

PART NUMBER: ACTR3028-315MHz-DCC6C-75kHz-v1.1

Frequency: 315.000MHz

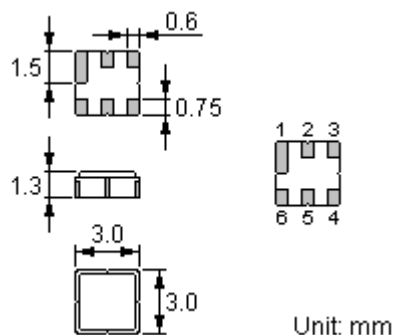
Features

- 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



Package Dimensions

Ceramic Package: **DCC6C**



Pin Configuration

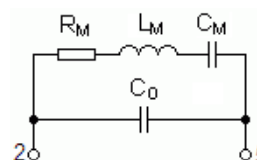
2	Input / Output
5	Output / Input
1, 3, 4, 6	Ground

Marking



Top View, Laser Printing
 "ACT": Manufacturer's mark
 "R": SAW resonator
 "3028": Part number

Equivalent LC Model



Maximum Ratings

Rating		Value	Unit
CW RF power dissipation	P	10	dBm
DC voltage between any terminals	V_{DC}	± 30	V
Operating temperature range	T_A	-40 ~ +125	°C
Storage temperature range	T_{stg}	-40 ~ +125	°C
Soldering Temperature (10 seconds)	T_S	260	°C

In line with our ongoing policy of product evolution and improvement, the above specification may subject to change without notice

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 3 The Business Centre, Molly Millars Lane, Wokingham, Berkshire, RG41 2EY, UK
<http://www.actcrystals.com>

Electrical Characteristics

Reference Temperature: $T_A = 25^\circ\text{C}$

Characteristic		Sym	Minimum	Typical	Maximum	Unit
Center Frequency ($+25^\circ\text{C}$)	Absolute Frequency	f_c	314.925		315.075	MHz
	Tolerance from 315.000 MHz	Δf_c			± 75	kHz
Insertion Loss		I_L		1.5	2.0	dB
Quality Factor	Unloaded Q	Q_U		11,270		
	50 Ω Loaded Q	Q_L		1,800		
Temperature Stability	Turnover Temperature	T_0	25		55	$^\circ\text{C}$
	Turnover Frequency	f_0		f_c		kHz
	Frequency Temperature Coefficient	FTC		0.032		ppm/ $^\circ\text{C}$
Frequency Aging	Absolute Value during the First Year	$ f_A $		≤ 10		ppm/yr
DC Insulation Resistance Between Any Two Terminals			1.0			M Ω
RF Equivalent RLC Model	Motional Resistance	R_M		19	26	Ω
	Motional Inductance	L_M		108.2803		μH
	Motional Capacitance	C_M		2.35999		fF
	Shunt Static Capacitance	C_0	2.50	2.80	3.10	pF

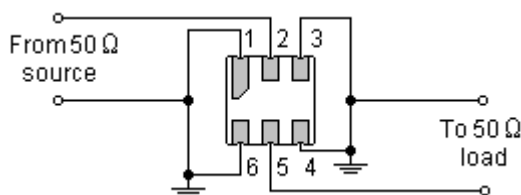
 **RoHS Compliant**

 **Electrostatic Sensitive Device**

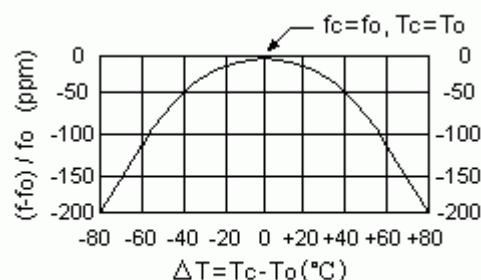
NOTE:

1. Unless noted otherwise, case temperature $T_C = +25^\circ\text{C} \pm 2^\circ\text{C}$.
2. The center frequency, f_c , is measured at the minimum insertion loss point with the resonator in the 50 Ω test system.
3. 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.
4. Turnover temperature, T_0 , is the temperature of maximum (or turnover) frequency, f_0 . The nominal frequency at any case temperature, T_C , may be calculated from: $f = f_0 [1 - \text{FTC} (T_0 - T_C)^2]$.
5. This equivalent RLC model approximates resonator performance near the resonant frequency and is provided for reference only. The capacitance C_0 is the static capacitance between the two terminals measured at low frequency (10MHz) with a capacitance meter. The measurement includes case parasitic capacitance.

Test Circuit



Temperature Characteristics



The curve shown above accounts for resonator contribution only.

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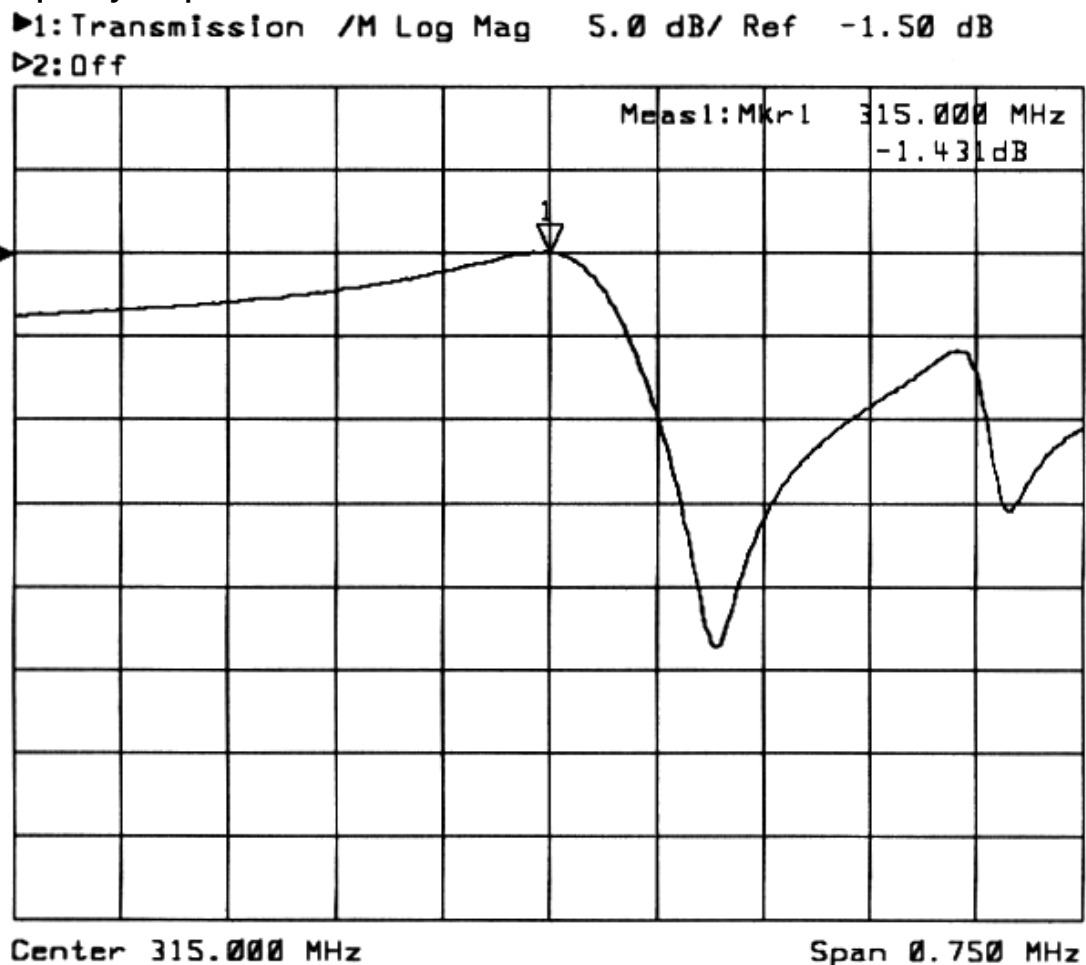
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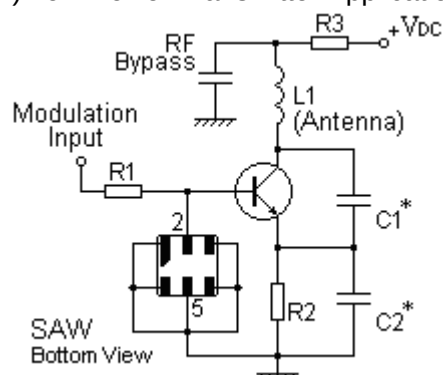
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Typical Frequency Response

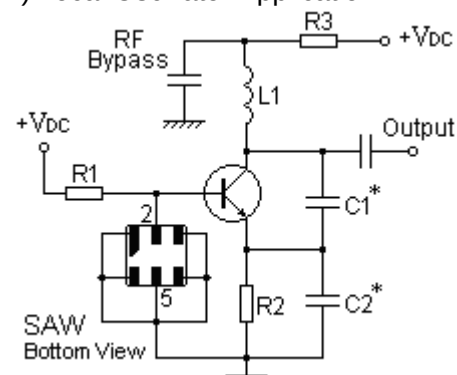


Typical Application Circuits

1) Low-Power Transmitter Application



2) Local Oscillator Application



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Stability Characteristics

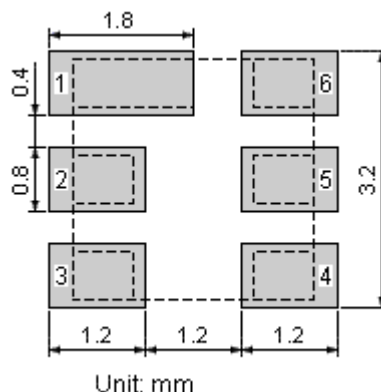
	Test item	Condition of test
1	Mechanical shock	(a) Drops: 3 times on concrete floor (b) Height: 1.0 m
2	Vibration resistance	(a) Frequency of vibration: 10~55Hz (c) Directions: X,Y and Z (b) Amplitude: 1.5 mm (d) Duration: 2 hours
3	Moisture resistance	(a) Condition: 40°C, 90~95% R.H. (c) Wait 4 hours before measurement (b) Duration: 96 hours
4	Climatic sequence	(a) +70°C for 16 hours (c) -25°C for 2 hours (e) Wait 4 hours before measurement (b) +55°C for 24 hours, 90~95% R.H. (d) +40°C for 24 hours, 90~95% R.H.
5	High temperature exposure	(a) Temperature: 70°C (c) Wait 4 hours before measurement (b) Duration: 250 hours
6	Thermal impact	(a) +70°C for 30 minutes ⇒ -25°C for 30 minutes repeated 3 times (b) Wait 4 hours before measurement

Requirements: The SAW resonator shall remain within the electrical specifications after tests.

Remarks

- SAW devices should not be used in any type of fluid such as water, oil, organic solvent, etc.
- Be certain not to apply voltage exceeding the rated voltage of components.
- Do not operate outside the recommended operating temperature range of components.
- Sudden change of temperature shall be avoided, deterioration of the characteristics can occur.
- Be careful of soldering temperature and duration of components when soldering.
- Do not place soldering iron on the body of components.
- Be careful not to subject the terminals or leads of components to excessive force.
- SAW devices are electrostatic sensitive. Please avoid static voltage during operation and storage.
- Ultrasonic cleaning shall be avoided. Ultrasonic vibration may cause destruction of components.

Recommended Land Pattern



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