Approved by: HaungHaoDong
Checked by: YangXia
Issued by: YuJingXia

SPECIFICATION

SJK P/N: AW433920QCC4A

深圳市晶科鑫实业有限公司
SHENZHEN CRYSTAL TECHNOLOGY INDUSTRIAL CO., LTD.

Add: RM#1805, East Wing,TianAn Hi-tech Plaza Phase2,TianAn Cyber Park, Shenzhen, China
Tel: (86) 755 88352809 88352810 Fax: (86) 755 88353718 88352499
E-mail: sjk@q-crystal.com HTTP://www.q-crystal.com

SAW Resonator UNIT

AW QCC4A Series

Features

- 1-port Resonator
- Provides reliable, fundamental mode, quartz
- frequency stabilization i.e. in transmitters or
- local oscillators
- Surface Mounted Technology (SMT)
- Lead-free production and RoHS compliance

1. Performance

1-1. Maximum Rating

Rating	Value	Units
CW RF Power Dissipation	0	dBm
DC Voltage Between Any Two Pins	±30V	VDC
Operating Temperature	-40 to +85	℃
Storage temperature range	-40 to +85	℃

1-2. Electronic Characteristics

Characteristic		Sym	Minimum	Typical	Maximum	Units
Center Frequency (+25℃)	Absolute Frequency	f_C		433.92		MHz
	Tolerance from 433.920 MHz	$\triangle f_C$		±75		kHz
Insertion Loss		I_L		1.5	2.0	dB
Quality Factor	Unloaded Q	Q_U		9,000		
	50 Ω Loaded Q	Q_L		1,500		
Temperature Stability	Turnover Temperature	T_O	25		55	℃
	Turnover Frequency	f_O		fc		kHz
	Frequency Temperature Coefficient	FTC		0.032		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		19	26	Ω
	Motional Inductance	L_M		65.5042		μH
	Motional Capacitance	C_M		2.0559		fF
	Pin 1 to Pin 2 Static Capacitance	C_O	1.9	2.2	2.5	pF

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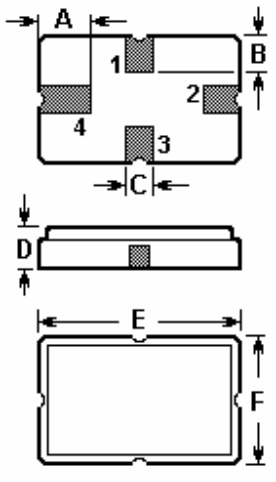
2. Package Dimension (QCC4A)



3. Pin Configuration

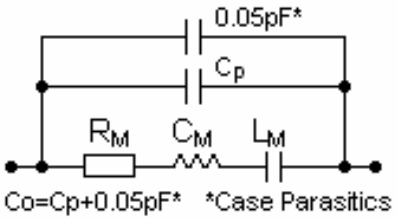
Pin	Configuration
1	Input / Output
3	Output / Input
2/4	Case Ground

Sign	Data (unit: mm)	Sign	Data (unit: mm)
A	1.2	D	1.4
B	0.8	E	5.0
C	0.5	F	3.5

4. Marking

Mking
Laser Marking

5. Equivalent LC Model



RoHS Compliant **Electrostatic Sensitive Device**

1. Unless noted otherwise, case temperature T_C = +25°C±2°C.
2. The center frequency, f_C, is measured at the minimum insertion loss point with the resonator in the 50Ω test system.
3. 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.
4. 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: $f = f_O [1 - FTC (T_O - T_C)^2]$.
5. This equivalent RLC model approximates resonator performance near the resonant frequency and is provided for reference only. The capacitance C_O is the static capacitance between the two terminals measured at low frequency (10MHz) with a capacitance meter. The measurement includes case parasitic capacitance.

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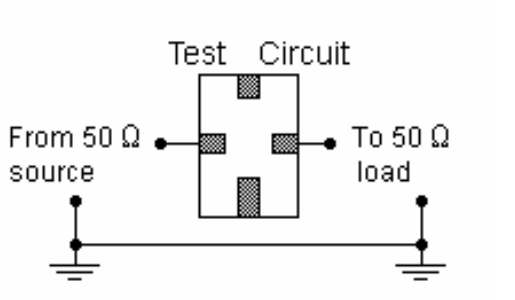
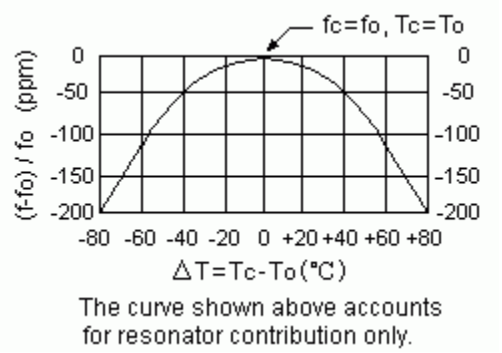
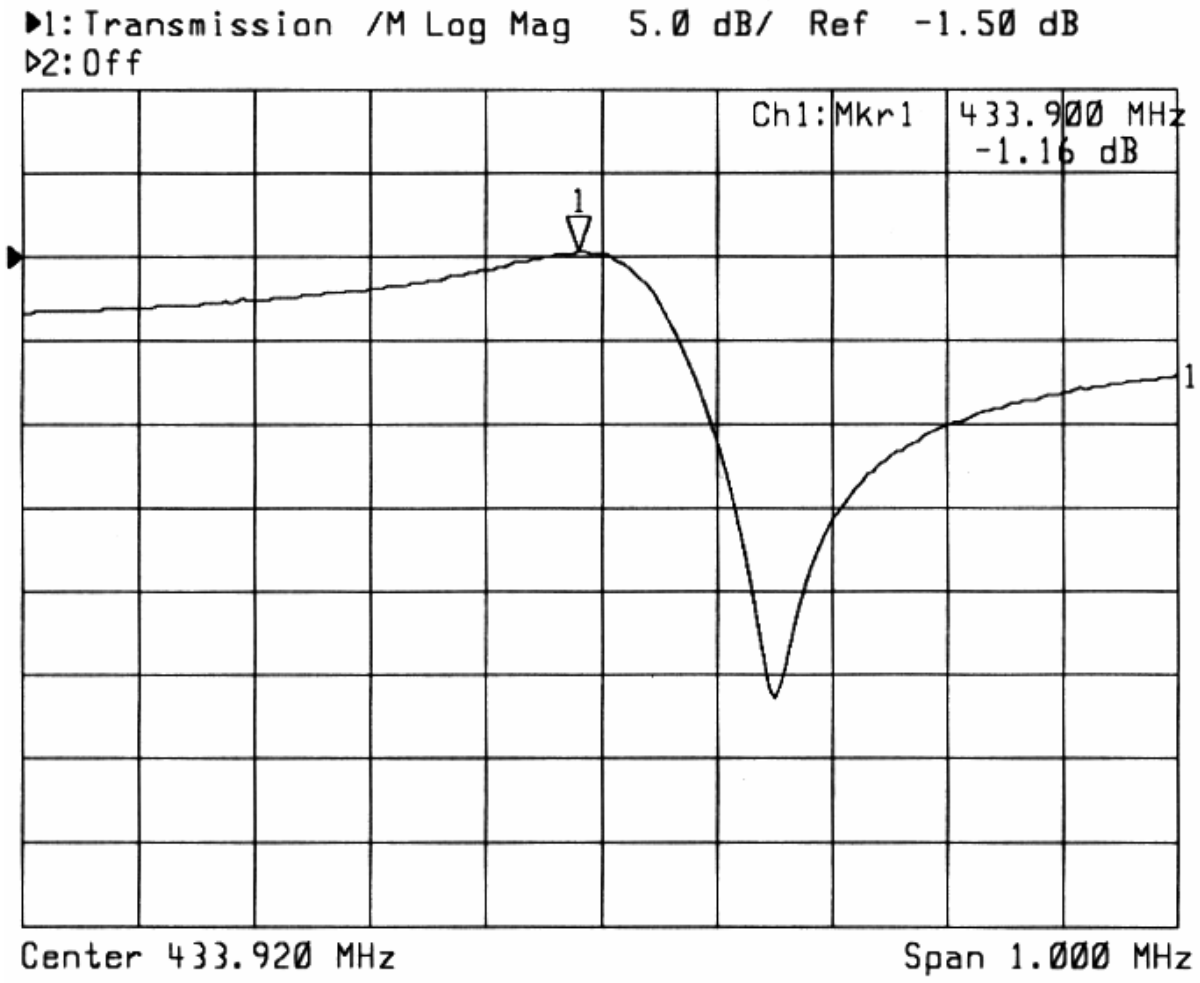
6.Test Circuit



7.Temperature Characteristics



8. Typical Frequency Response



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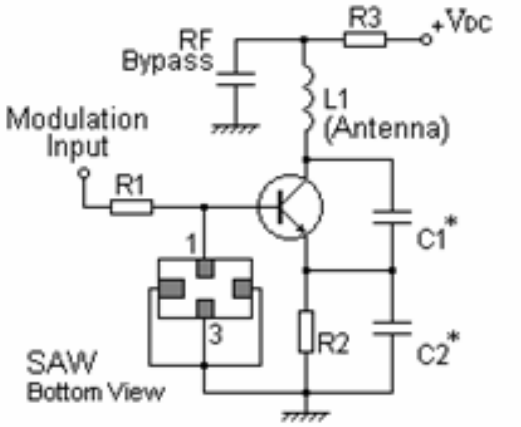
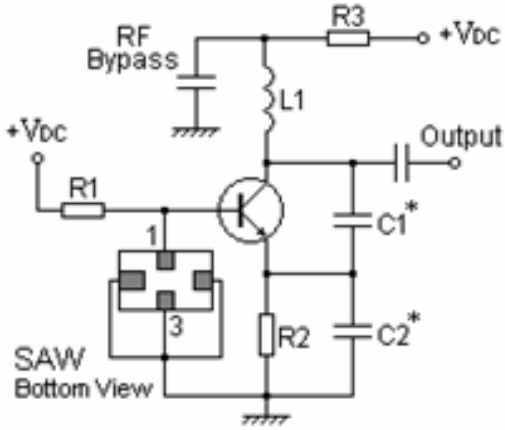
9.Typical Application Circuits

1) Low-Power Transmitter Application



2) Local Oscillator Application



☺ **CAUTION: Electrostatic Sensitive Device. Observe precautions for handling!**

1. Frequency aging is the change in f_C with time and is specified at +65℃or less. Aging may exceed the specification for prolonged temperatures above +65℃. Typically, aging is greatest the first year after manufacture, decreasing in subsequent years.
2. The center frequency, fc ,is the frequency of minimum IL with the resonator in the specified test fixture in a 50 Ω test system with VSWR ≤ 1.2 : 1. Typically, $f_{oscillator}$ or $f_{transmitter}$ is less than the resonator fc.
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 Tc=+25℃±2℃.
5. The design, manufacturing process, and specifications of this device are subject to change without notice.
6. Derived mathematically from one or more of the following directly measured parameters: f_C, IL, 3 dB bandwidth, fc versus Tc , and Co.
7. Turnover temperature, To, is the temperature of maximum (or turnover) frequency, fo, The nominal center frequency at any case temperature , Tc, may be calculated from :f = fo [1-FTC (TO-TC) ^{2}].Typically, oscillator To is 20℃ less than the specified resonator To.
8. This equivalent RLC model approximates resonator performance near the resonant frequency and is provided for reference only . The capacitance Co is the measured static (nonmotional) capacitance between either pin 1 and ground or pin 2 and ground .The measurement includes case parasitic capacitance with a floating case. For usual grounded case applications (with ground connected to either pin 1 or pin 2 and to the case), add approximately 0.25 pF to Co.

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