

STANDARD HC49/SMD4 CRYSTAL (12.0 x 4.7mm)

FEATURES:

- AT OR BT CUT AVAILABLE
- RESISTANCE WELD SEAL
- TIGHT TOLERANCE / STABILITY



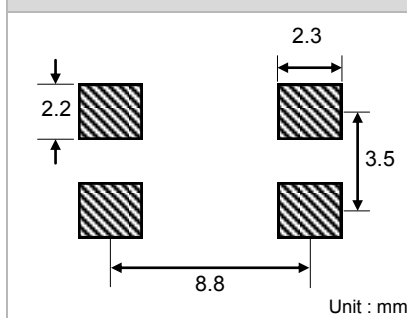
■ SPECIFICATION

| | |
|------------------------------|---|
| FREQUENCY RANGE | 3.500MHz ~ 100.000MHz |
| FREQUENCY TOLERANCE @ 25°C | ±5ppm ~ ±50ppm |
| FREQUENCY STABILITY | ±2.5ppm* ~ ±100ppm (*Available in selected operating temp.) |
| OPERATING TEMPERATURE RANGE | -20°C ~ 70°C (See P/N guide for other options) |
| STORAGE TEMPERATURE RANGE | -40°C ~ 85°C |
| LOAD CAPACITANCE | 4pF min. |
| SHUNT CAPACITANCE | 7pF max. |
| INSULATION RESISTANCE | 500MΩ min. @ 100V _{DC} |
| DRIVE LEVEL | 1μW ~ 100μW |
| AGING | ±3.0ppm / 1 st yr. max. |
| EQUIVALENT SERIES RESISTANCE | See Table (Freq. vs ESR) |
| OPERATION MODE | Fundamental (AT, BT) / 3rd overtone |

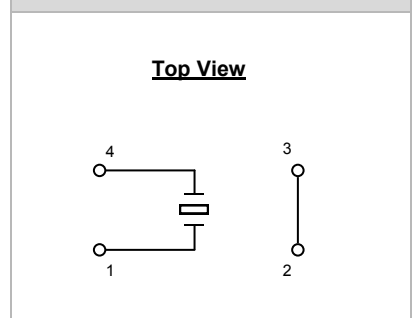
■ FREQ VS. ESR

| Frequency (MHz) | Mode | ESR (Ω) |
|----------------------|--------------------------|---------|
| 3.500 ≤ f < 4.000 | AT Fundamental | 100~150 |
| 4.000 ≤ f < 6.000 | AT Fundamental | 60~100 |
| 6.000 ≤ f < 10.000 | AT Fundamental | 50~60 |
| 10.000 ≤ f < 15.000 | AT Fundamental | 30~50 |
| 15.000 ≤ f < 35.000 | AT Fundamental | ≤ 25 |
| 21.000 ≤ f < 40.000 | BT Fundamental | ≤ 40 |
| 25.000 ≤ f < 100.000 | 3 rd Overtone | 60~80 |

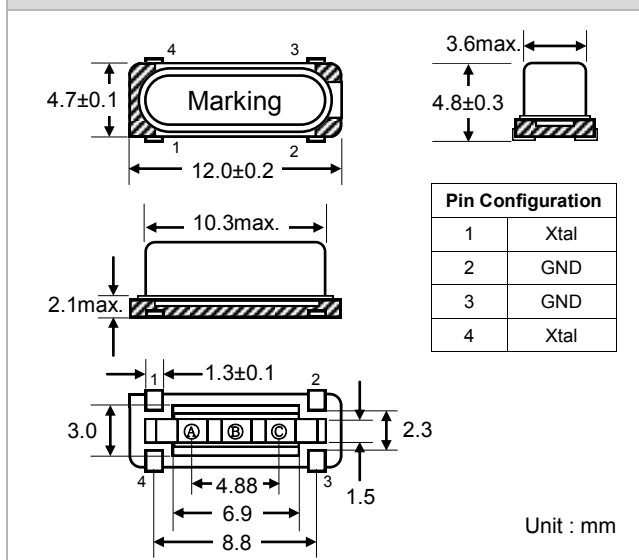
■ SOLDER PATTERN



■ PAD CONNECTIONS



■ PACKAGE DIMENSIONS



■ PART NUMBERING GUIDE

HC49/SMD4 - A - F - 18 - 30 - K - 13.000M - TR

Package Height

- A: 5.0mm max
- B: 4.0mm max

Mode

- F: AT Fundamental
- T: 3rd overtone
- B: BT Fundamental**

Load Capacitance

- S: Series 18: 18pF
- 08: 8pF 20: 20pF
- 10: 10pF 22: 22pF
- 12: 12pF 28: 28pF
- 16: 16pF 32: 32pF

Other Options

- TR: Tape and reel

Frequency

- M: MHz

Tolerance

- 50: ± 50ppm / ± 100ppm
- 30: ± 30ppm / ± 50ppm
- 25: ± 25ppm / ± 30ppm
- 20: ± 20ppm / ± 25ppm
- 10: ± 10ppm / ± 20ppm
- X: Custom range

Operating Temperature

- H: 0°C to 50°C
- I: -10°C to 60°C
- K: -20°C to 70°C
- ET: -40°C to 85°C

** BT Fundamental: 100ppm (Freq. Stability), -20 to 70°C Operating Temp. Only

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