



# ***SAW Components***

## ***Data Sheet***

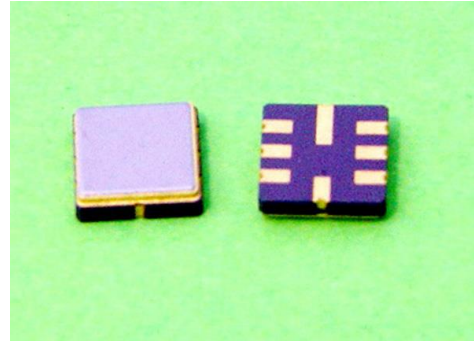
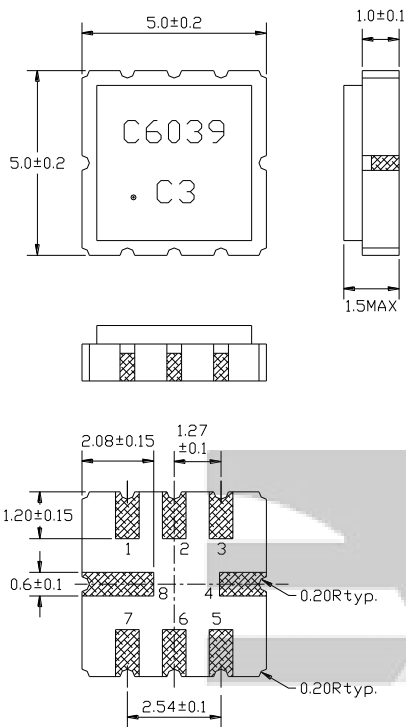
### ***CQTSR409M00.01***

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1. Package Dimension

Unit: mm



Pin No.	Function
2	Input
6	Output
4,8	Ground
other	NC

2. Marking

C6039	(1) Model code
C3	(2) Date code

C	3
Month code	Last figure of year

Month	1	2	3	4	5	6	7	8	9	10	11	12
Month code	A	B	C	D	E	F	G	H	I	J	K	L

### 3. Performance

#### 3.1 Application

One-port SAW Resonator for Wireless Remote Controller.

Center frequency: 409.0MHz

#### 3.2 Maximum Rating

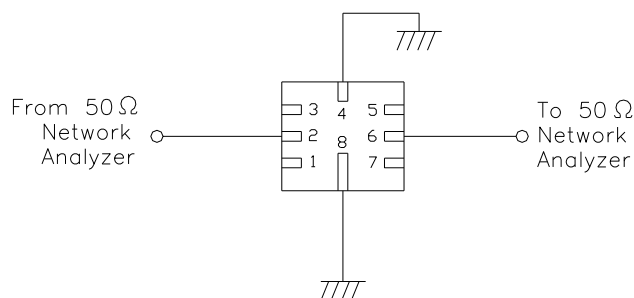
Rating		Value	Unit
Operating Temperature Range	$T_A$	-40 ~ +85	°C
Storage Temperature Range	$T_{stg}$	-45 ~ +85	°C
DC Voltage (between any Terminals)	$V_{DC}$	10	V
RF Power (in BW)	$P$	10	dBm
ESD Voltage (HB)	$V_{ESD}$	150	V

Electrostatic Sensitive Device (ESD)

#### 3.3 Electronic Characteristics

Item	Unit	Minimum	Typical	Maximum
Center Frequency ( $f_0$ )	MHz	408.925	409.00	409.075
Insertion Loss	dB	—	1.3	2.0
Quality Factor	—	—	—	—
Unloaded Q	—	—	14,000	—
50Ω Loaded Q	—	—	1,500	—
Temperature Stability	—	—	—	—
Turnover Temperature	°C	—	25	—
Frequency Temperature Coefficient	ppm/°C <sup>2</sup>	—	0.032	—
Frequency Aging	ppm/yr	—	<±10	—
DC Insulation Resistance	MΩ	1.0	—	—
RF Equivalent RLC Model	—	—	—	—
Motional Resistance $R_1$	Ω	—	16	25
Motional Inductance $L_1$	μH	—	89	—
Motional Capacitance $C_1$	fF	—	1.9	—
Shunt Static Capacitance $C_0$	pF	1.4	1.7	2.0

### 3.4 Test Circuit



## 4 Reliability

- 4.1 Mechanical Shock: The components shall remain within the electrical specifications after three one-half sine shock pulses(3000g's for 0.3 ms) in each direction(for six total) along each of the three mutually perpendicular axes for a total of 18 shocks.
- 4.2 Vibration Fatigue: The components shall remain within the electrical specifications after loaded vibration at 20~55Hz, amplitude 1.5mm, X,Y,Z, direction, for 2 hours.
- 4.3 Leak Test
- 4.3.1 Gross Leak Test: Submerge samples into at +85°C water for at least 1 minute. Carefully observe the samples. No bubbles should be seen.
- 4.3.2 Fine Leak Test: Expose samples for testing to 60 PSIG Helium gas for 2 hours. Then transfer the same samples to another chamber and draw a vacuum. Measure the leak rate. Failure is defined if the leak rate exceeds  $5 \times 10^{-8}$  atm cc/sec Helium.
- 4.4 High Temperature Storage: The components shall remain within the electrical specifications after being kept at the  $85^{\circ}\text{C} \pm 2^{\circ}\text{C}$  for 960 hours, then kept at room temperature for 2 hours.
- 4.5 Low Temperature Storage: The components shall remain within the electrical specifications after being kept at the  $-40^{\circ}\text{C} \pm 2^{\circ}\text{C}$  for 960 hours, then kept at room temperature for 2 hours.
- 4.6 Temperature Cycle: The components shall remain within the electrical specification after 32 cycles of high and low temperature testing (one cycle:  $80^{\circ}\text{C}$  for 30 minutes  $\rightarrow$   $25^{\circ}\text{C}$  for 20 seconds  $\rightarrow$   $-40^{\circ}\text{C}$  for 30 minutes) than kept at room temperature for 2 hours.
- 4.7 Humidity Test: The components shall remain within the electrical specifications after being kept at the condition of ambient temperature  $70^{\circ}\text{C}$ , and 90~95% RH for 240 hours, then kept at room temperature and normal humidity for 4 hours.
- 4.8 Solder-heat Resistance: The components shall remain within the electrical specifications after dipped in the solder at  $260^{\circ}\text{C} \pm 5^{\circ}\text{C}$  for 10 to 11 seconds, then kept at room temperature for 10 minutes.
- 4.9 Solderability: Solderability of terminal shall be kept at more than 80% after dipped in the solder flux at  $230^{\circ}\text{C} \pm 5^{\circ}\text{C}$  for  $5 \pm 1$  seconds.
- 4.10 Storage: The components shall meet the electrical and mechanical specifications after 5 years storage, if stored within the temperature range of  $-40^{\circ}\text{C} \sim +85^{\circ}\text{C}$  and in the humidity of 20 to 60% r.h.