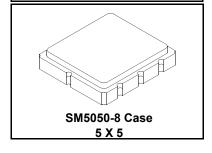


AEC-Q200 This component was always RoHS compliant from the first date of manufacture.

RO3101C

433.92 MHz SAW Resonator



- Ideal for European 433.92 MHz Remote Control and Security Transmitters
- Very Low Series Resistance
- Quartz Stability
- Complies with Directive 2002/95/EC (RoHS)
- Tape and Reel Standard per ANSI/EIA-481

The RO3101C is a true one-port, surface-acoustic-wave (SAW) resonator in a surface-mount ceramic case. It provides reliable, fundamental-mode, quartz frequency stabilization of fixed-frequency transmitters operating at 433.92 MHz. This SAW is designed specifically for remote control and wireless security transmitters operating in Europe under ETSI I-ETS 300 220.

Absolute Maximum Ratings

| Rating | Value | Units |
|---|------------|-------|
| Input Power Level | 0 | dBm |
| DC Voltage | 12 | VDC |
| Storage Temperature | -40 to +85 | °C |
| Operating Temperature | -40 to +85 | °C |
| Soldering Temperature (10 seconds / 5 cycles maximum) | 260 | °C |

Electrical Characteristics

| Characteristic | | Sym | Notes | Minimum | Typical | Maximum | Units |
|--|--------------------------------------|-------------------|-------|---------|------------------|---------|---------------------|
| Center Frequency, +25 °C | Absolute Frequency | f _C | | 433.845 | - | 433.995 | MHz |
| | Tolerance from 433.920 MHz | Δf_{C} | | | | ±75 | kHz |
| Insertion Loss | | IL | | | 1.2 | 2.5 | dB |
| Quality Factor | Unloaded Q | Q _U | | | 9000 | | |
| | 50Ω Loaded Q | Q_L | | | 1200 | | |
| Temperature Stability | Turnover Temperature | T _O | | 10 | 25 | 40 | °C |
| | Turnover Frequency | f _O | | | $f_{\mathbb{C}}$ | | |
| | Frequency Temperature Coefficient | FTC | | | 0.032 | | ppm/°C ² |
| Frequency Aging | Absolute Value during the First Year | f _A | | | ≤10 | | ppm/yr |
| DC Insulation Resistance between Any Two Terminals | | | | 1.0 | | | ΜΩ |
| RF Equivalent RLC Model | Motional Resistance | R _M | | | 15 | 33 | Ω |
| | Motional Inductance | L _M | | | 48.6 | | μH |
| | Motional Capacitance | C _M | | | 2.8 | | fF |
| | Shunt Static Capacitance | Co | | | 2.6 | | pF |
| Test Fixture Shunt Inductance | | L _{TEST} | | | 52.1 | | nH |
| Lid Symbolization (in addition to Lot and/or Date Codes) | | | • | 703 | , <u>YWWS</u> | | • |
| Standard Reel Quantity | Reel Size 7 Inch | | | 500 F | Pieces/Reel | | |
| | Reel Size 13 Inch | | | 3000 I | Pieces/Reel | | |

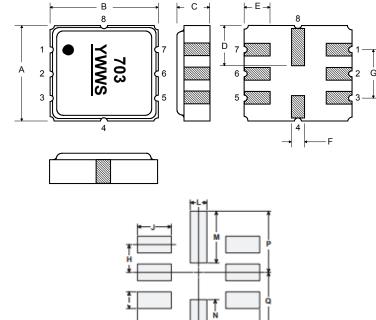
CAUTION: Electrostatic Sensitive Device. Observe precautions for handling. NOTES:

- 1. The design, manufacturing process, and specifications of this device are subject to change.
- 2. US or International patents may apply.

Electrical Connections

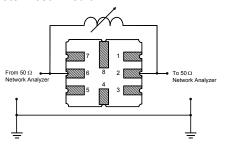
The SAW resonator is bidirectional and may be installed with either orientation. The two terminals are interchangeable and unnumbered. The callout NC indicates no internal connection. The NC pads assist with mechanical positioning and stability. External grounding of the NC pads is recommended to help reduce parasitic capacitance in the circuit.

| Pin | Connection | | |
|-----|------------|--|--|
| 1 | NC | | |
| 2 | Terminal | | |
| 3 | NC | | |
| 4 | NC | | |
| 5 | NC | | |
| 6 | Terminal | | |
| 7 | NC | | |
| 8 | NC | | |

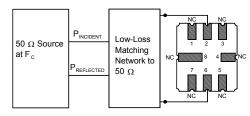


| Dimension | mm | | | Inches | | |
|-----------|------|------|------|--------|-------|-------|
| | Min | Nom | Max | Min | Nom | Max |
| Α | 4.80 | 5.00 | 5.20 | 0.189 | 0.197 | 0.205 |
| В | 4.80 | 5.00 | 5.20 | 0.189 | 0.197 | 0.205 |
| C | 1.30 | 1.50 | 1.70 | 0.050 | 0.060 | 0.067 |
| D | 1.98 | 2.08 | 2.18 | 0.078 | 0.082 | 0.086 |
| E | 1.07 | 1.17 | 1.27 | 0.042 | 0.046 | 0.050 |
| F | 0.50 | 0.64 | 0.70 | 0.020 | 0.025 | 0.028 |
| G | 2.39 | 2.54 | 2.69 | 0.094 | 0.100 | 0.106 |
| Н | | 1.27 | | | 0.050 | |
| I | | 0.76 | | | 0.030 | |
| J | | 1.55 | | | 0.061 | |
| K | | 2.79 | | | 0.110 | |
| L | | 0.76 | | | 0.030 | |
| M | | 2.36 | | | 0.093 | |
| N | | 1.55 | | | 0.061 | |
| 0 | | 2.79 | | | 0.110 | |
| Р | _ | 2.79 | | | 0.110 | |
| Q | | 2.79 | | | 0.110 | |

Parameter Test Circuit

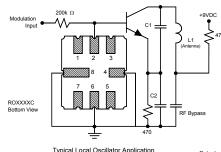


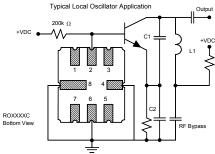
Power Test Circuit



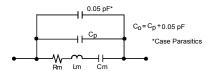
Example Application Circuits

Typical Low-Power Transmitter Application



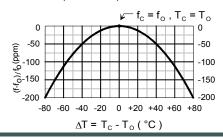


Equivalent RLC Model



Temperature Characteristics

The curve shown on the right accounts for resonator contribution only and does not include LC component temperature contributions.



Recommended Reflow Profile

- 1. Preheating shall be fixed at 150~180°C for 60~90 seconds.
- 2. Ascending time to preheating temperature 150°C shall be 30 seconds min.
- 3. Heating shall be fixed at 220°C for 50~80 seconds and at 260°C +0/-5°C peak (10 seconds).
- 4. Time: 5 times maximum.

