



This product represents our selection of low profile resistance weld type quartz crystals.

- OPTIONS:
- extended temperature range
 - tighter tolerances
 - mylar spacer
 - 3rd in line lead base
 - radial tape and reel (1,000 pcs)

FEATURES

- Cost effective
- Excellent aging
- Wide frequency range
- Low profile
- Excellent reliability
- "AT strip" blank technology

PART NUMBERING GUIDE "EXAMPLE"

| ECS | FREQUENCY (16.0000 MHz) | LOAD CAPACITANCE* | PACKAGE TYPE** |
|-----|-------------------------|-------------------|----------------|
| - | 160 | 20 | 4 |

* Load capacitance (xx=xx pF, S= series resonance), ** Package Type examples (4= 3.5mm max. height, 4L= 2.5mm max. height)
 For extended temp range of -40 to +85°C ad -DN suffix for example ECS-160-20-4-DN
 Note: See Product Selection Guide for additional options.

OPERATING CONDITIONS/ELECTRICAL CHARACTERISTICS

| PARAMETERS | CONDITIONS | MINIMUM | MAXIMUM | UNITS |
|---------------------------------|----------------------------|---------|---------|-------|
| FREQUENCY RANGE | f_0 | 3.57 | 70.000 | MHz |
| FREQUENCY TOLERANCE | @ +25°C | | ±30 | PPM |
| FREQUENCY STABILITY, ref @ 25°C | Standard -10 ~ +70°C | | ±50 | PPM |
| | "DN" Option -40 ~ +85°C | | ±100 | PPM |
| OPERATING TEMPERATURE | Standard | -10 | +70 | °C |
| | DN option | -40 | +85 | °C |
| STORAGE TEMPERATURE | | -40 | +105 | °C |
| SHUNT CAPACITANCE | C_0 | | 7.0 | pF |
| LOAD CAPACITANCE | C_L (Customer Specified) | 10.0 | Series | pF |
| DRIVE LEVEL | 3.57 ~ 70.000MHz | | 0.5 | mW |
| AGING (FIRST YEAR) | @ +25°C | | ±5.0 | PPM |

EQUIVALENT SERIES RESISTANCE / MODE OF OSCILLATION

| FREQUENCY RANGE (MHz) | MODE | MAX ESR Ω | FREQUENCY RANGE (MHz) | MODE | MAX ESR Ω |
|-----------------------|-------------|-----------|-----------------------|-------------|-----------|
| 3.570 ~ 3.999 | Fundamental | 200 | 9.000 ~ 12.999 | Fundamental | 60 |
| 4.000 ~ 4.999 | Fundamental | 150 | 13.000 ~ 19.999 | Fundamental | 40 |
| 5.000 ~ 5.999 | Fundamental | 120 | 20.000 ~ 30.000 | Fundamental | 30 |
| 6.000 ~ 6.999 | Fundamental | 100 | 27.000 ~ 70.000 | 3rd O/T | 100 |
| 7.000 ~ 8.999 | Fundamental | 80 | | | |

PACKAGE DIMENSIONS (mm)



| Height "H" (max.) | |
|-------------------|--------|
| -4 | 3.5 mm |
| -4L | 2.5 mm |



Figure 3) Frequency vs Temperature Curve

Figure 1) HC-49US - Top and Side views

Figure 2) HC-49US - 3rd In Line Lead Base - Side & Bottom View

Mouser Electronics

Authorized Distributor

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ECS:

[ECS300-S-4-F](#) [ECS-98.3-20-4](#) [ECS-120.003-18-4](#) [ECS-162.5-S-4](#) [ECS-122.8-20-4](#) [ECS-110.5-S-4](#) [ECS-180-20-4](#)
[ECS-115.2-S-4](#) [ECS-162.5-20-4](#) [ECS-59.9-20-4](#) [ECS-110.5-32-4](#) [ECS-245.7-20-4](#) [ECS-196.6-S-4](#) [ECS-100-18-4](#)
[ECS-107.3-S-4](#) [ECS-76.8-20-4](#) [ECS-147.4-S-4](#) [ECS-184-18-4](#) [ECS-204.8-20-4](#) [ECS-122.8-S-4](#) [ECS-196.6-20-4](#)
[ECS-110.5-20-4](#) [ECS-119.8-S-4](#) [ECS-240.001-18-4](#) [ECS-147.4-20-4](#) [ECS-160.003-18-4](#) [ECS-92.1-20-4](#) [ECS-250-18-4-F-3IL](#) [ECS-80-18-4-31L](#) [ECS-250-15-4-FX](#) [ECS-184-S-4 18.432 MHZ](#) [ECS-115.2-18-4B](#) [ECS-17.1776-20-4](#)