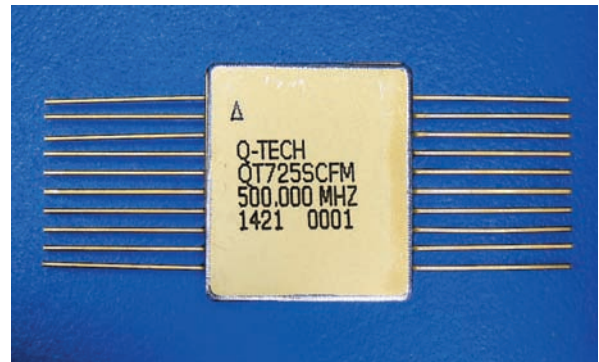


### Description

Q-Tech QT725S low noise Voltage Controlled SAW Oscillators provide superior performance at operating frequencies from 400 MHz to 1.3GHz. QT725S delivers low phase noise; 110dBc/Hz at 1 kHz offset and -170 dBc/Hz noise floor. Typical vibration sensitivity is 1ppb/g.

The QT725S VCSO is a Class 2 hybrid per MIL-PRF-55310, hermetically sealed, and operated from -40°C to +85°C. Absolute Pull range (APR) is ±20ppm min.



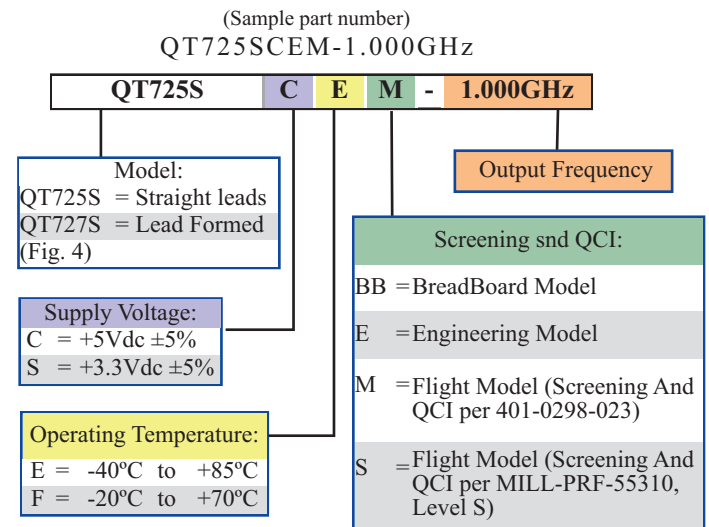
### Features

- Made in USA
- Hermetically sealed packages
- Supply voltages 3.3Vdc and 5.0Vdc
- Wide temperature range -40°C to +85°C with guaranteed APR
- Screened to MIL-PRF-55310, Level S or Modified MIL-PRF-38534, Class K
- Sine Wave Output
- 100k(Si) Radiation Tolerant
- Low Phase Noise
- Low Vibration sensitivity <2ppb/g

### Applications

- Phase Lock Loops (PLL)
- Satellites
- Aerospace
- Space Clock Recovery
- Low Phase Noise High Frequency

### Ordering Information



### Packaging Options

- Standard ESD packaging

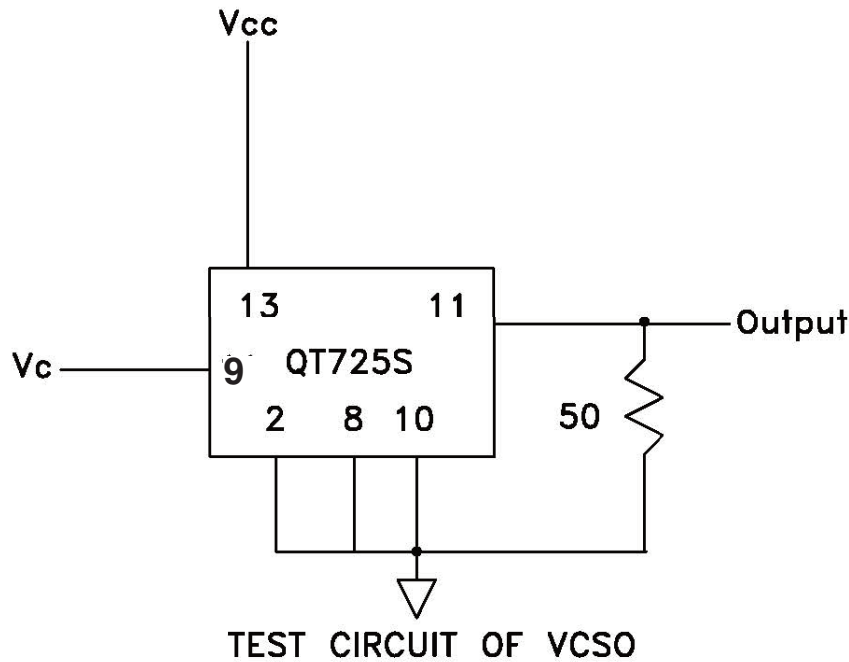


Figure 1

Parameters	Symbol	Conditions	Rating	Unit
Supply voltage *1	Vcc	Between Vcc and Vss	- 0.5 to +7.0	V
Operating Temperature	Top		-55 to +125	°C
Junction Temperature	Tj		+150	°C
Storage Temperature	Tstg		- 65 to +150	°C
Lead solder Temperature/Time			+250/10	°C/s
Package Thermal Resistance	$\theta_{JC}$		50	°C/W

\*1. Vcc parameter ratings are values that must not be exceeded. This product may suffer permanent damage if maximum ratings are exceeded. Operation and characteristics are guaranteed within recommended operating conditions.

**Package Outline - Dimensions are in inches**

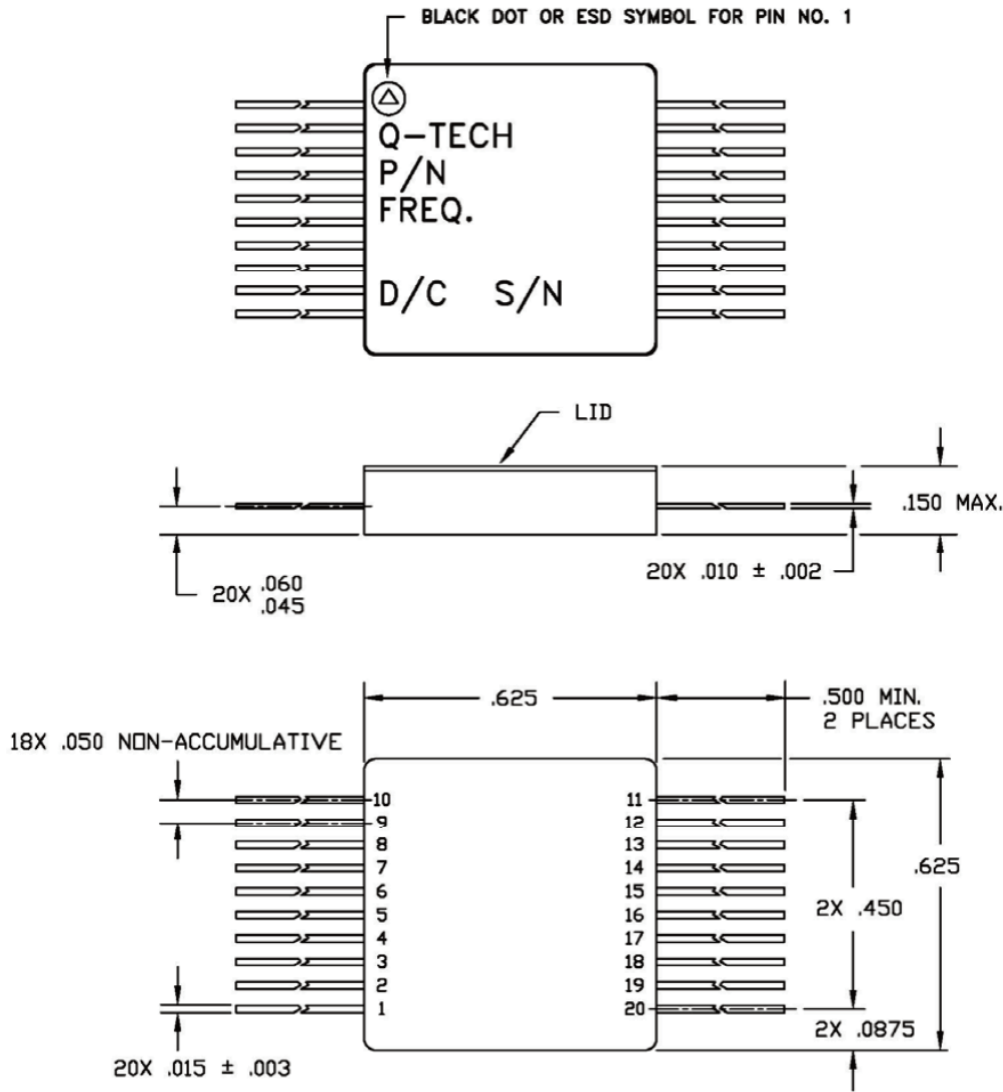


Figure 3

Pin no.	Function
2, 8, 10	Gnd / Case
11	Output
13	Vcc
9	Vc
Others	NC

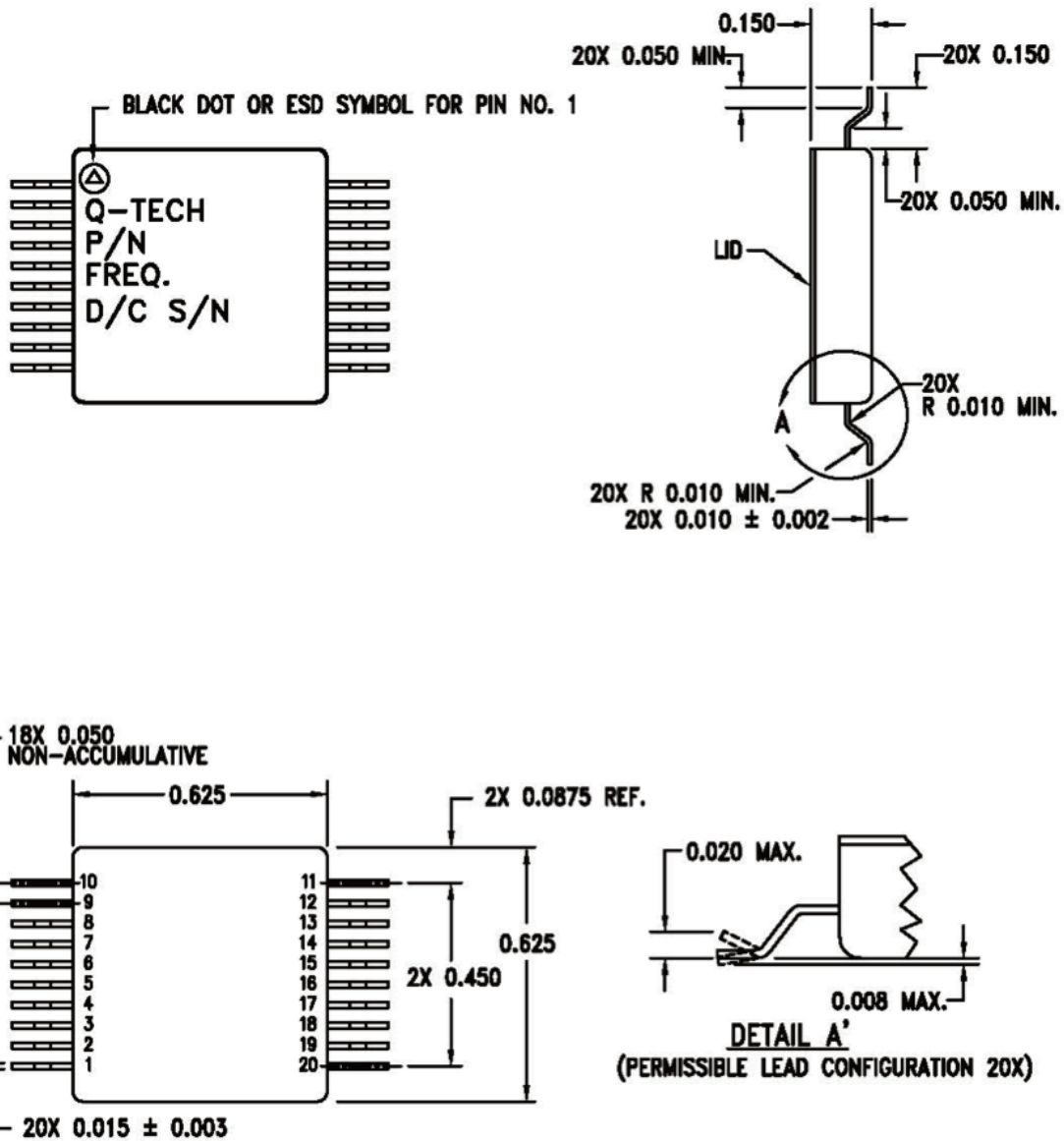


Figure 4

Pin no.	Function
2, 8, 10	Gnd / Case
11	Output
13	Vcc
9	Vc
Others	NC



**100kRAD(Si) RADIATION TOLERANT VOLTAGE  
CONTROLLED SAW OSCILLATOR**  
QT725S Series - 3.3 and 5.0Vdc Space Qualified VCISO

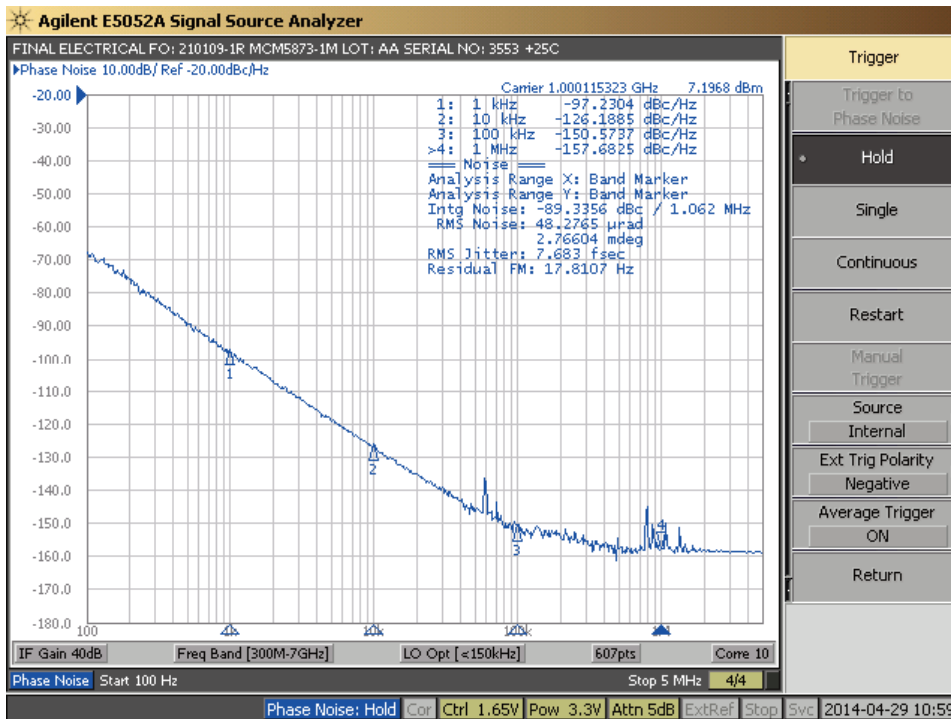
**Electrical Characteristics**

Parameters	Symbol	Test Conditions *1	Min	Typ	Max	Unit
Center Frequency *2	FO		400		1.3	<b>GHz</b>
Supply Voltage	Vcc		3.135	3.3	3.465	V
			4.75	5.0	5.25	
Operating temperature	Top		-40	25	+85	°C
Frequency Stability	DF/DT	Over operating Temperature range	-200		+50	ppm
Input Current	Icc				60	mA
Absolute Pull Range	APR		±20	±30		ppm
Tuning K	Kvco	For 1GHz Output		70		kHz/V
Tuning Kr=Kmax/Kmin.				3:1	4:1	
Output Power.	Po	50 ohms	7.0	8.0	12.0	dBm
Sub-Harmonics				-30	-20	dBc
Non-harmonics Spurious				<-80	<-80	dBc
SSB Phase Noise 1 GHz (500 MHz X2)		At 1kHz		-105	-95	dBc/Hz
		At 10kHz		-135	-125	
		At 100kHz		-155	-150	
		At 1MHz (Noise floor)		-160	-155	
Vibration Sensitivity				1	2	ppb/g
Aging (at 70°C±3°C)		First(1) Year	-20	±10	20	ppm
		Life	-30		30	

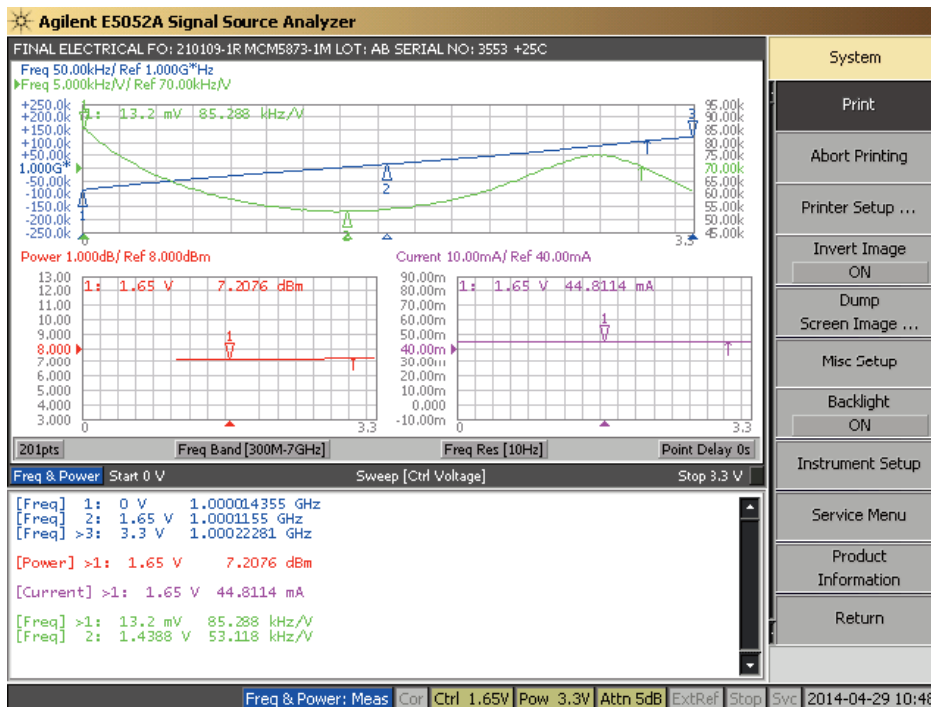
\*1 Test Conditions Unless Stated Otherwise: Nominal Vcc, Nominal Load, +25°C ± 3°C

\*2 Direct Frequency Output or Internal Multiplication is used based on noise requirements.

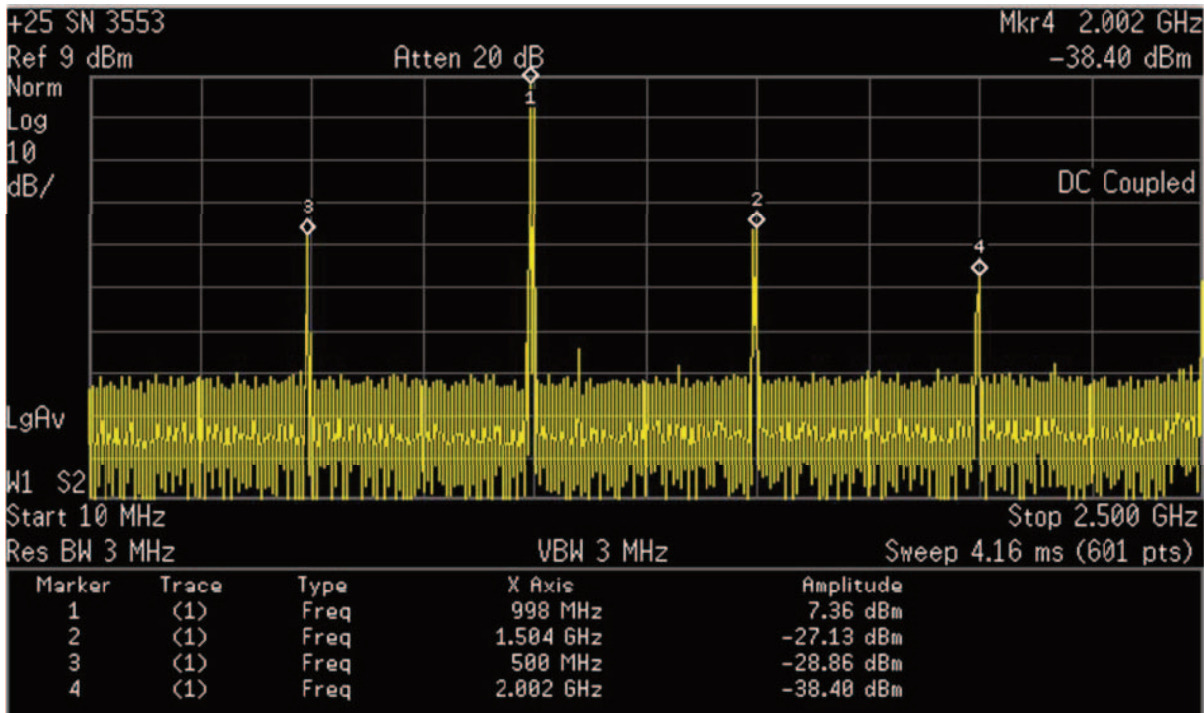
### Phase noise performance of a 1GHz VCSO at +25°C



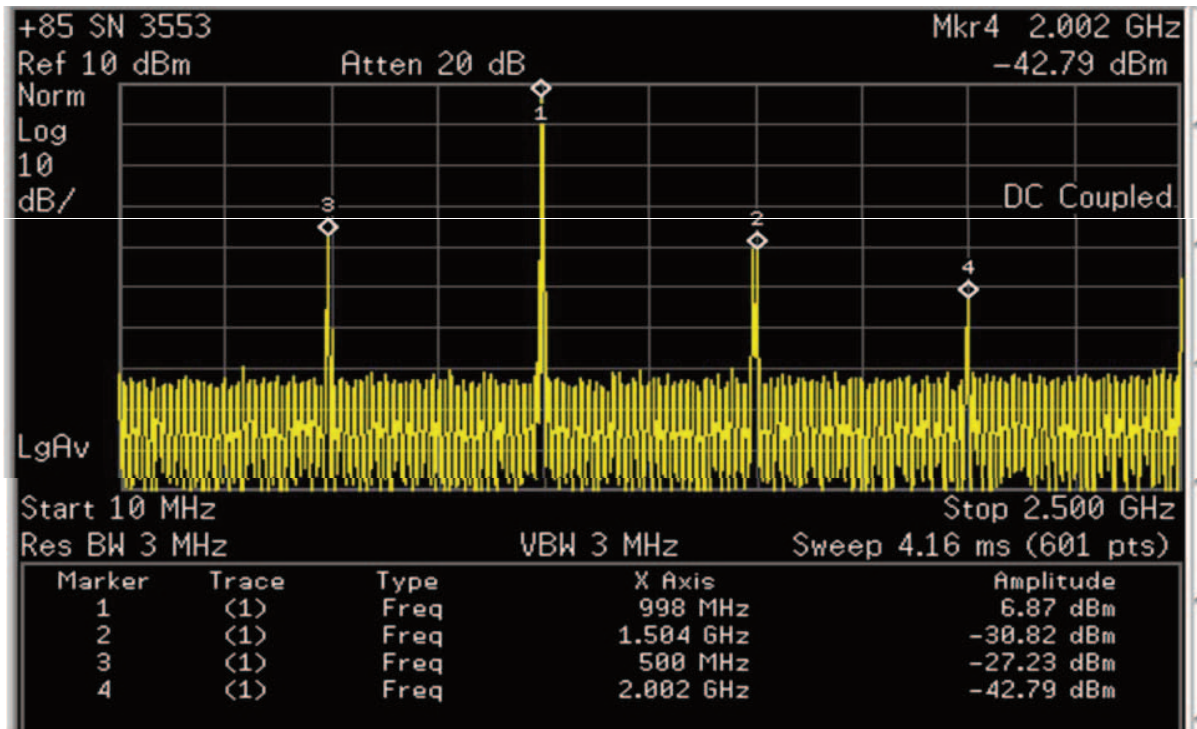
### Output Power and Pulling of a VCSO 1GHz at 3.3Vdc +25°C



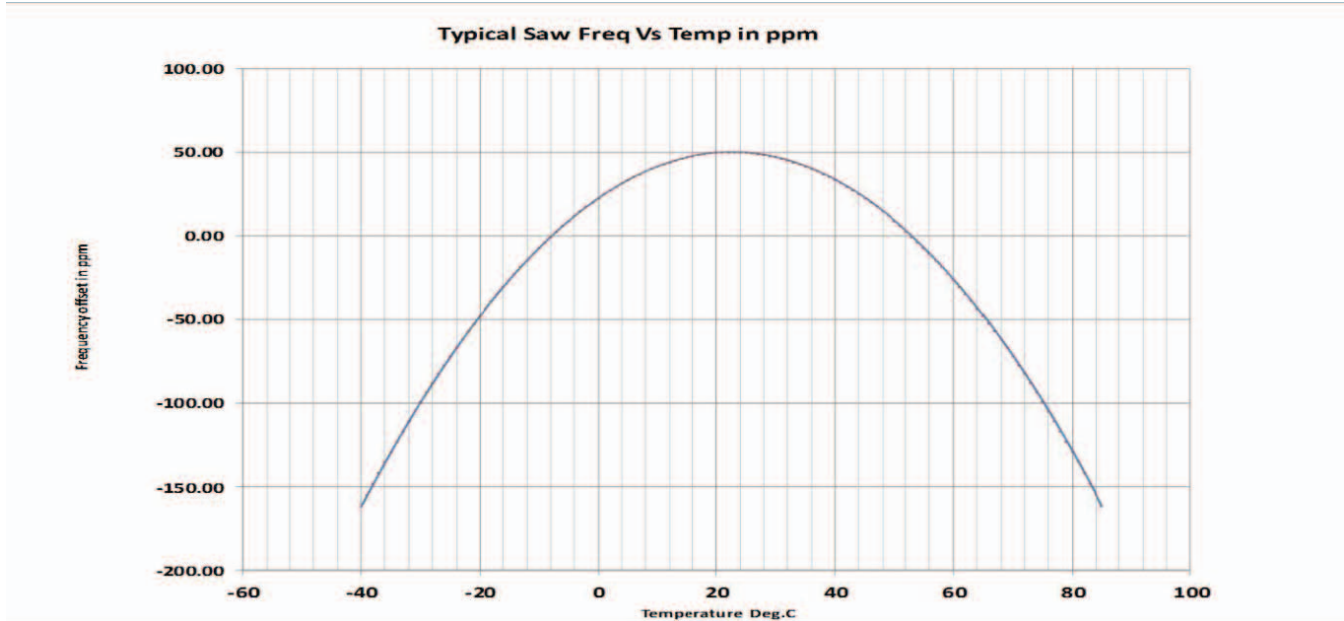
Output power spectrum of a 1GHz VCSO at +25°C



Output power spectrum of a 1GHz VCSO at +85°C



### Frequency versus Temperature Curve



### ESD Ratings

Proper ESD precautions should be taken when handling and mounting semiconductor products.  
Built in ESD protection circuitry ratings are as follows:

Model	Minimum	Conditions
Human Body Model	Class 1C, 2000V	MIL-STD-883, Method 3015.7