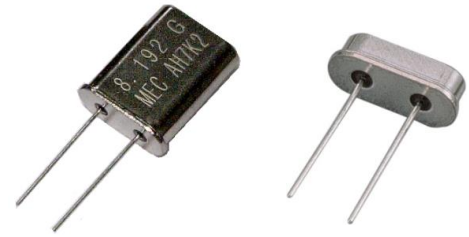


Quartz Crystals

H49	HUS	HUSL	Thru - Hole	Fund.	3rd O.T.	Min. 1.8 MHz	Max. 100 MHz
10.7 * 4.5 * 13.2 mm	10.7 * 4.3 * 3.5 mm	10.7 * 4.3 * 2.5 mm					



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 μW (typ.) 500 μW (max.)		
Frequency Tolerance	± 10 ppm , ± 20 ppm or ± 30 ppm (max.) at 25°C		
Frequency Stability	See Table 3		
Aging	ΔF / F : ± 5 ppm & ± 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	

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" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>MEC P/N</th> <th>H (height)</th> </tr> </thead> <tbody> <tr> <td>HUSL</td> <td>2.5 ± 0.2 mm</td> </tr> <tr> <td>HUS</td> <td>3.5 ± 0.2 mm</td> </tr> </tbody> </table>	MEC P/N	H (height)	HUSL	2.5 ± 0.2 mm	HUS	3.5 ± 0.2 mm
MEC P/N	H (height)						
HUSL	2.5 ± 0.2 mm						
HUS	3.5 ± 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

Dip type : H49 HUS HUSL U1 U5

Part Number Format and Example

	[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																														
	<table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <tr> <td>W</td> <td>0°C ~ +50°C</td> <td>X</td> <td>-10°C ~ +60°C</td> <td>Y</td> <td>-20°C ~ +70°C</td> <td>F</td> <td>-30°C ~ +70°C</td> <td>G</td> <td>-10°C ~ +80°C</td> </tr> <tr> <td>H</td> <td>-30°C ~ +85°C</td> <td>I</td> <td>-40°C ~ +85°C</td> <td>J</td> <td>-40°C ~ +90°C</td> <td>K</td> <td>-40°C ~ +105°C</td> <td>L</td> <td>-40°C ~ +125°C</td> </tr> <tr> <td>M</td> <td>-55°C ~ +105°C</td> <td>N</td> <td>-55°C ~ +125°C</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>	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	L	-40°C ~ +125°C	M	-55°C ~ +105°C	N	-55°C ~ +125°C						
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																						
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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

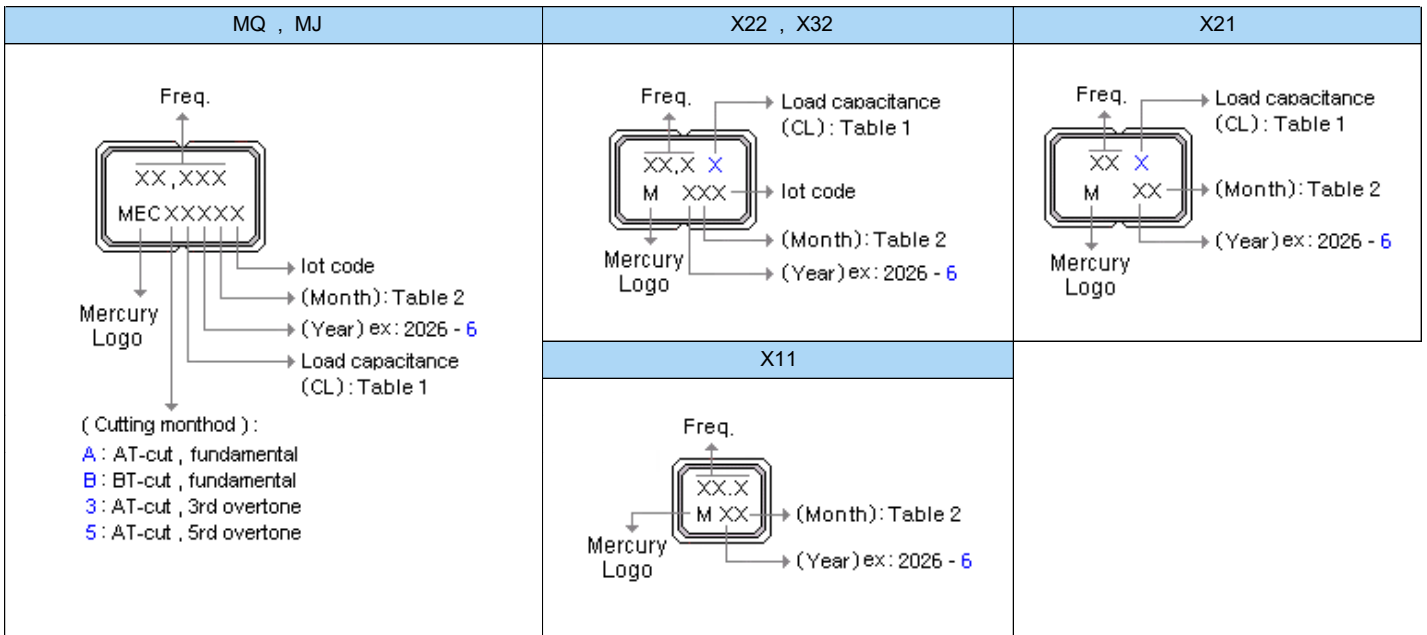


Table 1	CL	< 10	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	>34	Series
	Code	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	a	b

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

Part Number Formats and Product Marking Rules

Quartz Crystals

Production Marking Rules

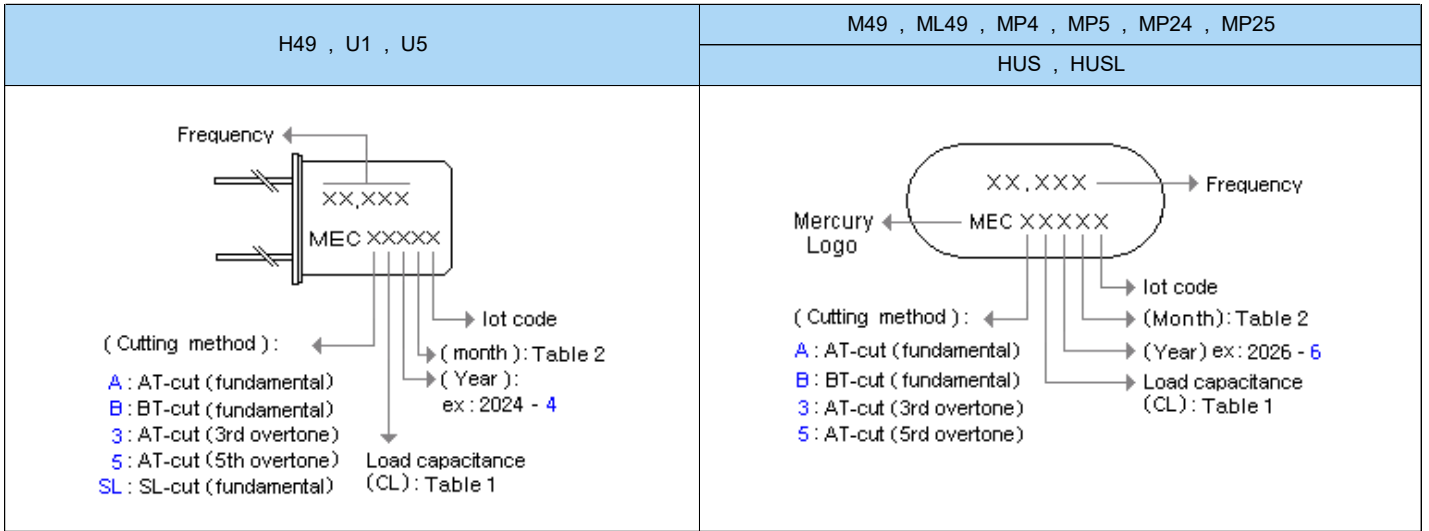


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