

- **Designed for 433.92 MHz Transmitters**
- **Very Low Series Resistance**
- **Quartz Stability**
- **Surface-mount Ceramic Case**
- **Complies with Directive 2002/95/EC (RoHS)**



The RO3101A is a one-port surface-acoustic-wave (SAW) resonator packaged in a surface-mount ceramic case. It provides reliable, fundamental-mode quartz frequency stabilization of fixed-frequency transmitters operating at 433.92 MHz. The RO3101A is designed specifically for remote control and wireless security transmitters operating in Europe under ETSI EN 300 220-2.

Absolute Maximum Ratings

Rating	Value	Units
CW RF Power Dissipation (See: Typical Test Circuit)	+0	dBm
DC Voltage Between Terminals (Observe ESD Precautions)	±30	VDC
Case 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 Tolerance from 433.920 MHz	f_C	2,3,4,5	433.845		433.995	MHz
	Δf_C				±75	kHz
Insertion Loss	IL	2,5,6		1.5	2.2	dB
Quality Factor	Q_U	5,6,7		9000		
	Q_L			1458		
Temperature Stability	Turnover Temperature	6,7,8	10	25	40	°C
	Turnover Frequency			f_C		
	Frequency Temperature Coefficient			0.032		ppm/°C ²
Frequency Aging	Absolute Value during the First Year	1		≤10		ppm/yr
DC Insulation Resistance between Any Two Terminals		5	1.0			MΩ
RF Equivalent RLC Model	Motional Resistance	5, 7, 9		19.4		Ω
	Motional Inductance			63.8		μH
	Motional Capacitance			2.11		fF
	Shunt Static Capacitance	5, 6, 9		2.4		pF
Test Fixture Shunt Inductance	L_{TEST}	2, 7		55.1		nH
Lid Symbolization (in addition to Lot and/or Date Codes)	655 // YYWWSS					



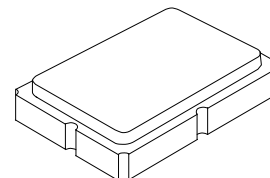
CAUTION: Electrostatic Sensitive Device. Observe precautions for handling.

NOTES:

- Frequency aging is the change in f_C with time and is specified at +65 °C or less. Aging may exceed the specification for prolonged temperatures above +65 °C. Typically, aging is greatest the first year after manufacture, decreasing in subsequent years.
- The center frequency, f_C , is measured at the minimum insertion loss point, IL_{MIN} , with the resonator in the 50 Ω test system ($VSWR \leq 1.2:1$). The shunt inductance, L_{TEST} , is tuned for parallel resonance with C_O at f_C . Typically, $f_{OSCILLATOR}$ or $f_{TRANSMITTER}$ is approximately equal to the resonator f_C .
- One or more of the following United States patents apply: 4,454,488 and 4,616,197.
- Typically, equipment utilizing this device requires emissions testing and government approval, which is the responsibility of the equipment manufacturer.
- Unless noted otherwise, case temperature $T_C = +25 \pm 2$ °C.
- The design, manufacturing process, and specifications of this device are subject to change without notice.
- Derived mathematically from one or more of the following directly measured parameters: f_C , IL, 3 dB bandwidth, f_C versus T_C , and C_O .
- Turnover temperature, T_O , is the temperature of maximum (or turnover) frequency, f_O . The nominal frequency at any case temperature, T_C , may be calculated from: $f = f_O [1 - FTC (T_O - T_C)^2]$. Typically *oscillator* T_O is approximately equal to the specified *resonator* T_O .
- This equivalent RLC model approximates resonator performance near the resonant frequency and is provided for reference only. The capacitance C_O is the static (nonmotional) capacitance between the two terminals measured at low frequency (10 MHz) with a capacitance meter. The measurement includes parasitic capacitance with "NC" pads unconnected. Case parasitic capacitance is approximately 0.05 pF. Transducer parallel capacitance can be calculated as: $C_P \approx C_O - 0.05$ pF.
- Tape and Reel standard per ANSI / EIA 481.

RO3101A

**433.92 MHz
SAW
Resonator**



SM5035-4