Approved by:
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Issued by:

SPECIFICATION

P/N: TO39-SR868AGJM

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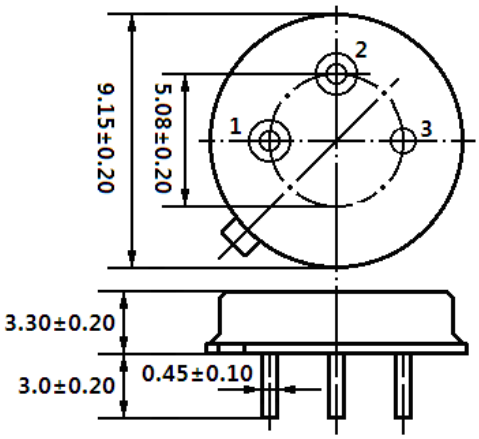
- Ideal for868.35MHz Remote Control Transmitters
- Very Low Series Resistance
- Rugged, Hermetic, Low-Profile TO39 or F11 Case

The SR868AGJM is a true one-port, surface-acoustic-wave (SAW) resonator in a low-profile TO39 or F11 or QCC8C case. It provides reliable, fundamental-mode, quartz frequency stabilization of fixed-frequency transmitters operating at 868.350MHz. The SR868AGJM is designed specifically for wireless remote control and security transmitters, Typically for Automotive-keyless-entry, Operating in the USA under FCC Part 15,in Canada under DoC RSS-210,and in Italy .

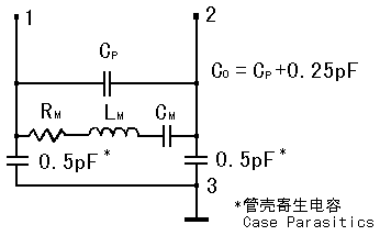
1. Marking

SJK/R868A

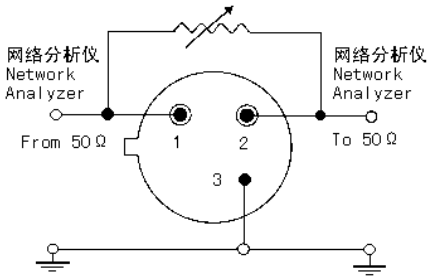
2. Package Dimension



3. Equivalent LC Model



4. Test Circuit



5. Absolute Maximum Ratings

Rating	Value	Units
CW RF Power Dissipation	+0	dBm
DC Voltage Between Any Two Pins	0	VDC
Case Temperature	-40 to +85	°C

6. Electrical Characteristics

Characteristic		Sym	Min	Typical	Max	Units
Center Frequency (+25 ℃)	Absolute Frequency	f_C	868.275	868.350	868.425	MHz
	Tolerance from 330.00MHz	Δf_C			±75	kHz
Insertion Loss		IL		1.2	2.2	dB
Quality Factor	Unloaded Q	Q_U		14600		
	50Ω Loaded Q	Q_L		2000		
Temperature Stability	Turnover Temperature	T_O	23	38	53	℃
	Turnover Frequency	f_O		f c+2		kHz
	Freq. Temp. Coefficient	FTC		0.037		ppm/℃^{2}
Frequency Aging Absolute Value during the First Year		$\|f_A\|$		≤10		ppm/yr
DC Insulation Resistance between Any Two Pins			1.0			MΩ
RF Equivalent RLC Model	Motional Resistance	R_M		15	29	Ω
	Motional Inductance	L_M		109		μH
	Motional Capacitance	C_M		2.2		fF
	Pin 1 to Pin 2 Static Capacitance	C_O	2.3	2.6	2.9	pF
Transducer Static Capacitance		C_P		2.3		pF
Test Fixture Shunt Inductance		L_{TEST}		93		nH

CAUTION: Electrostatic Sensitive Device. Observe precautions for handling.

Notes:

1. 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.

2. The center frequency, f_C, is measured at the minimum insertion loss point, IL_{MIN}, with the resonator in the 50Ω test system (VSWR ≤1.2:1). The shunt inductance, L_{TEST}, is tuned for parallel resonance with C_O at f_C.

3. Typically, equipment utilizing this device requires emissions testing and government approval, which is the responsibility of the equipment manufacturer.

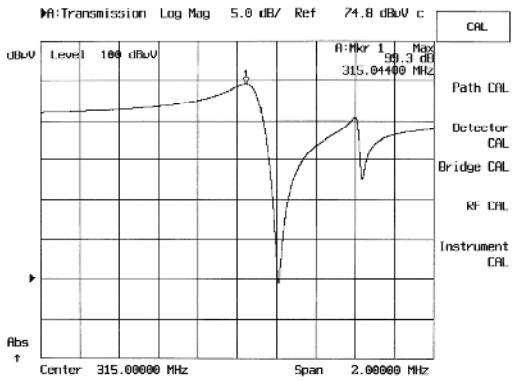
4. Unless noted otherwise, case temperature T_C =+25℃±2℃.

5. Derived mathematically from one or more of the following directly measured parameters: f_C, IL, 3dB bandwidth, f_C versus T_C, and C_O.

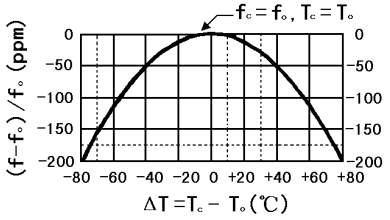
6. Turnover temperature, T_O, is the temperature of maximum (or turnover) frequency, f_O. The nominal frequency at any case temperature, T_C, may be calculated from: $f = f_O [1 - FTC(T_O - T_C)^2]$. Typically, *oscillator* T_O is 20°C less than the specified *resonator* T_O.

7. 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 Pin1 and Pin 2 measured at low frequency (10MHz) with a capacitance meter. The measurement includes parasitic capacitance with floating case. For usual grounded case applications (with ground connected to either pin 1 or pin 2 and to the case), add approximately 0.25pF to C_O.

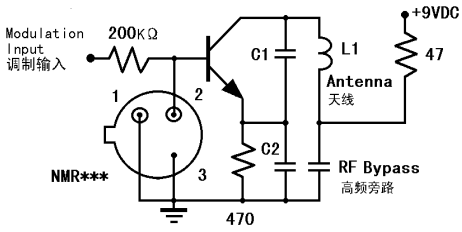
7. Typical Frequency Response



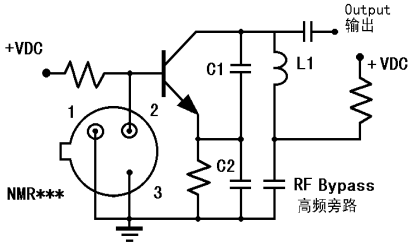
8. Temperature Characteristic



9. Application Circuits



Low-Power Transmitter Application



Local Oscillator Application

10. Reliability

- Mechanical Shock: The components shall remain within the electrical specifications after 1000 shocks, acceleration 392m/s^{2,} duration 6 milliseconds.
- Vibration Fatigue: The components shall remain within the electrical specifications after loaded vibration at 20 Hz, amplitude 1.5 mm, for 2 hours.
- Terminal Strength: The components shall remain within the electrical specifications after pulled 2 Kgs weight for 10 seconds towards an axis of each terminal.
- High Temperature Storage: The components shall remain within the electrical specifications after being kept at the 85℃±2℃ for 48 hours, then kept at room temperature for 2 hours.
- Low Temperature Storage: The components shall remain within the electrical specifications after being kept at the -25℃±2℃ for 48 hours, then kept at room temperature for 2 hours.
- Temperature Cycle: The components shall remain within the electrical specifications after 5 Cycles of high and low temperature testing (one cycle: 80℃ for 30 minutes →25℃ for 5 minutes →-25℃ for 30 minutes) than kept at room temperature for 2 hours.
- Solder-heat Resistance: The components shall remain within the electrical specifications after dipped in the solder at 260℃ for10±1 seconds, then kept at room temperature for 2 hours. (Terminal must be dipped leaving 1.5 mm from the case).
- Solder ability: Solder ability of terminal shall be kept at more than 80% after dipped in the solder flux at 230℃±5℃ for 5±1 second.