

#### Features

- Frequency up to 3 GHz
- Extreme small package 7.6mm SQ
- Low Phase Noise

#### Applications

- Telecommunication
- Navigation
- Instrumentation

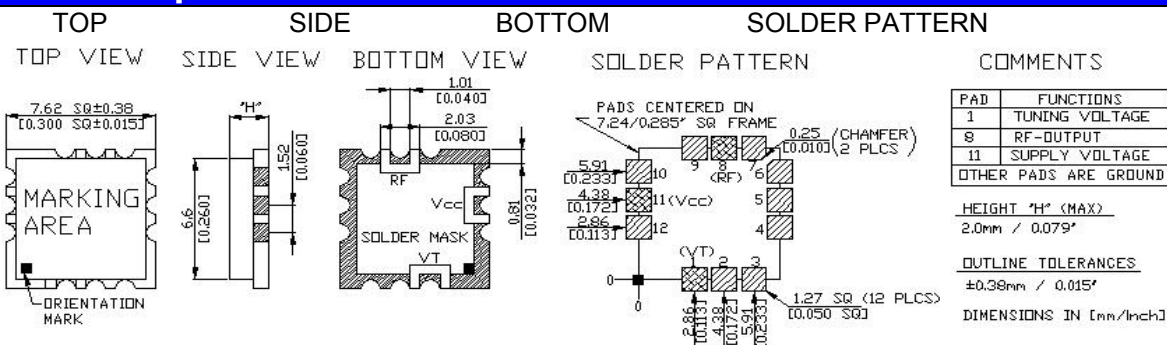
#### Description

The RQL-type is specifically designed for applications that demand low phase noise and minimal space consumption. Components are selected for high-Q and tight tolerances, 9 ground-pads ensure solid ground-connection. Raltron's RQL-series is developed and manufactured in its ISO9000 certified facility in Miami.

RF-simulation (CAE), automated test-equipment (Agilent VCO/PLL-Analyzer) and statistical process control (SPC) are integral part of R&D and manufacturing – which ensures minimal process variances and a high degree of repeatability.



#### Mechanical Specification



#### Electrical Specification

PARAMETER	COMMENTS, EXAMPLES	SYMBOL	MIN	TYP	MAX	UNIT
Max Frequency	Currently available in RQR-package	f <sub>o</sub>			3000	MHz
Tuning Ratio	Ratio of upper-to-lower freq (2 = "Octave-VCO")	f-up : f-low		1.1	1.5	-
Tuning Voltage	Battery operated 2V, Stationary: 5V or higher	V <sub>t</sub>	0~2	0~5	0~25	V
Supply Voltage	Battery operated 3.3V to 5V, Stationary up to 12V	V <sub>cc</sub>	3.3	5	12	V
Supply Current	Dependent on Frequency and Output Power	I <sub>cc</sub>	10	20	30	mA
Output Power	Output Power Tolerance is typ. ±3dB (min. ±1dB)	P <sub>out</sub>	-3	+3	+10	dBm
Harmonic Suppression	Dependent on Tuning Range and Freq	a(2f <sub>o</sub> )		-20		dBc
Pushing	Dependent on Freq, Tuning R., typ 0.1%~0.5% f <sub>o</sub>	df/dV <sub>cc</sub>		1		MHz/V
Pulling	Dependent on Freq, Output Power and Circuit.	df/dZL		3		MHz

### General Specification

1. Load Impedance is 50 Ohms.
2. Operating temperature range is typically  $-40^{\circ}\text{C} \dots +85^{\circ}\text{C}$ .
3. The package is non-hermetic. Substrate is glass-reinforced laminate, cover is folded nickel-silver.
4. Bypass-capacitors (ceramic) from Vcc to Ground are recommended:  $1\text{nF}||100\text{pF}$ .
5. Customized specifications may deviate from this General Specification.
6. Phase-noise performance depends on the individual specification. Phase Noise is strongly dependent on (a) frequency (b) supply voltage and (c) tuning range.
7. The phase noise graph (to right) shows the characteristic of 3 typical RQL-VCOs. All samples have 3dBm output power and  $\pm 1\%$  tuning range. Variables are frequency and supply voltage.

### Phase Noise

