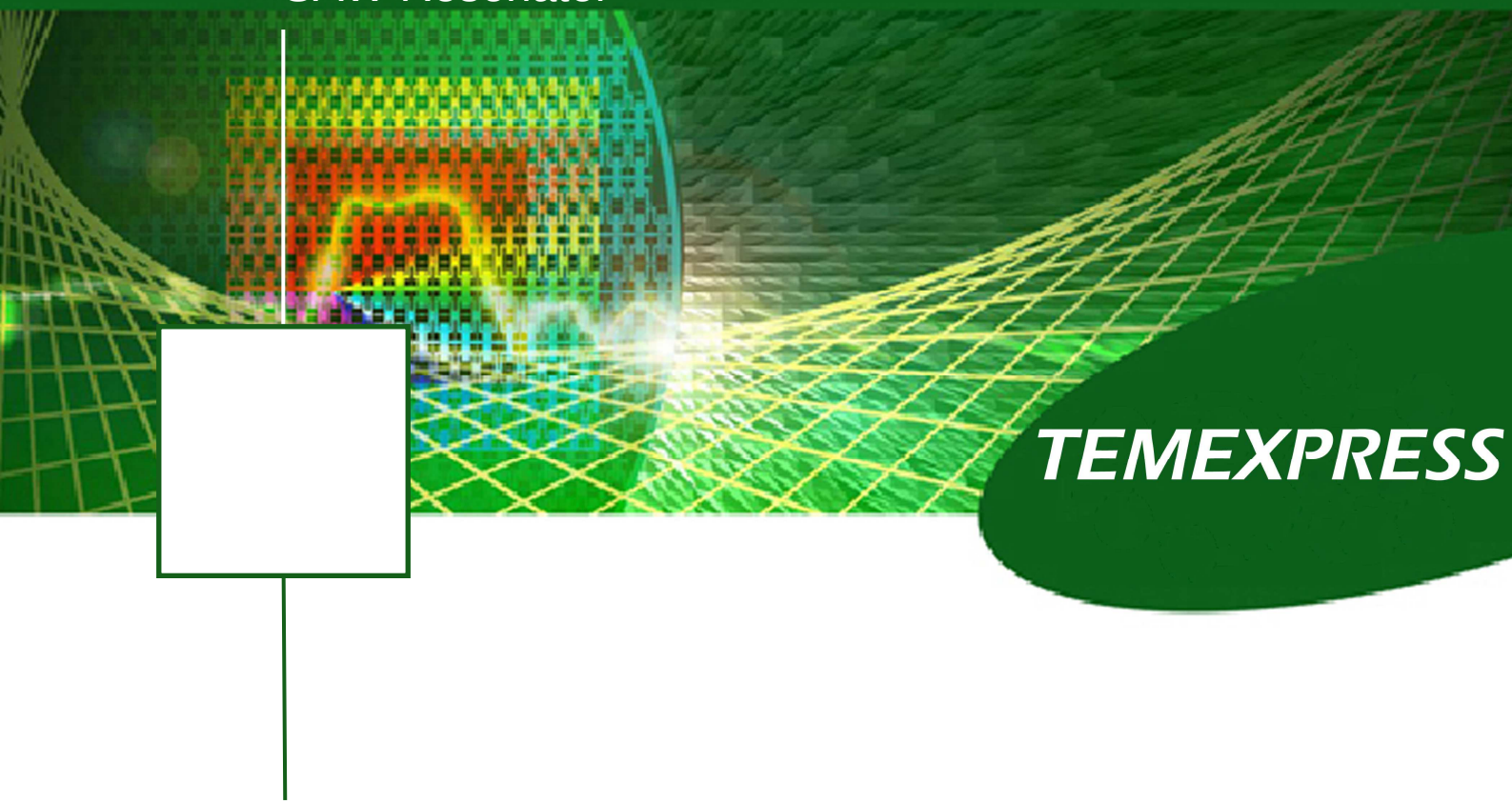
SAW Resonator



FR GT03

SAW Resonator – Wireless Remote Control

Specification (Rev 3)

FR GT03

SAW Resonator – Wireless Remote Control

Specification (Rev 3)

July 03rd, 2014

Features

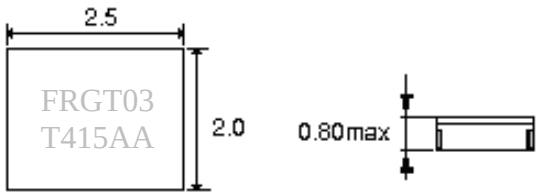
- SAW Resonator
- 1-port resonator
- Provides reliable, fundamental mode, quartz frequency stabilization
- Tolerance ± 75kHz
- Ceramic package for Surface Mounted Technology

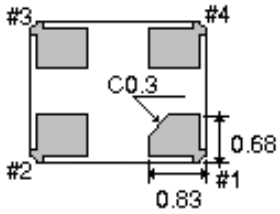
Package Drawing & Pin out

The product is in conformance with the European RoHS Recast Directive (2011/65/EU).

[Unit: mm]

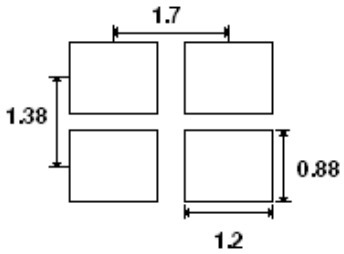
Top View





Bottom View

Recommended Land Pattern



Pin Configuration	
1	**Input**
2	Ground
3	**Output**
4	Ground

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Technical Characteristics

Reference Temperature : T_A = +25°C

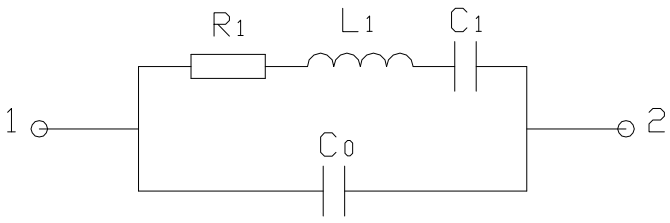
Electrical Parameters	Unit	Minimum	Typical	Maximum
Center Frequency f_c (1)	MHz	433.745	433.820	433.895
Tolerance from f_c	kHz	- 75	-	75
Insertion Loss	dB	-	1.2	1.6
Quality Factor				
Unloaded Q (Q_U)		-	11 200	-
50Ω Loaded Q (Q_l)		-	1 450	-
Temperature Stability				
Temperature coefficient of frequency (TC_f)	ppm/K²	-	-0.016	-
Turnover temperature (T_0)	°C	10	20	30
Stability from 0°C to +40°C	kHz	-	-	±4
Stability from -10°C to +50°C	kHz	-	-	±9
Frequency Aging (2) (Absolute value during the first year)	ppm/year	-	≤ 10	-
DC Insulation Resistance between any two pins	MΩ	1.0	-	-
RF Equivalent RLC Model				
Motional Resistance (R_1)	Ω	-	14.82	20
Motional Inductance (L_1)	µH	-	61.094	-
Motional Capacitance (C_1)	fF	-	2.204	-
Shunt Static Capacitance (C_0)	pF	-	2.1	2.7

(1) The Center Frequency f_c is measured at the minimum insertion loss point with the resonator in the 50Ω test system.

(2) 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.

(3) This equivalent RLC model approximates resonator performance near the resonant frequency and is provided for reference only.

Equivalent LC Model



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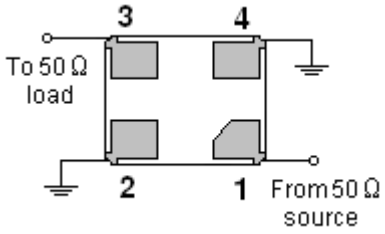
Maximum Ratings

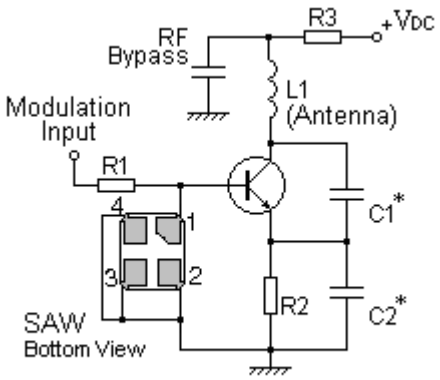
Storage Temperature Range	°C	[-40°C ; +85°C]
Operating temperature	°C	[-40°C ; +85°C]
DC voltage between any two pins	V	±30
Input Power Level	dBm	10

Test Circuit

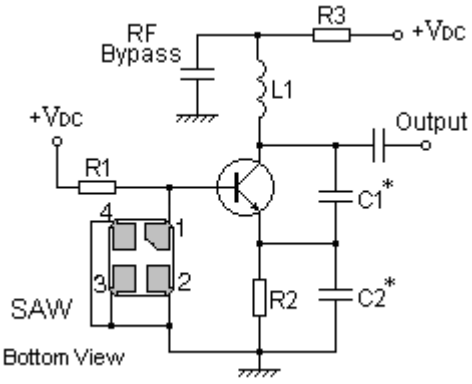


Typical Application Circuits

Low-Power Transmitter Application



Local Oscillator Application



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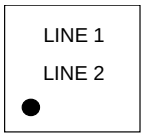
Marking

Laser Printing



Line 1: "FRGT03" is the reference to Temexpress Part number

Line 2: TYWWZZ is the date code as:

T: Partner identifier.
Y: last digit of the year.
WW: number of week in the year
ZZ: Lot number in the week (from AA to ZZ).

Reliability

	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 (b) Amplitude: 1.5 mm (c) Directions: X,Y and Z (d) Duration: 2 hours
3	Moisture resistance	(a) Condition: 40°C, 90~95% R.H. (b) Duration: 96 hours (c) Wait 4 hours before measurement
4	Climatic sequence	(a) +70°C for 16 hours (b) +55°C for 24 hours, 90~95% R.H. (c) -25°C for 2 hours (d) +40°C for 24 hours, 90~95% R.H. (e) Wait 4 hours before measurement
	High temperature exposure	(a) Temperature: 70°C (b) Duration: 250 hours (c) Wait 4 hours before measurement
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.

Note: As a result of the particularity of inner structure of SAW products, it easy to be breakdown by electrostatic, so we should pay attention to ESD protect in the test.