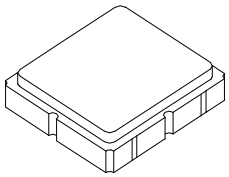
AEC-Q200
This component was always RoHS compliant from the first date of manufacture.

# RO3073D

## 315.0 MHz SAW Resonator

- ***Ideal for 315 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***



**SM3838-6 Case**

The RO3073C 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 315.0 MHz. This SAW is designed specifically for remote control and wireless security transmitters.

### Absolute Maximum Ratings

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

### Electrical Characteristics

| Characteristic | | Sym | Notes | Minimum | Typical | Maximu | Units |
|---|---|---|---|---|---|---|---|
| Frequency, +25 °C | Absolute Frequency | $f_C$ | | 314.925 | | 315.075 | MHz |
| | Tolerance from 315.0 MHz | $\Delta f_C$ | | | | ±75 | kHz |
| Insertion Loss | | IL | | | 1.6 | 2.5 | dB |
| Quality Factor | Unloaded Q | $Q_U$ | | | 7700 | | |
| | 50 Ω Loaded Q | $Q_L$ | | | 1300 | | |
| 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 | | | MΩ |
| RF Equivalent RLC Model | Motional Resistance | $R_M$ | | | 20.6 | 29 | Ω |
| | Motional Inductance | $L_M$ | | | 80.0 | | µH |
| | Motional Capacitance | $C_M$ | | | 3.2 | | fF |
| | Shunt Static Capacitance | $C_O$ | | | 3.94 | | pF |
| Test Fixture Shunt Inductance | | $L_{TEST}$ | | | 64.7 | | nH |
| Lid Symbolization | | 705, 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.**

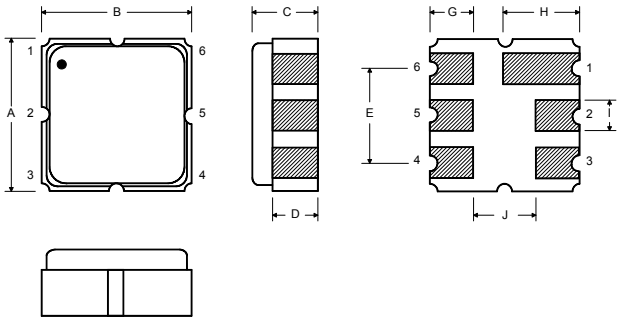
**NOTES:**

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

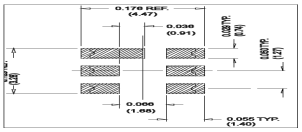
### Electrical Connections

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 |

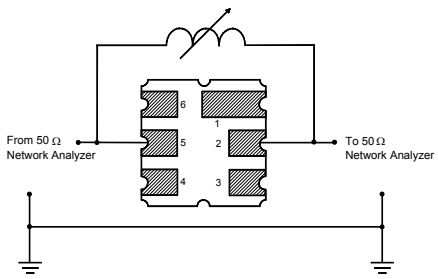



| Dimension | mm | | | Inches | | |
|---|---|---|---|---|---|---|
| | Min | Nom | Max | Min | Nom | Max |
| A | 3.60 | 3.80 | 4.0 | 0.14 | 0.15 | 0.16 |
| B | 3.60 | 3.80 | 4.0 | 0.14 | 0.15 | 0.16 |
| C | 1.00 | 1.20 | 1.40 | 0.04 | 0.05 | 0.055 |
| D | 0.95 | 1.10 | 1.25 | 0.037 | 0.043 | 0.05 |
| E | 2.39 | 2.54 | 2.69 | 0.090 | 0.10 | 0.110 |
| G | 0.90 | 1.0 | 1.10 | 0.035 | 0.04 | 0.043 |
| H | 1.90 | 2.0 | 2.10 | 0.75 | 0.08 | 0.83 |
| I | 0.50 | 0.6 | 0.70 | 0.020 | 0.024 | 0.028 |
| J | 1.70 | 1.8 | 1.90 | 0.067 | 0.07 | 0.075 |

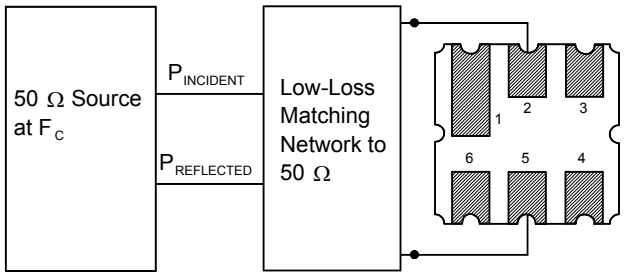


### Typical Test Circuit

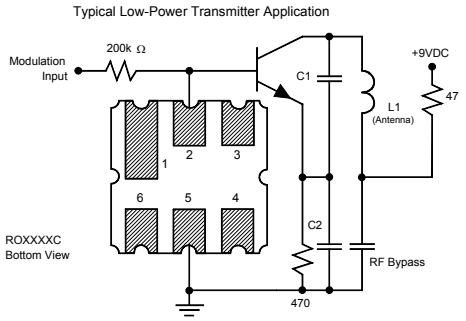
The test circuit inductor, $L_{TEST}$, is tuned to resonate with the static capacitance, $C_O$, at $F_C$.

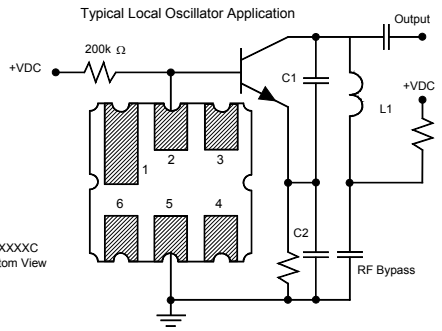



### Power Test

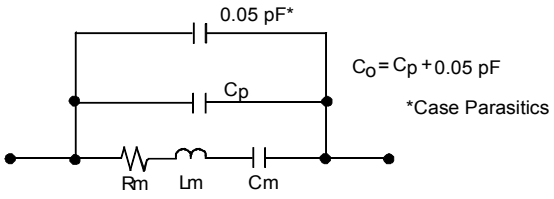



### Typical Application Circuits



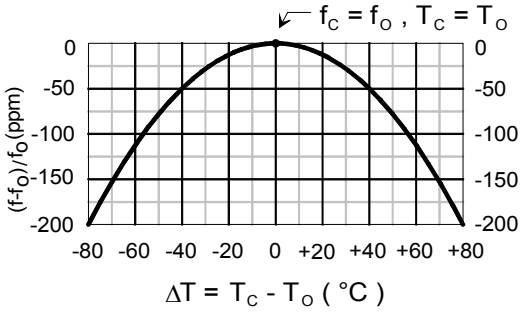




## Equivalent RLC Model




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