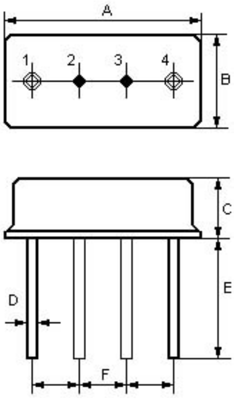
The HR433A is a true one- port ， surface- acoustic- wave(SAW) resonator in a low- profile F-11 case. It provides reliable ， fundamental- mode ， quartz frequency stabilization of fixed- frequency transmitters operating at 433.92 MHz.

1.Package Dimension (F-11)



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

Dimension	Data (unit: mm)
A	11.0±0.3
B	4.5±0.3
C	3.2±0.3
D	0.45±0.1
E	5.0±0.5
F	2.54±0.2

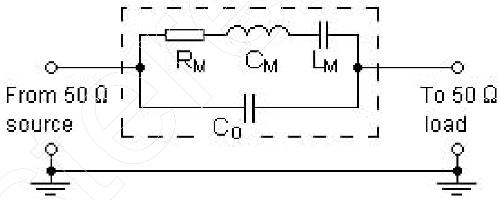
2.Marking

HR433A

Color: Black or Blue

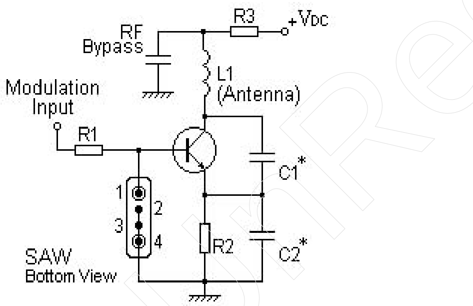
3.Equivalent LC Model and Test Circuit

Equivalent LC Model

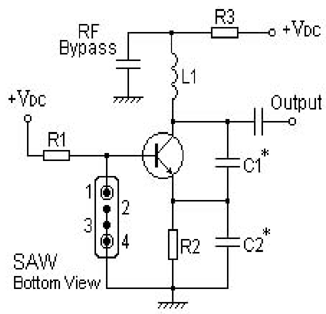


4.Typical Application Circuit

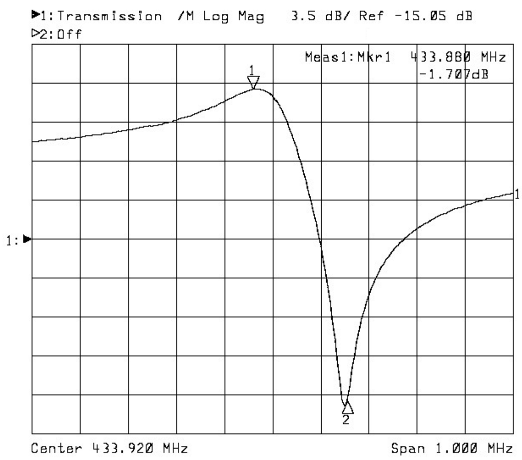
1) Typical Low-Power Transmitter Application



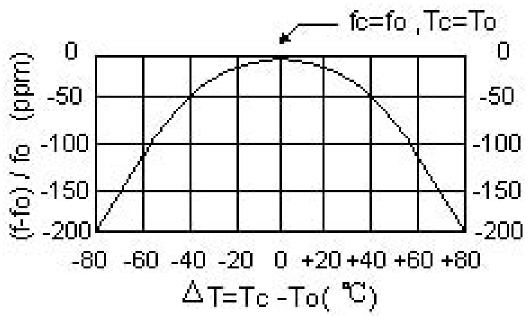
2) Typical Local Oscillator Application



5.Typical Frequency Response



6.Temperature Characteristics



The curve shown above accounts for resonator contribution only and does not include oscillator temperature characteristics.

7.Performance

7-1.Maximum Rating

Rating	Value	Units
CW RF Power Dissipation	+10	dBm
DC Voltage Between Any Two Pins	±30V	VDC
Case Temperature	-40 to +85	℃

7-2.Electronic Characteristics

Characteristic		Sym	Minimum	Typical	Maximum	Units
Center Frequency (+25℃)	Absolute Frequency	f_C	433.845		433.995	MHz
	Tolerance from 433.920 MHz	Δf_C		±75	±150	kHz
Insertion Loss		I_L		1.7	2.0	dB
Quality Factor	Unloaded Q	Q_U		10371		
	50 Ω Loaded Q	Q_L		1800		
Temperature Stability	Turnover Temperature	T_O	25	40	55	℃
	Turnover Frequency	f_O		fc		kHz
	Frequency Temperature Coefficient	FTC		0.037		ppm/℃^{2}
Frequency Aging Absolute Value during the First Year		$\lvert f_A \rvert$		≤10		ppm/yr
DC Insulation Resistance Between Any Two Pins			1.0			MΩ
RF Equivalent RLC Model	Motional Resistance	R_M		21	26	Ω
	Motional Inductance	L_M		79.926		µH
	Motional Capacitance	C_M		1.6848		fF
	Pin 1 to Pin 2 Static Capacitance	C_O		1.9		pF

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℃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, f_C, 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 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. 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, f_C versus T_C , and C_O.
7. Turnover temperature, T_O, is the temperature of maximum (or turnover) frequency, f_O, The nominal center 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℃ less than the specified resonator T_O.
8. This equivalent RLC model approximates resonator performance near the resonant frequency and is provided for reference only. The capacitance C_O 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 C_O.

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