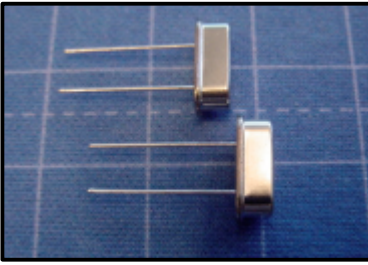


# HC-49US-DN Extended Temp Range Crystal



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  $\pm 100$  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=  $\pm 100$  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			$\pm 30$	PPM
FREQUENCY STABILITY, ref @25°C	-40 ~ +85°C			$\pm 100$	PPM
SHUNT CAPACITANCE				7	pF
LOAD CAPACITANCE	C <sub>L</sub> (Customer Specified)	10	20.0 std	Series	pF
DRIVE LEVEL	DL			500	$\mu$ W
OPERATING TEMPERATURE	T <sub>OPR</sub>	-40		+85	°C
STORAGE TEMPERATURE	T <sub>STG</sub>	-40		+105	°C
AGING CHARACTERISTICS (Per Year)	@ +25°C $\pm 3^\circ$ C per year			$\pm 5$	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)

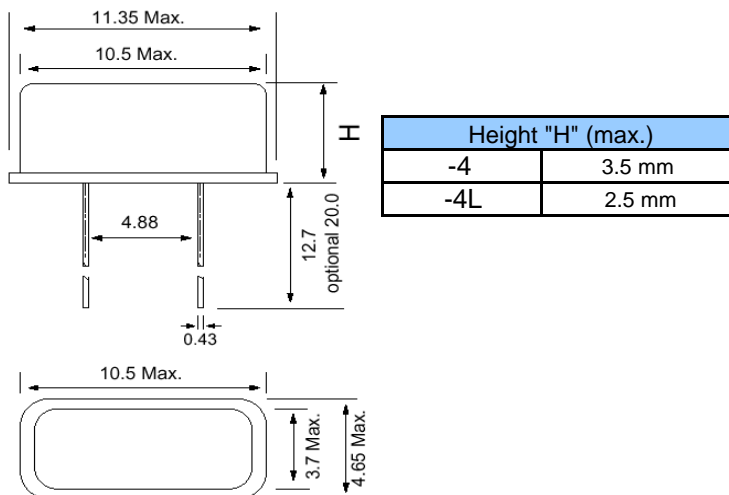


Figure 1) HC-49US-DN - Top and Side Views