

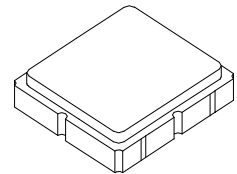


AEC-Q200

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

RO3300E

**403.55 MHz
SAW Resonator**



**SM3030-b Case
3.0 X 3.0**

- **Designed for 403.55 MHz MICs Transmitters**
- **Very Low Series Resistance**
- **Quartz Stability**
- **Complies with Directive 2002/95/EC (RoHS)**
- **Tape and Reel Standard per ANSI/EIA-481**



The RO3300E 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 403.55 MHz.

Absolute Maximum Ratings

| Rating | Value | Units |
|---|-------------|-------|
| Input Power Level | 0 | dBm |
| DC Voltage | 12 | VDC |
| Storage Temperature Range | -40 to +125 | °C |
| Operating Temperature Range | -40 to +105 | °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 | 403.475 | | 403.625 | MHz |
| | Tolerance from 403.55 MHz | Δf_C | | | ±75 | kHz |
| Insertion Loss | IL | | | 1.0 | 2.0 | dB |
| Quality Factor | Unloaded Q | Q_U | | 8117 | | |
| | 50 Ω Loaded Q | Q_L | | 768 | | |
| Temperature Stability | Turnover Temperature | T_O | 10 | 25 | 40 | °C |
| | Turnover Frequency | f_O | | f_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 | | | M Ω |
| RF Equivalent RLC Model | Motional Resistance | R_M | | 10.5 | | Ω |
| | Motional Inductance | L_M | | 33.5 | | μ H |
| | Motional Capacitance | C_M | | 4.6 | | fF |
| | Shunt Static Capacitance | C_O | | 4.2 | | pF |
| Test Fixture Shunt Inductance | L_{TEST} | | | 36.9 | | nH |
| Lid Symbolization (in addition to Lot and/or Date Codes) | | | 719, YWWS | | | |
| Standard Reel Quantity | Reel Size 7 Inch | | 500 Pieces/Reel | | | |
| | Reel Size 13 Inch | | 3000 Pieces/Reel | | | |



CAUTION: Electrostatic Sensitive Device. Observe precautions for handling.

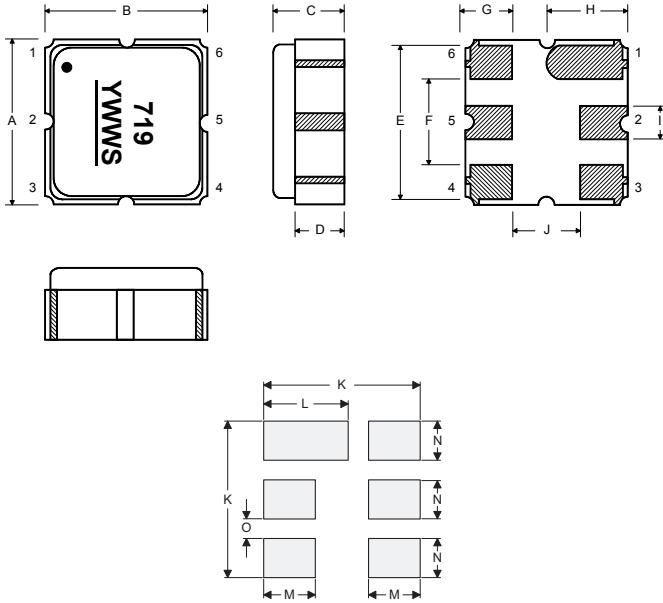
NOTES:

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.

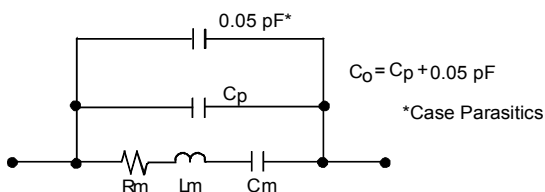
| Pin | Connection |
|-----|------------|
| 1 | NC |
| 2 | Terminal |
| 3 | NC |
| 4 | NC |
| 5 | Terminal |
| 6 | NC |



Case and Typical PCB Land Dimensions

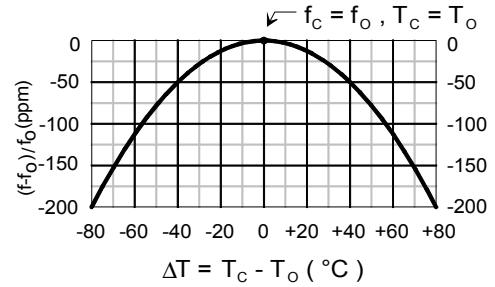
| Ref | mm | | | Inches | | |
|-----|------|------|------|--------|-------|-------|
| | Min | Nom | Max | Min | Nom | Max |
| A | 2.87 | 3.00 | 3.13 | 0.113 | 0.118 | 0.123 |
| B | 2.87 | 3.00 | 3.13 | 0.113 | 0.118 | 0.123 |
| C | 1.12 | 1.25 | 1.38 | 0.044 | 0.049 | 0.054 |
| D | 0.77 | 0.90 | 1.03 | 0.030 | 0.035 | 0.040 |
| E | 2.67 | 2.80 | 2.93 | 0.105 | 0.110 | 0.115 |
| F | 1.47 | 1.60 | 1.73 | 0.058 | 0.063 | 0.068 |
| G | 0.72 | 0.85 | 0.98 | 0.028 | 0.033 | 0.038 |
| H | 1.37 | 1.50 | 1.63 | 0.054 | 0.059 | 0.064 |
| I | 0.47 | 0.60 | 0.73 | 0.019 | 0.024 | 0.029 |
| J | 1.17 | 1.30 | 1.43 | 0.046 | 0.051 | 0.056 |
| K | | 3.20 | | | 0.126 | |
| L | | 1.70 | | | 0.067 | |
| M | | 1.05 | | | 0.041 | |
| N | | 0.81 | | | 0.032 | |
| O | | 0.38 | | | 0.015 | |

Equivalent RLC Model



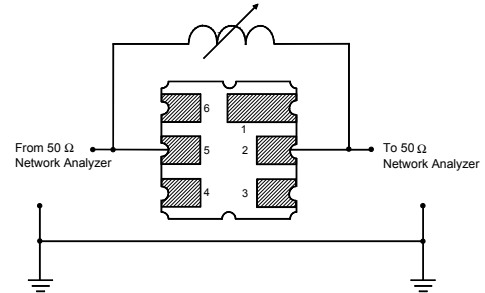
Temperature Characteristics

The curve shown accounts for resonator contribution only and does not include external LC component temperature effects.

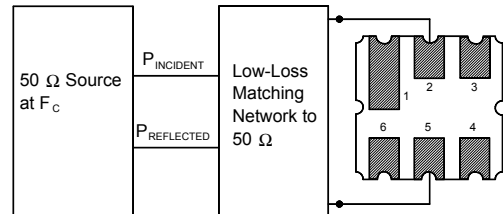


Characterization Test Circuit

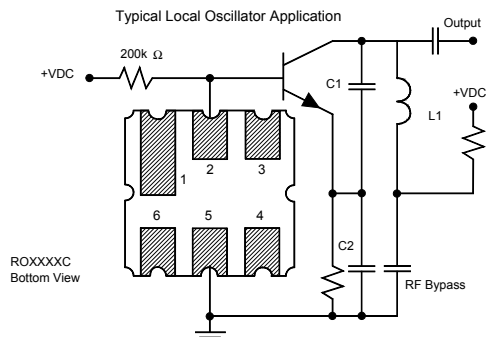
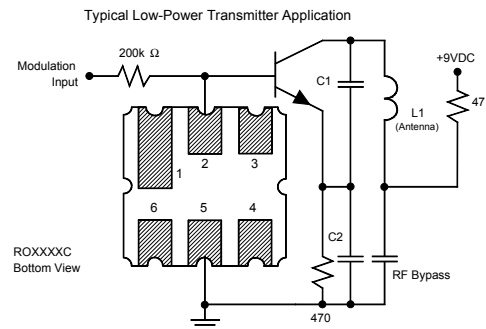
Inductor L_{TEST} is tuned to resonate with the static capacitance, C_0 , at F_c .



Power Dissipation Test



Example Application Circuits



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.

