ppm (-30°C to 85°C) , 15 Ω]

[1]	Holder Type										
[2]	Center frequency . Please add " A3 , A5 or B " after the " Freq. in MHz " for the quartz cut other options . Blank : AT-cut fund. mode ; A3 : AT-cut 3rd overtone ; A5 : AT-cut 5th overtone ; B : BT-cut fund. mode ; SL : SL-cut fund. mode										
[3]	Load Capacitance (CL) : series (spec. code is " S ") or										
	Parallel (If parallel , please specify CL value , typical CL ranges from 8 to 32 pF)										
	Available Options " V " = Vinyl sleeve around holder , " K " = 3rd lead at bottom center , " R " = On reel " G " = 3rd lead at top center , " I " = Teflon insulator at bottom										
[4]	Calibration tolerance value : freq. tolerance value (at 25°C) , industrial temp. range										
[5]	Frequency Stability , industrial temp. range										
[6]	Temp. Range Options	W	0°C ~ +50°C	X	-10°C ~ +60°C	Y	-20°C ~ +70°C	F	-30°C ~ +70°C	G	-10°C ~ +80°C
		H	-30°C ~ +85°C	I	-40°C ~ +85°C	J	-40°C ~ +90°C	K	-40°C ~ +105°C	M	-55°C ~ +105°C
		N	-55°C ~ +125°C								
	Temp. Range is -10°C to 60°C , for example " X "										
[7]	If non-standard please enter the desired Temp. Range after " / " , for example " -20 + 60 " : -20°C to 60°C										
	If non-standard please enter the desired ESR (Equivalent Series Resistance) after " / " , for example " 20R " : 20Ω										

Production Marking Rules

General X'tal package type marking rules	MQ, MJ marking rules	X22, X32 marking rules
Frequency Lot code (Cutting method) : A : AT-cut (fundamental) B : BT-cut (fundamental) 3 : AT-cut (3rd overtone) 5 : AT-cut (5th overtone) SL : SL-cut (fundamental) (month) : Table 2 ex : 2024 - 4 Load capacitance (CL) : Table 1	Freq. Lot code (Month) --- Table 2 (Year) --- 2020 --- 0 2021 --- 1 Load capacitance (CL) : Table 1 (Cutting method) : A : AT-cut , fundamental B : BT-cut , fundamental 3 : AT-cut , 3rd overtone 5 : AT-cut , 5th overtone	Freq. Load capacitance (CL) : Table 1 lot code : (Month)--- Table 2 (Year) 2020 --- 0 2021 --- 1
X11 marking rules		X21 marking rules
Freq. (Month)--- Table 2 (Year) 2020 --- 0 2021 --- 1		Freq. Load capacitance (CL) : Table 1 (Month)--- Table 2 (Year) 2020 --- 0 2021 --- 1

Table 1	CL	< 10	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	>34	Series
	Code	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	a	b

Table 2	Month	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
	Code	A	B	C	D	E	F	G	H	I	J	K	L