

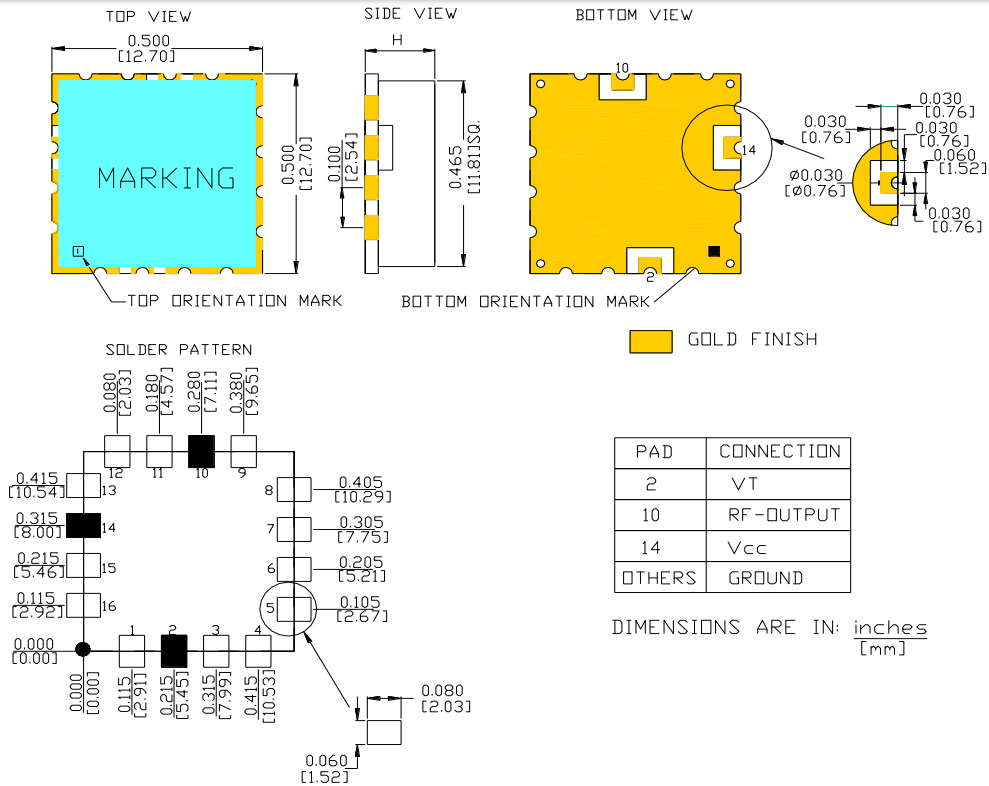
## ELECTRICAL SPECIFICATIONS

| PARAMETER                        | CONDITION                           | SYMBOL                          | VALUE  |      |      | UNIT      |
|----------------------------------|-------------------------------------|---------------------------------|--|------|------|-----------|
|                                  |                                     |                                 | Min.   | Typ. | Max. |           |
| Frequency Range                  | Vt=0.5 V                            | fo(Vt)                          |  |      | 4130 | MHz       |
|                                  | Vt=5.0                              |                                 | 4730   |      |      |           |
| Power Supply Voltage             |                                     | Vcc                             | 4.75   | 5.0  | 5.25 | V         |
| Tuning Voltage                   |                                     | Vt                              | 0.2  |      | 7.0  | V         |
| Supply Current                   | Vcc=5.0V ±5%                        | Icc                             |  | 28   |      | mA        |
| Tuning Sensitivity               | Vt=0.5-5V<br>Vcc=5.0V ±5%<br>T=25°C | df/dVt                          |  | 150  |      | MHz/V     |
| Modulation Bandwidth             | @3 dB                               |                                 |  | 5000 |      | kHz       |
| Tuning Port Capacitance          | Vt=0.5-5V                           |                                 |  | 20   |      | pF        |
| Pushing                          | Vcc=4.75 – 5.25V                    | df/dVcc                         |  | 5    | 8    | MHz/V     |
| Pulling <sup>1,2</sup>           | Return Loss: 12dB                   | df/dZL                          |  | 3    | 5    | MHz-pk-pk |
| Frequency Drift with Temperature | @-40°C                              |                                 |  | 25   |      | MHz       |
|                                  | @+85°C                              |                                 |  | 25   |      | MHz       |
| Operating Temperature Range      |                                     | Ta                              | -40  |      | 85   | °C        |
| Storage Temperature Range        |                                     | Tstor                           | -55  |      | 125  | °C        |
| Maximum Limits Voltage           | Vcc(abs)                            |                                 | -0.4   |      | 8.0  | V         |
| Moisture Sensitivity Level       | MSL                                 | JEDEC J-STD-2                   | 1  |      |      |           |
| Termination; Finish              |                                     |                                 | Glass-reinforced laminate base and nickel-silver cover |      |      |           |
| ESD Sensitivity                  | HBM                                 | Human body model<br>JESD22-A114 |  | 3    |      | kV        |

## OUTPUT CHARACTERISTICS

| SINE-WAVE | PARAMETER            | SYMBOL         | CONDITION                              | VALUE |      |     | UNIT |
|-----------|----------------------|----------------|--|-------|------|-----|------|
|           |                      |                |  | Min   | Typ. | Max |      |
|           | Output Power         | Pw             | Output termination 50Ω<br>Vcc=5.0V ±5% | -3    |      | +3  | dBm  |
|           | Harmonic Suppression | h <sup>2</sup> |  |       | -15  | -10 | dBc  |
|           | Output Power         |                | Vt=0 and 5V                            | -3    |      |     | dB   |
|           | Output Load          | OCL            |  |       | 50   |     | Ω    |

## MECHANICAL DIMENSIONS AND PIN FUNCTIONING



H =  $\frac{0.220}{5.6}$

H Tolerance:  $\pm 0.020$ in  
 $\pm 0.51$ mm

| PIN              | SYMBOL            | FUNCTION        |
|------------------|-------------------|-----------------|
| 2                | Vt                | Control Voltage |
| 10               | Rf <sub>out</sub> | RF Output       |
| 14               | Vcc               | Power Supply    |
| 6, Others, Cover | GND               | Ground          |

■ Marking:

RQRA  
 4130-4730  
 1 Date code

## PHASE NOISE

| PARAMETER       | SYMBOL             | CONDITION                | VALUE |      |      | UNIT |
|-----------------|--------------------|--------------------------|-------|------|------|------|
|                 |                    |                          | Min   | Typ  | Max  |      |
| SSB Phase noise | $\Sigma(\Delta f)$ | $\Delta f=1\text{kHz}$   |       | -60  | -55  | dBc  |
|                 |                    | $\Delta f=10\text{kHz}$  |       | -88  | -83  |      |
|                 |                    | $\Delta f=100\text{kHz}$ |       | -108 | -103 |      |
|                 |                    | $\Delta f=1\text{ MHz}$  |       | -128 | -123 |      |

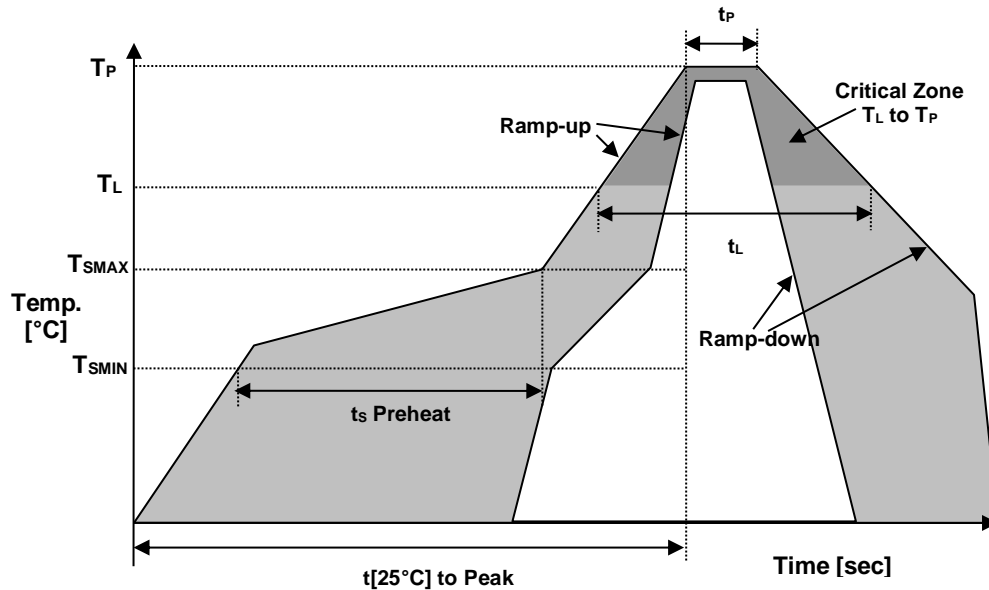
## COMMON SPECIFICATIONS

- 1.1 -Load impedance is 50 Ohms.
- 1.2 -Pulling is measured with 12dB return loss, all phases.
- 1.3- Package outline tolerances are typ.  $\pm 0.30\text{mm}$  /  $\pm 0.012$  inch if not stated differently on the drawing.
- 1.4 -It is recommended to provide two bypass-capacitors (ceramic), from Vcc to Gnd,  $1\text{nF} \parallel 100\text{pF}$ .
- 1.5- Solder temperature (peak) is  $260^\circ\text{C}$  for 10-20s.

## Environmental Compliance

| PARAMETER              | CONDITIONS               |
|------------------------|--------------------------|
| Mechanical Shock       | MIL-STD-883, Method 2002 |
| Mechanical Vibration   | MIL-STD-883, Method 2007 |
| Solderability          | MIL-STD-883, Method 2003 |
| Resistance to Solvents | MIL-STD-883, Method 2016 |

## REFLOW PROFILE



| Recommended Solder Reflow Profile                 |                                  |                |
|---|----------------------------------|----------------|
| Temperature Min Preheat                           | $T_{SMIN}$                       | 150°C          |
| Temperature Max Preheat                           | $T_{SMAX}$                       | 175°C          |
| Time ( $T_{SMIN}$ to $T_{SMAX}$ )                 | $t_s$                            | 60-180 sec.    |
| Temperature                                       | $T_L$                            | 217°C          |
| Peak Temperature                                  | $T_P$                            | 260°C          |
| Ramp-up rate                                      | $R_{UP}$                         | 3°C/sec max.   |
| Ramp-down rate                                    | $R_{DOWN}$                       | 6°C/sec max.   |
| Time within 5°C of Peak Temperature               | $t_p$                            | 10-20 sec max. |
| Time $t_{[25^\circ\text{C}]}$ to Peak Temperature | $t_{[25^\circ\text{C}]}$ to Peak | 480 sec.       |
| Time  | $t_L$                            | 60-150 sec.    |

| APPROVALS            |    |            |
|----------------------|----|------------|
| Eng. approval, date: | IM | 11/25/2019 |
| Created by, date:    | CP | 11/25/2019 |
| Revision: A          |    |            |

