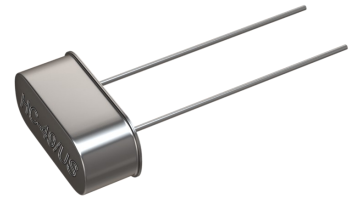


# THT QUARTZ CRYSTAL

## SERIES HC-49/US

### FEATURES

- + High reliability for low cost
- + Low profile—3.5 and 2.5 mm max. package height
- + Extended temperature range to -40/+125°C
- + Excellent clock signal generator for CPU 's
- + Qualified for automotive applications



### GENERAL DATA

PB FREE / ROHS-2 2011/65/EU COMPLIANT

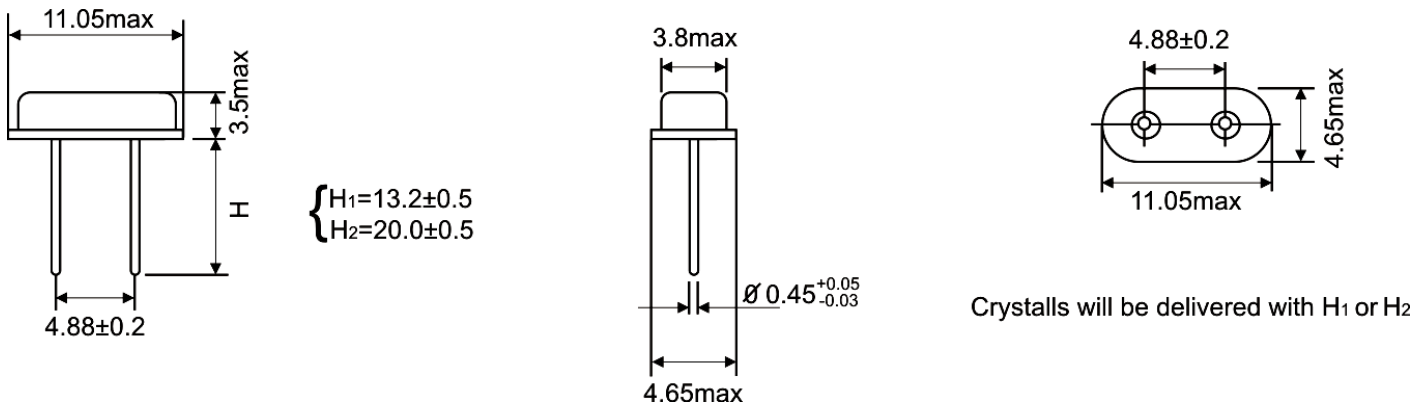
| PARAMETERS                          | PRODUCT FEATURES AND CONDITIONS  |
|-------------------------------------|--|
| SMD-CRYSTAL SERIES                  | HC-49/U  |
| NUMBER OF LEADS                     | HC-49/US = 2 (standard)<br>HC-49/3US = 3 (middle pin for grounding)                                      |
| OPTIONS FOR HOUSING                 | Insulator = for 2 leads and 3 leads housing<br>Cutted leads = only for 2 leads housing                   |
| FREQUENCY RANGE                     | 3.48755 ~ 36.0 MHz AT-Fundamental<br>24.0 ~ 44.0 MHz BT-Fundamental<br>24.576 ~ 75.0 MHz 3rd Overtone    |
| FREQUENCY TOLERANCES AT 25°C        | ±5 ppm ~ ±50 ppm   |
| LOAD CAPACITANCE (C <sub>L</sub> )  | 6 pF ~ 50 pF or Series   |
| WORKING TEMPERATURE RANGES          | 0/+50°C ~ -40/+125°C   |
| SHUNT CAPACITANCE (C <sub>0</sub> ) | 7 pF max.  |
| DRIVE LEVEL                         | 100 µW typical (0.01 mW ~ 1 mW possible on request)  |
| AGING                               | ±3 ~ ±5 ppm per year standard (±2 ppm available as option)   |
| INSULATION RESISTANCE               | >500 MΩ DC/100V ±10%   |
| STORAGE TEMPERATURE                 | -55°/+125°C  |
| DELIVERY FORM                       | Standard = Bulks for 2 leads and 3 leads housing<br>Option = Paper Tape on Reel only for 2 leads housing |

[OTHER PARAMETERS ARE AVAILABLE ON REQUEST / CREATE HERE YOUR SPECIFICATION](#)

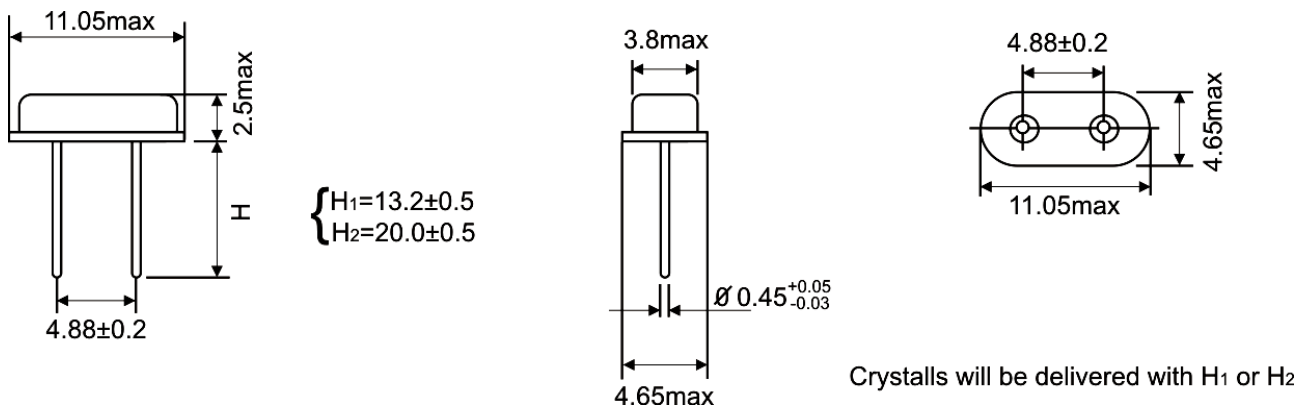
### FREQUENCY STABILITY VS. TEMPERATURE

|             | ±3ppm | ±5ppm | ±10ppm | ±15ppm | ±20ppm | ±30ppm | ±50ppm |
|-------------|-------|-------|--------|--------|--------|--------|--------|
| 0°/+50°C    | +     | +     | +      | +      | +      | +      | +      |
| -10°/+60°C  |       | +     | +      | +      | +      | +      | +      |
| 0°/+70°C    |       |       | +      | +      | +      | +      | +      |
| -20°/+70°C  |       |       | +      | +      | +      | +      | +      |
| -40°/+85°C  |       |       |        | +      | +      | +      | +      |
| -40°/+105°C |       |       |        |        |        | +      | +      |
| -55°/+125°C |       |       |        |        |        |        | +      |

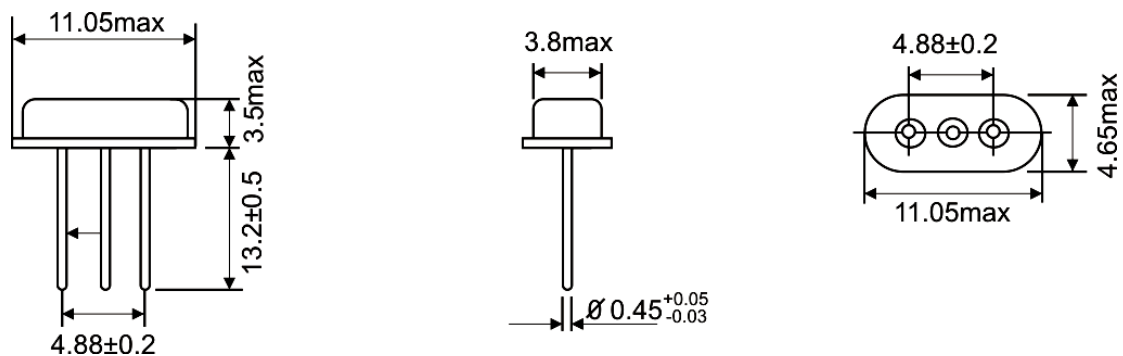
## DIMENSIONS OF HC-49/US (standard package height of 3.5mm max.)



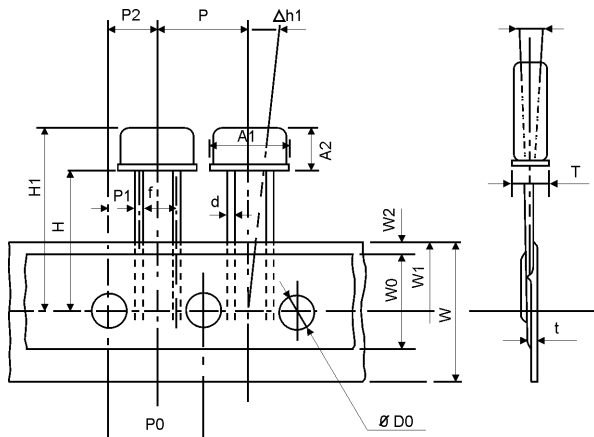
## DIMENSIONS OF HC-49/US (optional package height of 2.5mm max.)



## DIMENSIONS OF HC-49/3US



## REEL SPECIFICATION OF HC-49/US (only for 2pin Housing)



| Description                         | Symbol | Dimensions                                |
|-------------------------------------|--------|---|
| Outside Diameter of Part            | A1x A2 | 11.1x3.5                                  |
| Thickness of Part                   | T      | 5.0max                                    |
| Lead Wire Diameter                  | d      | Ø0.43 <sup>+0.05</sup> / <sub>-0.02</sub> |
| Interval Spacing of Part            | P      | 12.7±1.0                                  |
| Pitch to Leading Hole               | P0     | 12.7±1.0                                  |
| Tolerance of Leading Hole           | P1     | 3.85±0.7                                  |
|                                     | P2     | 6.35±1.0                                  |
| Lead Pitch                          | F      | 5.0 <sup>+0.5</sup> / <sub>-0.2</sub>     |
| Inclination                         | Δ h    | 0±1.0                                     |
| Tape Width                          | W      | 18.2±0.2                                  |
| Adhesive Tape Width                 | W0     | 13.0 <sup>+0.8</sup> / <sub>-0.2</sub>    |
| Tolerance of Leading Hole(Vertikal) | W1     | 9.0±0.5                                   |
| Tolerance of Cover Tape             | W2     | 2.0max                                    |
| Bottom Surface Position of Part     | H      | 20.5±0.5                                  |
| Top Surface Position of Part        | H1     | 24.0max                                   |
| Hole Diameter                       | D0     | Ø4.0±0.2                                  |
| Tape Thickness                      | t      | 0.7±0.1                                   |
| Inclination                         | Δ h1   | 0±1.0                                     |

Unit:mm

## ORDERING INFORMATION

SERIES  
HC-49/US  
OR  
HC-49/3US

FREQUENCY  
3.48755 ~ 36.0 MHz  
AT-FUNDAMENTAL  
24.0 ~ 44.0 MHz BT-FUNDAMENTAL  
24.576 ~ 75.0 MHz  
3rd OVERTONE

FREQUENCY TOLERANCE  
AT 25°C  
±5 PPM ~ ±50 PPM

TEMPERATURE RANGE  
0°/+50°C  
-10°/+60°C  
0°/+70°C  
-20°/+70°C  
-40°/+85°C  
-40°/+125°C  
-55°/+125°C

HC-49/US 3.5 27.000 MHz 30/50/-40+125/20pF

HOUSING  
3.5 mm  
2.5 mm

TEMPERATURE STABILITY  
See Table  
„FREQUENCY STABILITY VS. TEMPERATURE“

LOAD CAPACITANCE  
6 pF ~ 50 pF or Series

EXAMPLE: HC-49/US 3.5 27.000 MHz 30/50/-40+125/20pF  
PLEASE INDICATE YOUR REQUIRED PARAMETERS

## RESONANCE RESISTANCE

| FREQUENCY IN MHz | VIBRATION MODE | ESR MAX. IN $\Omega$ |
|------------------|----------------|----------------------|
| 3.5 ~ 3.79 MHz   | AT Fund.       | 120                  |
| 3.9 ~ 4.99 MHz   | AT Fund.       | 100                  |
| 4.5 ~ 5.99 MHz   | AT Fund.       | 90                   |
| 6.0 ~ 6.99 MHz   | AT Fund.       | 70                   |
| 7.0 ~ 7.99 MHz   | AT Fund.       | 70                   |
| 8.0 ~ 8.99 MHz   | AT Fund.       | 60                   |
| 9.0 ~ 9.99 MHz   | AT Fund.       | 60                   |
| 10.0 ~ 11.99 MHz | AT Fund.       | 50                   |
| 12.0 ~ 19.99 MHz | AT Fund.       | 40                   |
| 20.0 ~ 26.99 MHz | AT Fund.       | 30                   |
| 27.0 ~ 40.00 MHz | AT Fund.       | 25                   |
| 27.0 ~ 40.00 MHz | 3rd OT AT      | 100                  |
| 40.0 ~ 40.00 MHz | 3rd OT AT      | 60                   |

## REVISION HISTORY

| REVISION | RELEASE DATE | AMENDMENTS SUMMARY   |
|----------|--------------|--|
| 0.0      | APRIL 2015   | + Initial Data Sheet (SPEC 01/REV.00)  |
| 0.1      | OCTOBER 2016 | + Revised frequency ranges, frequency stability, dimensions of HC-49/US and HC-49/3US<br>+ Added additional operating temperature range (-55°C to 125°C) |



## PREMIUM QUALITY BY PETERMANN-TECHNIK



OUR COMPANY IS CERTIFIED ACCORDING TO ISO 9001:2008 IN OCTOBER 2013 BY THE DMSZ CERTIFIKATION GMBH.

THIS IS FOR YOU TO ENSURE THAT THE PRINCIPLES OF QUALITY MANAGEMENT ARE FULLY IMPLEMENTED IN OUR QUALITY MANAGEMENT SYSTEM AND QUALITY CONTROL METHODS ALSO DOMINATE OUR QUALITY STANDARDS.