

RQRA-1500-LPH

## ELECTRICAL SPECIFICATIONS

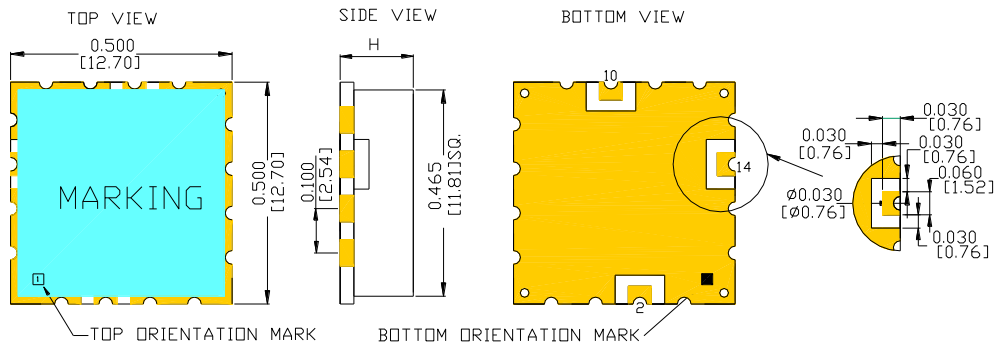
PARAMETER	CONDITION	SYMBOL	VALUE			UNIT
			Min.	Typ.	Max.	
Frequency Range	Vt=1.0V~4.0 V	fo(Vt)		1500		MHz
Power Supply Voltage	±5.0%	Vcc		5.0		V
Tuning Voltage		Vt	1.0		4.0	V
Supply Current	Vcc=5.0V ±5%	Icc		27		mA
Tuning Sensitivity	Vt=1.0~4.0V Vcc=5.0V ±5% T=25°C	df/dVt		4.0		MHz/V
Tuning Port Capacitance				65		pF
Modulation Bandwidth	BW @ 3 dB			1000		KHz
Pushing	Vcc ±5%	df/dVcc		0.1	0.2	MHz/V
Pulling <sup>1,2</sup>	@12dBr, all phases	df/dZL		0.1	0.2	MHz p-p
Operating Temperature		Ta	-40		85	°C
Storage Temperature		Tstor	-55		125	°C
Maximum Limits Voltage	V <sub>cc(abs)</sub>		-0.4		7.0	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 JESD22-A114		3		kV

## OUTPUT CHARACTERISTICS

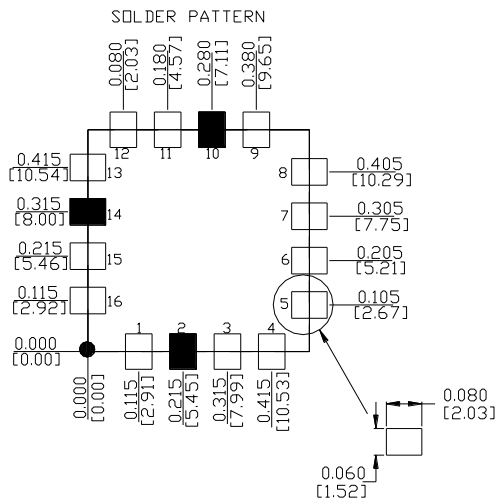
SINE-WAVE	PARAMETER	SYMBOL	CONDITION	VALUE			UNIT
				Min	Typ.	Max	
	Output Power	P <sub>w</sub>	Output termination 50Ω Vcc=5.0V ±5%	-2.5	0	2.0	dBm
	2nd Harmonic Suppression	h <sup>2</sup>			-13	-10	dBc
	3rd Harmonic Suppression	h <sup>3</sup>			-20	-10	dBc
	Spurious (Non-Harmonic)	Sp			--		dBc
	Output Load	O <sub>CL</sub>		50		Ω	

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### MECHANICAL DIMENSIONS AND PIN FUNCTIONING



GOLD FINISH



$$H = \frac{0.236}{6.0}$$

PAD	CONNECTION
2	VT
10	RF-OUTPUT
14	Vcc
OTHERS	GROUND

DIMENSIONS ARE IN:  $\frac{\text{inches}}{[\text{mm}]}$

H Tolerance:  $\pm 0.020\text{in}$   
 $\pm 0.51\text{mm}$

■ Marking:

RQRA  
1500-LPH  
Date code

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## PHASE NOISE

PARAMETER	SYMBOL	CONDITION	VALUE			UNIT
			Min	Typ	Max	
SSB Phase noise	$\Sigma(\Delta f)$	$\Delta f=1.0\text{kHz}$			-95	dBc/Hz
		$\Delta f=10.0\text{kHz}$			-120	
		$\Delta f=100\text{kHz}$			-140	
		$\Delta f=1.0\text{MHz}$			-155	
		$\Delta f=10.0\text{MHz}$			-155	
		$\Delta f=20.0\text{MHz}$			-156	

## COMMON SPECIFICATIONS

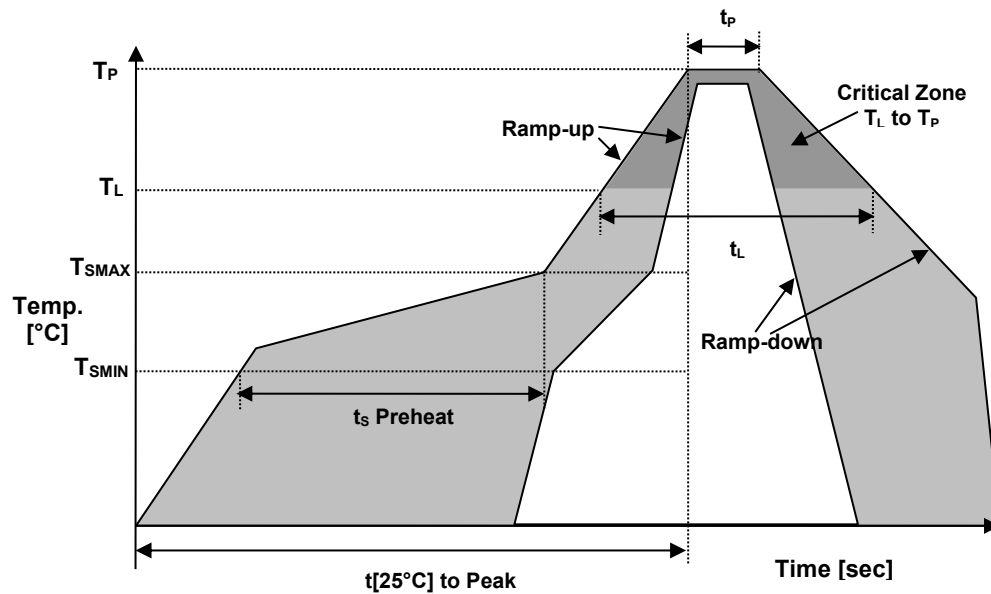
- 1.1 -Load impedance is 50 Ohms.
- 1.2 -Pulling is measured with 12dB return loss, all phases.
- 1.3- Package outline tolerances are typ.  $\pm 0.30\text{mm}$  /  $\pm 0.012$  inch if not stated differently on the drawing.
- 1.4 -It is recommended to provide two bypass-capacitors (ceramic), from Vcc 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

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## REFLOW PROFILE



Recommended Solder Reflow Profile		
Temperature Min Preheat	$T_{S_{MIN}}$	150°C
Temperature Max Preheat	$T_{S_{MAX}}$	175°C
Time ( $T_{S_{MIN}}$ to $T_{S_{MAX}}$ )	$t_s$	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 01/21/2019

Created by, date: AR 01/21/2019

Revision: A

