

- **SAW Frequency Stabilized**
- **Fundamental-mode Oscillation at 1090.0 MHz**
- **Designed for ATC/TCAS Transponder Applications**
- **Complies with Directive 2002/95/EC (RoHS)**



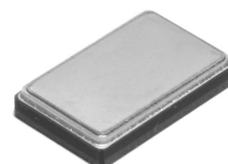
The frequency of this oscillator is stabilized by UHF surface-acoustic-wave (SAW) technology, providing excellent performance in a compact, rugged oscillator operating at the fundamental frequency of 1090.0 MHz. The highly-reliable HX1081 is designed for use in Mode-S Air Traffic Control Transponders/Traffic Alert and Collision Avoidance Systems (TCAS).

#### Absolute Maximum Ratings

Rating	Value	Units
DC Supply Voltage	3.0 to +3.7	VDC
Ambient Temperature	Powered	-55 to +105
	Storage	-55 to +125
		°C

## HX1081

## 1090.0 MHz SAW Oscillator



Characteristic		Sym	Notes	Minimum	Typical	Maximum	Units
Operating Frequency	Absolute Frequency	$f_O$	1, 7	1089.75	1090.00	1090.25	MHz
	Tolerance from 1090.0 MHz	$\Delta f_O$				$\pm 250$	kHz
RF Output Power		$P_O$	3, 6	+10	+12	+13	dBm
Start-up Time			2, 8			500	ns
Discrete Spurious	Second Harmonics		2, 3, 4		-25	-20	dBc
	Third and Higher Harmonics				-35	-30	
	Nonharmonic				< -100	-80	
SSB Phase Noise	1 kHz Offset		2, 3, 4			-90	dBc/Hz
	10 kHz Offset					-110	
RF Impedance	Nominal Impedance	$Z_O$	3		50		$\Omega$
	Operating Load VSWR	$G_L$	3, 5			1.5:1	
DC Power Supply	Operating/Enable Voltage	$V_{CC}$	3, 6	3.0	3.3	3.7	VDC
	Operating Current	$I_{CC}$			37	40	mA
Operating Ambient Temperature		$T_A$	3, 6	-55		+105	°C
Lid Symbolization (YY=Year, WW=Week)				RFM HX1081 YYWW			

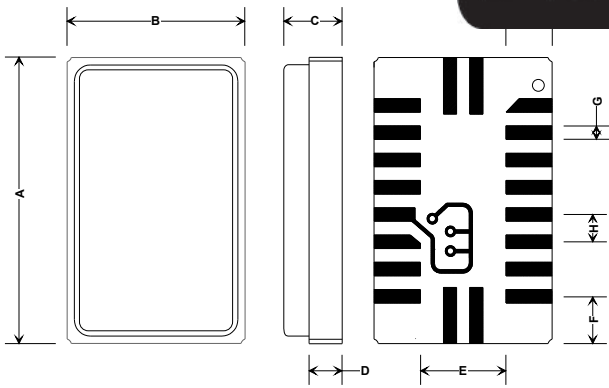


**CAUTION: Electrostatic Sensitive Device. Observe precautions for handling. COCOM CAUTION: Approval by the U.S. Department of Commerce is required prior to export of this device.**

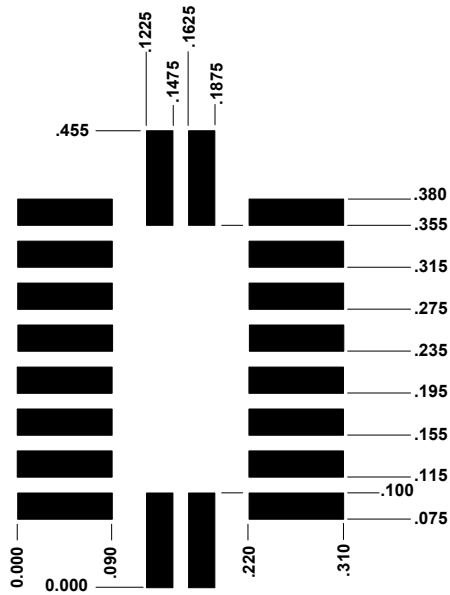
#### NOTES:

- One or more of the following United States patents apply: 4,760,352; 5,787,117; and 7,260,375.
- Unless noted otherwise, all specifications are listed at  $T_A = +25 \pm 2^\circ\text{C}$ ,  $V_{CC}$  = nominal voltage  $\pm 0.01$  VDC, and load impedance =  $50 \Omega$  with  $V_{SWR} \leq 1.5:1$ .
- The design, manufacturing process, and specifications of this device are subject to change without notice.
- Applies to oscillator only and not to sidebands caused by external electrical or mechanical sources. (Dedicated external voltage regulation with low-frequency filtering for the DC power supply and proper circuit board layout are recommended for optimum spectral purity.)
- For specified maximum operating load VSWR, any angle, at  $F_O$ . No instability or damage will occur for any passive load impedance.
- For any combination of  $V_{CC}$  and  $T_A$  within the specified operating ranges.
- Applies for any combination of Note 5 and 6 conditions.
- Start-up time is defined as the time from when 90% of  $V_{CC}$  is applied to the Enable Pin until the RF output reaches 90% of its steady-state output level.

# Discontinued



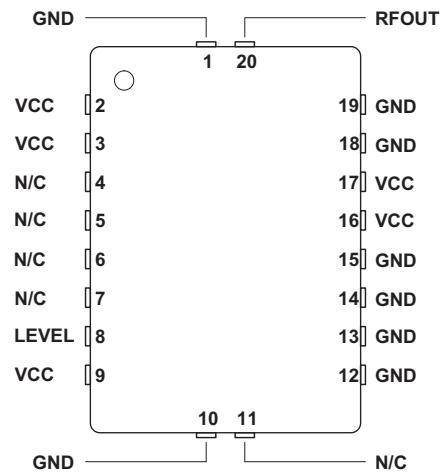
	Min	Nom	Max	Inches		
				Min	Nom	Max
A	10.6	10.7	10.9	0.417	0.423	0.429
B	6.7	6.8	7.0	0.264	0.270	0.276
C	1.5	1.8	2.0	0.061	0.070	0.079
D	1.4	1.7	1.9	0.058	0.066	0.074
E	3.2	3.3	3.4	0.125	0.130	0.135
F	1.8	1.9	2.0	0.069	0.074	0.079
G	0.4	0.6	0.6	0.015	0.020	0.025
H	0.9	1.0	1.1	0.035	0.040	0.045
I	1.7	1.8	1.9	0.065	0.070	0.075



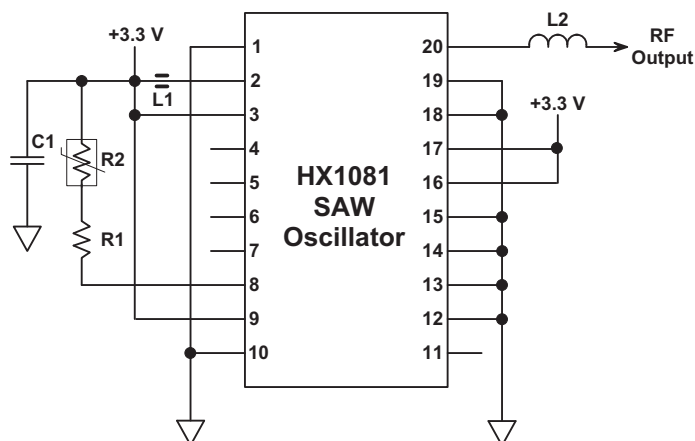
Dimensions in inches

SM3-20H PCB Pad Layout

## HX1081 Pin Out



# Discontinued



Ref	Description	Part Number	Manufacturer
C1	Capacitor, 0.1 $\mu$ F, 0402 SMD	GRM155R61A104KA01B	Murata
L1	Ferrite Bead, 300 ohm, 0402 SMD	74279272	Würth Electronics, Inc.
L2	Inductor, 1.8 nH 0402 SMD	LL 1005-FHL 1N8S	TOKO
R1	Resistor, 4.99K, 0402 SMD, 1/16 W, 5%	RR05 10P-4991-D	Susumu
R2	Thermistor, 0805 SMD, 1K, +4110 ppm	TFPT0805L1001FV	Vishay Dale
U1	1090 MHz SAW Oscillator, SMD	HX1081	RF Monolithics, Inc.

Pin	Name	Description
1	GND	Oscillator Ground
2	VCC	Power Input, +3.3 V nominal. This pin must be supplied through a ferrite bead of 300 ohm nominal impedance
3	VCC	Power Input, +3.3 V nominal
4	N/C	Mechanical connection only, make no electrical connection
5	N/C	Mechanical connection only, make no electrical connection
6	N/C	Mechanical connection only, make no electrical connection
7	N/C	Mechanical connection only, make no electrical connection
8	LEVEL	Current-driven RF output level control input. Allows temperature compensation of RF output level.
9	VCC	Power Input, +3.3 V nominal
10	GND	Oscillator Ground
11	N/C	Mechanical connection only, make no electrical connection
12	GND	Oscillator Ground
13	GND	Oscillator Ground
14	GND	Oscillator Ground
15	GND	Oscillator Ground
16	VCC	Power Input, +3.3 V nominal
17	VCC	Power Input, +3.3 V nominal
18	GND	Oscillator Ground
19	GND	Oscillator Ground
20	RFOUT	RF output pin, match to 50 ohm load with a 1.8 nH series inductor