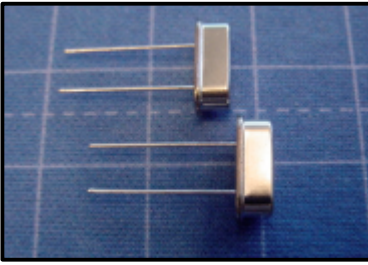


HC-49US-DN Extended Temp Range Crystal



The HC-49US-DN is the extended temp range version of our standard HC-49US crystal. The DN version has an operating temperature of -40 to +85°C and a frequency stability of ± 100 ppm. The HC-49US-DN is a low cost option for today's industrial applications.

FEATURES

- Cost effective
- Resistance-weld sealing
- Extended Temp range

PART NUMBERING GUIDE "EXAMPLE"

| ECS | - | FREQUENCY (4.000 MHz) | - | LOAD CAPACITANCE* | - | PACKAGE TYPE ** | - | Suffix |
|-----|---|-----------------------|---|-------------------|---|-----------------|---|--------|
| ECS | - | 40 | - | 20 | - | 4 | - | DN |

* Load Capacitance (xx=xx pF, S=series resonance) ** Package Type examples (-4=3.5 mm max. height, -4L = 2.5 mm max. height)
 DN Suffix, D= ± 100 ppm frequency stability, N = -40 to +85°C temp range

OPERATING CONDITIONS/ELECTRICAL CHARACTERISTICS

| PARAMETERS | CONDITIONS | MINIMUM | TYPICAL | MAXIMUM | UNITS |
|----------------------------------|--|----------|----------|-----------|-------|
| FREQUENCY RANGE | | 3.579545 | | 70.000 | MHz |
| CALIBRATION TOLERANCE | @ +25°C | | | ± 30 | PPM |
| FREQUENCY STABILITY, ref @25°C | -40 ~ +85°C | | | ± 100 | PPM |
| SHUNT CAPACITANCE | | | | 7 | pF |
| LOAD CAPACITANCE | C _L (Customer Specified) | 10 | 20.0 std | Series | pF |
| DRIVE LEVEL | DL | | | 500 | μW |
| OPERATING TEMPERATURE | T _{OPR} | -40 | | +85 | °C |
| STORAGE TEMPERATURE | T _{STG} | -40 | | +105 | °C |
| AGING CHARACTERISTICS (Per Year) | @ +25°C $\pm 3^\circ\text{C}$ per year | | | ± 5 | PPM |

EQUIVALENT SERIES RESISTANCE / MODE OF OSCILLATION

| FREQUENCY RANGE (MHz) | MODE OF OSC. | MAX. ESR (W) | FREQUENCY RANGE (MHz) | MODE OF OSC. | MAX. ESR (W) |
|-----------------------|--------------|--------------|-----------------------|--------------|--------------|
| 3.579545 - 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 | 100 | 20.000 - 30.000 | Fundamental | 30 |
| 6.000 - 6.999 | Fundamental | 80 | 27.000 - 70.000 | 3rd O/T | 100 |
| 7.000 - 8.999 | Fundamental | 80 | | | |

PACKAGE DIMENSIONS (mm)

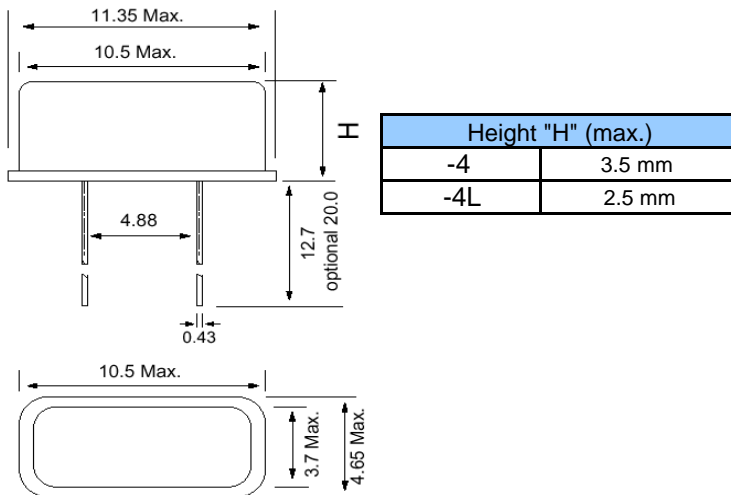


Figure 1) HC-49US-DN - Top and Side Views