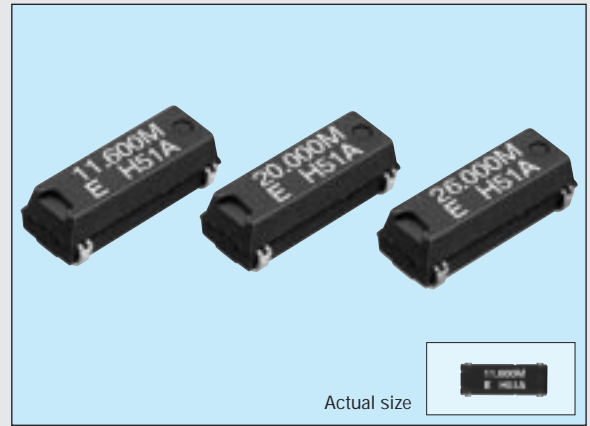


SMD HIGH-STABILITY CRYSTAL UNIT

MA-406H

- High-density mounting-type SMD.
- Excellent heat-resistance and environment capability.
- 9.6 MHz to 27.0 MHz available.



Specifications (characteristics)

| Item | Symbol | Specifications | Remarks |
|---------------------------------------|-------------------------|--|--|
| Nominal frequency range | f | 9.600 MHz to 27.000 MHz | Fundamental mode |
| Temperature range | Storage temperature | T _{STG} | -55°C to +125°C |
| | Operable temperature | T _{OPR} | -40°C to 85°C |
| Drive level | Maximum drive level | GL | 2mW max. |
| | Recommended drive level | DL | 10μW to 100μW |
| Soldering condition | T _{SOL} | 240°C max. within 10 sec. and under 200°C within 40 sec. | |
| Frequency tolerance (standard) | Δf/f | ±10ppm | T _a =25°C±3°C,DL=100μW |
| Frequency temperature characteristics | | As per below table | |
| Load capacitance | C _L | 10pF to ∞ | Please specify |
| Series resistance | R _i | As per below table | Operable temperature range, DL=100μW |
| Shunt capacitance | C ₀ | 5.0pF max. | |
| Insulation resistance | IR | 500 MΩ min. | |
| Aging | f _a | ±1ppm/year max. | T _a =25°C ±1°C, DL=100μW |
| Shock resistance | S. R. | ±1ppm max. | Three drops on a hard wooden board from 75 cm or excitation test with 3000G x 0.3ms x 1/2 sine wave x 3 directions |

Measured values for frequency tolerance and temperature characteristics need to be brought into mutual correlation prior to the start of production. There are some cases that a parts of the cylindrical capsule of quartz unit expose on the surface of the molding material.

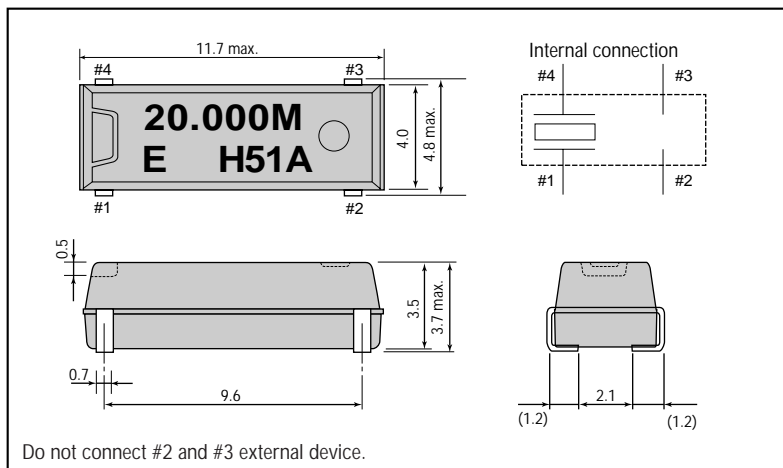
Frequency temperature characteristics

| Temperature range | Min. frequency specifications |
|-------------------|-------------------------------|
| 0°C to +50°C | ± 3ppm min. |
| -10°C to +60°C | ± 5ppm min. |
| -20°C to +70°C | ± 7ppm min. |
| -30°C to +80°C | ±10ppm min. |
| -40°C to +85°C | ±15ppm min. |

Series resistance

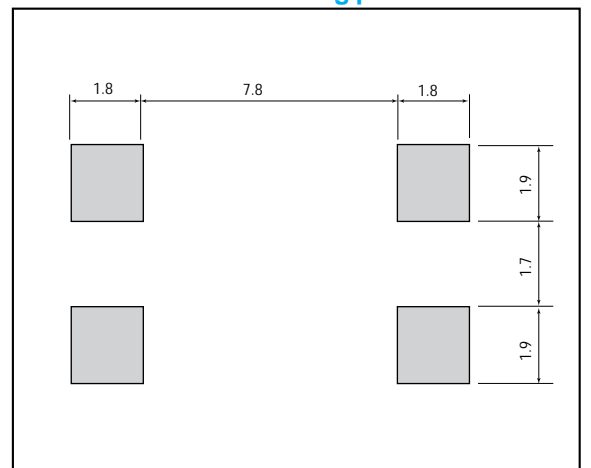
| Frequency (MHz) | Series resistance (Ω) |
|-----------------|-----------------------|
| 9.6 ≤ f < 10.0 | 50 Ω max. |
| 10.0 ≤ f < 12.0 | 40 Ω max. |
| 12.0 ≤ f < 16.0 | 30 Ω max. |
| 16.0 ≤ f ≤ 27.0 | 25 Ω max. |

External dimensions



(Unit: mm)

Recommended soldering pattern



(Unit: mm)