

# Discontinued

RFM products are now  
Murata products.

- Ideal for European 433.92 MHz Transmitters
- Low Series Resistance
- Quartz Stability
- Rugged, Hermetic, Low-Profile TO39 Case

The RO3023 is a true one-port, surface-acoustic-wave (SAW) resonator in a low-profile TO39 case. It provides reliable, fundamental-mode, quartz frequency stabilization of fixed-frequency transmitters operating at 433.92 MHz. The RO3023 is designed specifically for remote-control and wireless security devices operating in Europe under ETSI I-ETS 300 220 and in Germany under FTZ 17 TR 2100.

## Absolute Maximum Ratings

Rating	Value	Units
CW RF Power Dissipation (See: Typical Test Circuit)	+0	dBm
DC Voltage Between Any Two Pins (Observe ESD Precautions)	±30	VDC
Case Temperature	-40 to +85	°C
Soldering Temperature (10 seconds / 5 cycles max.)	260	°C

## Electrical Characteristics

Characteristic	Sym	Notes	Minimum	Typical	Maximum	Units
Center Frequency at +25 °C	$f_C$	2, 3, 4, 5	433.895		434.045	MHz
	$\Delta f_C$				±75	kHz
Insertion Loss	IL	2, 5, 6		2.5	4.8	dB
Quality Factor	$Q_U$	5, 6, 7		8,500		
	$Q_L$			2200		
Temperature Stability	$T_O$	6, 7, 8	10	25	40	°C
	$f_O$			$f_C + 2.3$		kHz
	FTC			0.037		ppm/°C <sup>2</sup>
Frequency Aging	Absolute Value during the First Year	fA	1		≤10	ppm/yr
DC Insulation Resistance between Any Two Pins		5	1.0			MΩ
RF Equivalent RLC Model	$R_M$	5, 7, 9		34.5		Ω
	$L_M$			107		μH
	$C_M$			1.3		fF
	$C_O$		5, 6, 9	2.1		pF
Transducer Static Capacitance	$C_P$	5, 6, 7, 9		1.8		pF
Test Fixture Shunt Inductance	$L_{TEST}$	2, 7		68.2		nH
Lid Symbolization				RFM RO3023 Datecode		

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

### NOTES:

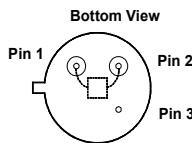
1. Frequency aging is the change in  $f_C$  with time and is specified at +65°C or less. Aging may exceed the specification for prolonged temperatures above +65°C. Typically, aging is greatest the first year after manufacture, decreasing in subsequent years.
2. The center frequency,  $f_C$ , is measured at the minimum insertion loss point, IL<sub>MIN</sub>, with the resonator in the 50 Ω test system (VSWR ≤ 1.2:1). The shunt inductance, L<sub>TEST</sub>, is tuned for parallel resonance with C<sub>O</sub> at f<sub>C</sub>.
3. One or more of the following United States patents apply: 4,454,488 and 4,616,197.
4. Typically, equipment utilizing this device requires emissions testing and government approval, which is the responsibility of the equipment manufacturer.
5. Unless noted otherwise, case temperature T<sub>C</sub> = +25°C ± 2°C.
6. The design, manufacturing process, and specifications of this device are subject to change without notice.
7. Derived mathematically from one or more of the following directly measured parameters: f<sub>C</sub>, IL, 3 dB bandwidth, f<sub>C</sub> versus T<sub>C</sub>, and C<sub>O</sub>.
8. Turnover temperature, T<sub>O</sub>, is the temperature of maximum (or turnover) frequency, f<sub>O</sub>. The nominal frequency at any case temperature, T<sub>C</sub>, may be calculated from: f = f<sub>O</sub> [1 - FTC (T<sub>O</sub> - T<sub>C</sub>)<sup>2</sup>]. Typically, oscillator T<sub>O</sub> is 20°C less than the specified resonator T<sub>O</sub>.
9. This equivalent RLC model approximates resonator performance near the resonant frequency and is provided for reference only. The capacitance C<sub>O</sub> is the static (nonmotional) capacitance between Pin1 and Pin 2 measured at low frequency (10 MHz) 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 0.25 pF to C<sub>O</sub>.

# Discontinued

## Electrical Connections

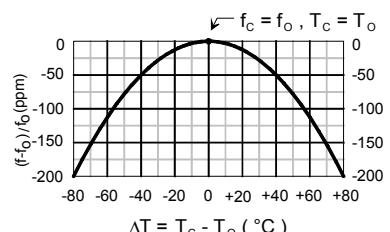
This one-port, two-terminal SAW resonator is bidirectional. The terminals are interchangeable with the exception of circuit board layout.

Pin	Connection
1	Terminal 1
2	Terminal 2
3	Case Ground



## Temperature Characteristics

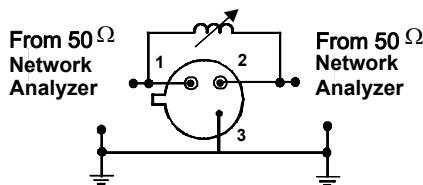
The curve shown on the right accounts for resonator contribution only and does not include oscillator temperature characteristics.



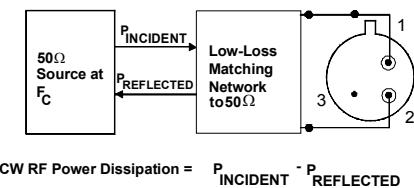
## Typical Test Circuit

The test circuit inductor,  $L_{TEST}$ , is tuned to resonate with the static capacitance,  $C_O$  at  $F_C$ .

### Electrical Test:



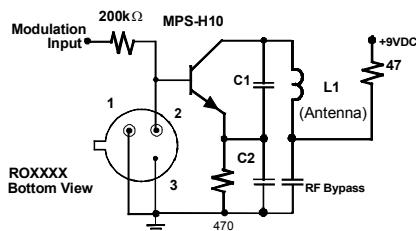
### Power Test:



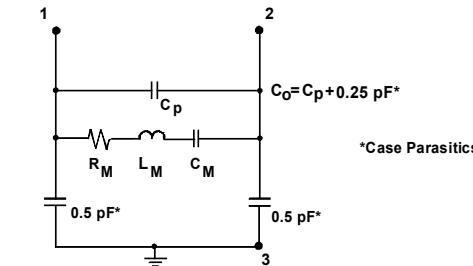
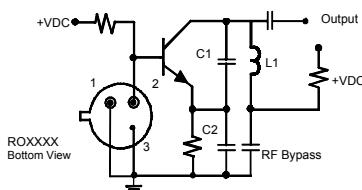
$$CW \text{ RF Power Dissipation} = P_{INCIDENT} - P_{REFLECTED}$$

## Typical Application Circuits

### Typical Low-Power Transmitter Application:

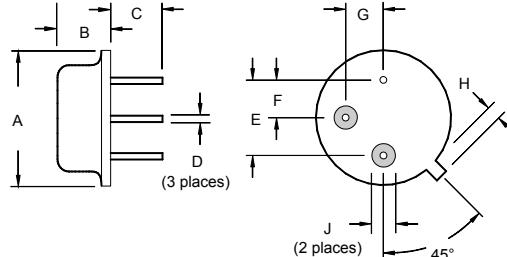


### Typical Local Oscillator Application:



\*Case Parasitics

## Case Design



Dimensions	Millimeters		Inches	
	Min	Max	Min	Max
A			9.30	0.366
B			3.18	0.125
C	2.50	3.50	0.098	0.138
D	0.46 Nominal		0.018 Nominal	
E	5.08 Nominal		0.200 Nominal	
F	2.54 Nominal		0.100 Nominal	
G	2.54 Nominal		0.100 Nominal	
H			1.02	0.040
J	1.40		0.055	

ООО "ЛайфЭлектроникс"

"LifeElectronics" LLC

ИНН 7805602321 КПП 780501001 Р/С 40702810122510004610 ФАКБ "АБСОЛЮТ БАНК" (ЗАО) в г.Санкт-Петербурге К/С 30101810900000000703 БИК 044030703

Компания «Life Electronics» занимается поставками электронных компонентов импортного и отечественного производства от производителей и со складов крупных дистрибуторов Европы, Америки и Азии.

С конца 2013 года компания активно расширяет линейку поставок компонентов по направлению коаксиальный кабель, кварцевые генераторы и конденсаторы (керамические, пленочные, электролитические), за счёт заключения дистрибуторских договоров

Мы предлагаем:

- Конкурентоспособные цены и скидки постоянным клиентам.
- Специальные условия для постоянных клиентов.
- Подбор аналогов.
- Поставку компонентов в любых объемах, удовлетворяющих вашим потребностям.
- Приемлемые сроки поставки, возможна ускоренная поставка.
- Доставку товара в любую точку России и стран СНГ.
- Комплексную поставку.
- Работу по проектам и поставку образцов.
- Формирование склада под заказчика.
- Сертификаты соответствия на поставляемую продукцию (по желанию клиента).
- Тестирование поставляемой продукции.
- Поставку компонентов, требующих военную и космическую приемку.
- Входной контроль качества.
- Наличие сертификата ISO.

В составе нашей компании организован Конструкторский отдел, призванный помочь разработчикам, и инженерам.

Конструкторский отдел помогает осуществить:

- Регистрацию проекта у производителя компонентов.
- Техническую поддержку проекта.
- Защиту от снятия компонента с производства.
- Оценку стоимости проекта по компонентам.
- Изготовление тестовой платы монтаж и пусконаладочные работы.



Тел: +7 (812) 336 43 04 (многоканальный)  
Email: org@lifeelectronics.ru