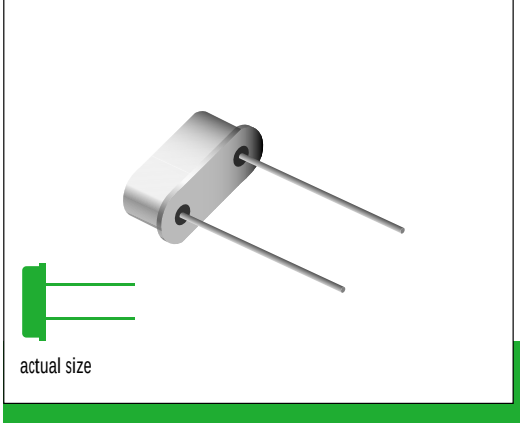

actual size

# SS series • SS4

## low profile quartz crystal

**features**

- pin layout like HC49/U
- extended temperature range

| **type** | **SS4** (HC49/U4H) | | | |
|---|---|---|---|---|
| frequency | 3.579545 MHz ~ 26.0 MHz fundamental AT-cut | | | 24.0 MHz ~ 40.0 MHz |
| | 27.0 MHz ~ 50.0 MHz 3rd overtone AT-cut | | | fundamental BT-cut |
| frequency tolerance at 25 °C | ± 30 ppm | ± 30 ppm | ± 30 ppm | ± 50 ppm |
| frequency temp. characteristic | ± 50 ppm (< 8.0 MHz) | ± 30 ppm (> 8.0 MHz) | ± 100 ppm | +10 ppm / -90 ppm |
| operating temperature | -20 °C ~ +70 °C | -20 °C ~ +70 °C | -40 °C ~ +85 °C | -20 °C ~ +70 °C |
| storage temperature | -40 °C ~ +90 °C | -40 °C ~ +90 °C | -40 °C ~ +90 °C | -40 °C ~ +90 °C |
| load capacitance $C_L$ | 12 pF ~ 30 pF / series | 12 pF ~ 30 pF / series | 12 pF ~ 30 pF / series | 12 pF ~ 30 pF / series |
| shunt capacitance $C_0$ | < 7 pF | < 7 pF | < 7 pF | < 7 pF |
| drive level max. | 100 µW | 100 µW | 100 µW | 100 µW |
| aging | < ± 5 ppm | < ± 5 ppm | < ± 5 ppm | < ± 5 ppm |

### order information example:

**Q - 3.579545 - SS4 - 16 - 30 / 30 - TR**

1. 2. 3. 4. 5. 6. 7.

| | |
|---|---|
| 1. quartz: | Q |
| 2. frequency: | 3.579545 MHz |
| 3. type: | SS4 (HC49/U4H) |
| 4. load capacitance: | 16 pF |
| 5. frequency stability at 25 °C: | ± 30 ppm |
| 6. frequency vs temperature: | ± 30 ppm |
| 7. special requirement: | taped (see option table) |

### option table:

- MP – middle pin
- TR – taped
- IS – insulation spacer
- LL – lead length
- FUND – fundamental tone
- BT – BT-cut
- 3 OT – 3rd overtone
- T1 – -40 °C ~ +85 °C

### date code

| | Jan. | Febr. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1999 | a | b | c | d | e | f | g | h | j | k | l | m |
| 2000 | n | p | q | r | s | t | u | v | w | x | y | z |
| 2001 | A | B | C | D | E | F | G | H | J | K | L | M |
| 2002 | N | P | Q | R | S | T | U | V | W | X | Y | Z |

### marking:

frequency with $C_L$ code / company code / date code / internal code

### example:

**3 a 579 J n**

- n – date code / internal code
- J – company code
- 579 – load capacitance code (T = 3rd OT)
- a – frequency in MHz (4 digits max.)
- 3 –

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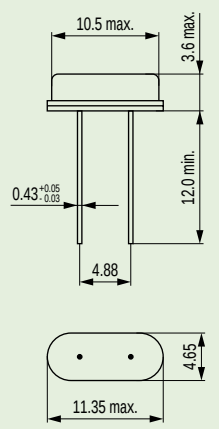
Jauch Quartz GmbH • Telephone: (+49) 77 20 / 9 45-0 • Telefax: (+49) 77 20 / 9 45-100 • Internet: www.jauch.de • e-mail: hcj@jauch.de

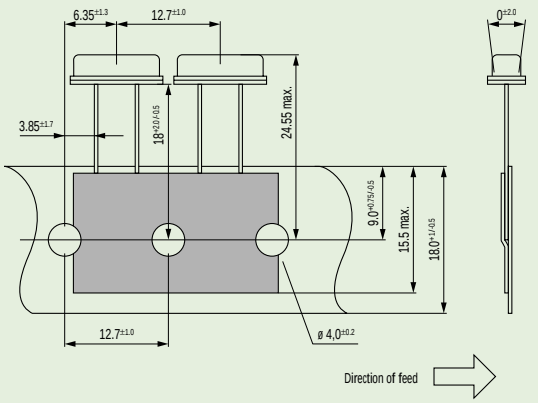
# SS series • SS4

## dimensions




in mm

## taping according to DIN IEC 286-2




in mm

## test conditions:

a) acceleration:
1000 g / 0.5 ms, 1/2 sine wave

b) shock (random drop):
height 75 cm, 3 times to hardwood surface
($\Delta R/R \leq 20\%$;
$\Delta f/f \leq \pm 5$ ppm)

c) vibration:
f = 10 Hz ~ 55 Hz;
amplitude = 1.5 mm;
period = about 1 minute;
time = 2 h each direction

d) solderability:
according to DIN 68-2-54

## series resistance (Rs) / motional capacitance ($C_1$) table

| frequency in MHz | cut | vibration mode | Rs max. in Ω | Rs typ. in Ω | $C_1$ typ. in fF |
|---|---|---|---|---|---|
| 3.5 ~ 3.69 | AT | fund | 180 | 70 ~ 100 | 3.5 ~ 4.0 |
| 3.7 ~ 3.99 | AT | fund | 150 | 60 ~80 | 4.0 ~ 4.5 |
| 4.0 ~ 4.09 | AT | fund | 150 | 50 ~ 70 | 4.5 ~ 4.8 |
| 4.1 ~ 4.39 | AT | fund | 130 | 50 ~ 70 | 4.8 ~ 5.0 |
| 4.4 ~ 4.99 | AT | fund | 120 | 40 ~ 60 | 5.0 ~ 5.5 |
| 5.0 ~ 5.99 | AT | fund | 120 | 40 ~ 60 | 5.5 ~ 6.0 |
| 6.0 ~ 6.99 | AT | fund | 80 | 35 ~ 55 | 6.0 ~ 7.0 |
| 7.0 ~ 7.99 | AT | fund | 75 | 25 ~ 45 | 7.0 ~ 10 |
| 8.0 ~ 9.99 | AT | fund | 70 | 20 ~ 40 | 10 ~ 12 |
| 10.0 ~ 11.99 | AT | fund | 50 | 15 ~ 35 | 12 ~ 14 |
| 12.0 ~ 13.99 | AT | fund | 50 | 15 ~ 35 | 12 ~ 16 |
| 14.0 ~ 15.99 | AT | fund | 50 | 10 ~ 15 | 16 ~ 17 |
| 16.0 ~ 17.99 | AT | fund | 50 | 10 ~ 15 | 18 ~ 20 |
| 18.0 ~ 19.99 | AT | fund | 50 | 10 ~ 15 | 20 ~ 22 |
| 20.0 ~ 26.0 | AT | fund | 50 | 10 ~ 15 | 22 ~ 26 |
| 24.0 ~ 40.0 | BT | fund | 50 | 10 ~ 15 | 10 ~15 |
| 27.0 ~ 50.0 | AT | 3rd OT | 100 | 80 | 0.8 ~ 2.5 |

## standard load capacitance codes

| | | | |
|---|---|---|---|
| 12 pF: | a | 24 pF: | d |
| 16 pF: | b | 30 pF: | . |
| 18 pF: | f | 32 pF: | e |
| 20 pF: | c | series: | s |
| 22 pF: | g | | |

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