

# R433



## Features

- External dimensions: TO-39,F-11,D-11.
- Frequency range: 433.92MHZ.
- Ideal for 433.92MHZ Remote-control and Wireless Security Transmitters.
- Very Low Series Resistance.
- Quartz Stability.

## 1. Absolute Maximum Rating

Rating	Value	Units
CW RF Power Dissipation	+0	dbm
DC Voltage between Any Two Pins	0 to 32	V
Case Temperature	-40 to +85	°C

## 2. Electrical Characteristics

Characteristic		Sym.	Min.	Typ.	Max.	Unit
Center Frequency (25°C)	Absolute Frequency	$f_c$	433.845	433.92	433.995	MHz
	Tolerance from 433.92MHz	$\Delta f_c$		$\pm 75$		KHz
Insertion Loss		IL		1.2	2.5	dB
Quality Factor	Unloaded Q	$Q_U$		11000		
	50 $\Omega$ loaded Q	$Q_L$		2000		
Temperature Stability	Turnover Temperature	$T_O$	-	39	-	°C
	Turnover Frequency	$f_O$		$f_c+8.4$		KHz
	Frequency Temperature Coefficient	FTC		0.032		ppm/°C <sup>2</sup>
Frequency Aging (Value during the First Year)		$f_A$			10	ppm/yr
RF Equivalent RLC Model	Motional Resistance	$R_M$		18	26	$\Omega$
	Motional Inductance	$L_M$		86		$\mu H$
	Motional Capacitance	$C_M$		1.56		pF
	Pin1 to Pin2 Static Capacitance	$C_O$	1.7	2.0	2.3	pF
	Transducer Static Capacitance	$C_P$		1.8		pF
DC Insulation Resistance between Any Two Pins			1.0			M $\Omega$

### NOTES:

- 1) Unless noted otherwise, case temperature  $T_c = +25 \pm 2^\circ C$ .
- 2) The center frequency  $f_c$  is measured at the minimum insertion loss point,  $IL_{min}$ , with the resonator in the 50  $\Omega$  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  $f_c$ .
- 3) 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  $20^\circ C$  less than the specified resonator  $T_o$ .

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- 4) Frequency aging is the change in  $f_c$  with time and is specified at  $+65^\circ\text{C}$  or less. Aging may exceed the specification for prolonged temperatures above  $+65^\circ\text{C}$ . Typically aging is greatest the first year after manufacture, decreasing in subsequent years.
- 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 (nonmotional) capacitance between pin1 and pin2 measured at low frequency (10MHZ) with a capacitance meter. 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 0.25pF to  $C_o$ .
- 6) Derived mathematically from one or more of the following directly measured parameters:  $f_c$ , IL, 3dB bandwidth,  $f_c$  versus T

### 3. Others

- 1) Typically, equipment utilizing this device requires emissions testing and government approval, which is the responsibility of the equipment manufacturer.
- 2) Electrostatic Sensitive Device, observe precautions for handling.
- 3) According to the different request of customer, we can supply the different Frequency precision, for example,  $\pm 75\text{KHZ}$ ,  $\pm 150\text{KHZ}$ ,  $\pm 250\text{KHZ}$ , etc.

Pin No.	Function
1	Input or Output
2	Output or Input
3	Ground

