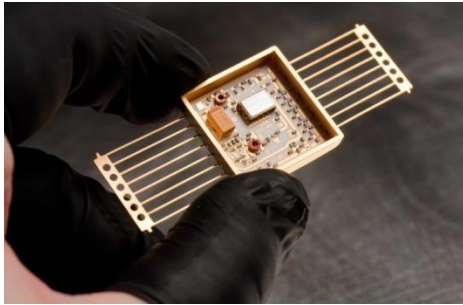


# Radiation Tolerant Voltage Controlled SAW Oscillator

Available Space-Screened VCISO with Ruggedized Hybrid Construction



## Features

- **Low phase Noise:** -109 dBc/Hz at 1 kHz
- **Frequency Range:** 350 MHz to 4,000 MHz
- **Low Vibrations Sensitivity:**  $2 \times 10^{-9}$  per g
- **Operating Temperature:** -55°C to +100°C
- **Applications Include:** Phase Lock Loops, Local Oscillators, Low Noise Clocks, Clock Recovery for Space, Satellite, and Aerospace

## Description

The AP825 Series is a high performance line of SAW oscillators providing superior communication distances for frequencies of 350 MHz to 4,000 MHz and phase lock loop for heritage applications. The radiation tolerant voltage controlled SAW Oscillators (VCISO) are designed for space, satellite communications and aerospace systems.

The VCISOs deliver low phase noise performance (-109dBc/Hz at 1 kHz) and low vibration sensitivity ( $2 \times 10^{-9}$  per g). API's space-screened VCISOs are standard products that can be modified to customer requirements for output frequency, frequency range and control voltage sensitivity.

API's VCISOs meet exceptional radiation tolerance at testing levels with radiation exposure to 200 kRad total dosage. The VCISOs are constructed in hermetically sealed metal packages using ruggedized hybrid construction to provide high-reliability and outstanding performance over a wide temperature range (-55°C to +100°C). This series includes models which have internal frequency multiplication of 2 or 4 to provide output frequencies in the 700 MHz to 4,000 MHz range.

## API Technologies | Space-Screening/QCI

- Radiation Tolerance – has been tested with radiation exposure up to 200 kRad
- API Technologies is the only manufacturer of radiation tolerant VCISOs utilizing MIL-PRF-38534 Class H and K certified lines employing space-level quality conformance inspections.
- API provides dedicated program management
- API has a combined 60 years of space heritage

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## Technical Specifications

Parameter	Min	Typical	Max	Units	Notes
Center Frequency Range	350		4,000	MHz	
Tuning Range		700		ppm	
Kvco		140		ppm/V	
Tuning Linearity	-10		10	%	Deviation from best linear fit
Output Power	8	10		dBm	
Harmonic Spurious			-30	dBc	
Sub-harmonic Spurious			-25	dBc	For Multiplier Versions Only
Non-harmonic Spurious			-60	dBc	
SSB Phase Noise					Fundamental 20logN Applies for Multiplied Version
$\Delta f = 1 \text{ Hz}$		-109		dBc/Hz	
$\Delta f = 10 \text{ kHz}$		-132		dBc/Hz	
$\Delta f = 100 \text{ kHz}$		-152		dBc/Hz	
$\Delta f = 1 \text{ MHz}$		-160		dBc/Hz	
$\Delta f = 10 \text{ MHz}$		-160		dBc/Hz	
Vcc	7.6	8	8.4	Volts	Consult Factory for other available Vcc
Icc		120	150	mA	
Operating Temperature	-55		+100	°C	Case temperature

Specifications apply at Vcc = 8.0V and Tcase = 25°C unless otherwise specified

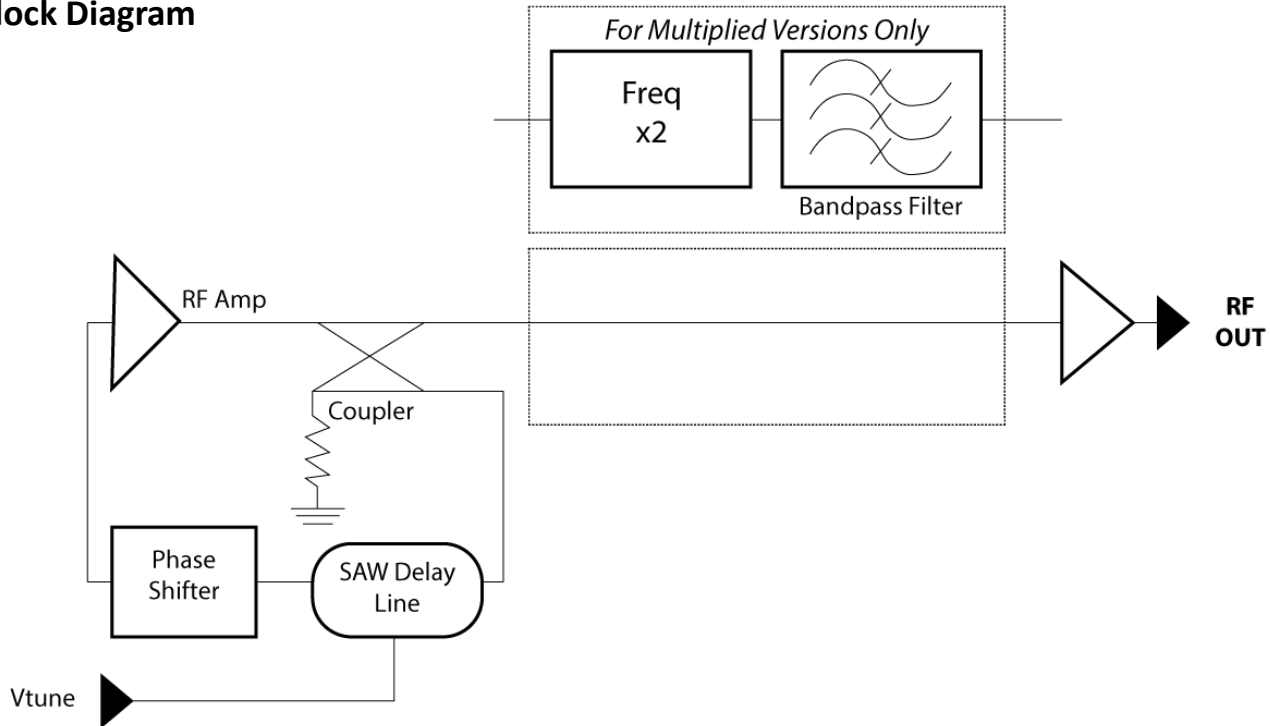
## Absolute Max Ratings

Operating Temperature	-55°C to +100°C
Storage Temperature	-55°C to +125°C
Power Supply Voltage	13V
Tuning Voltage	-2 V to +12 V

# Radiation Tolerant Voltage Controlled SAW Oscillator

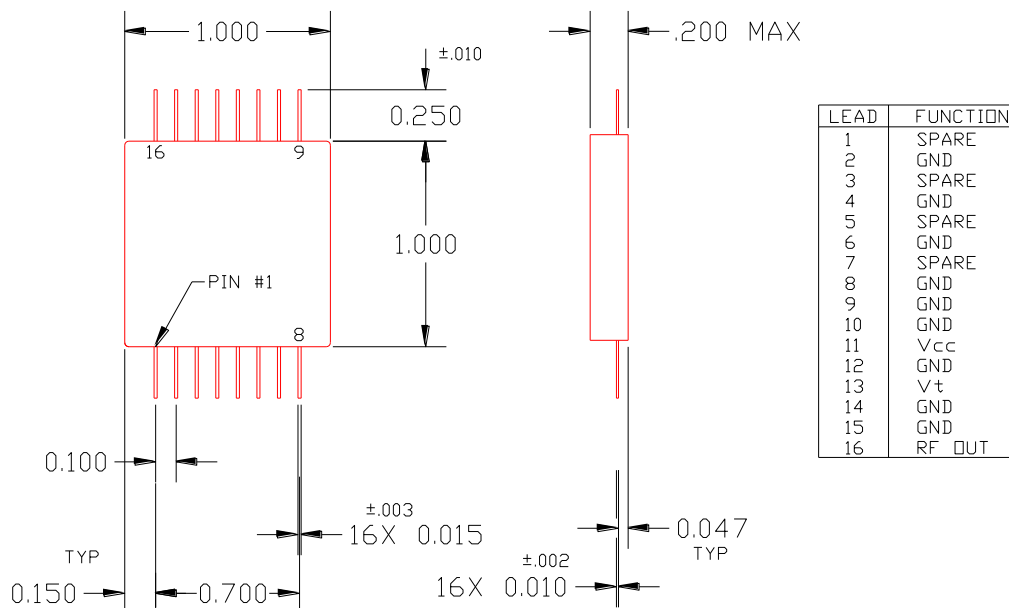
Available Space-Screened VCSO with Ruggedized Hybrid Construction

## Block Diagram



## Outline Drawing

**Hermetic Kovar Package: 1.0" x 1.0" x .2" SMT**

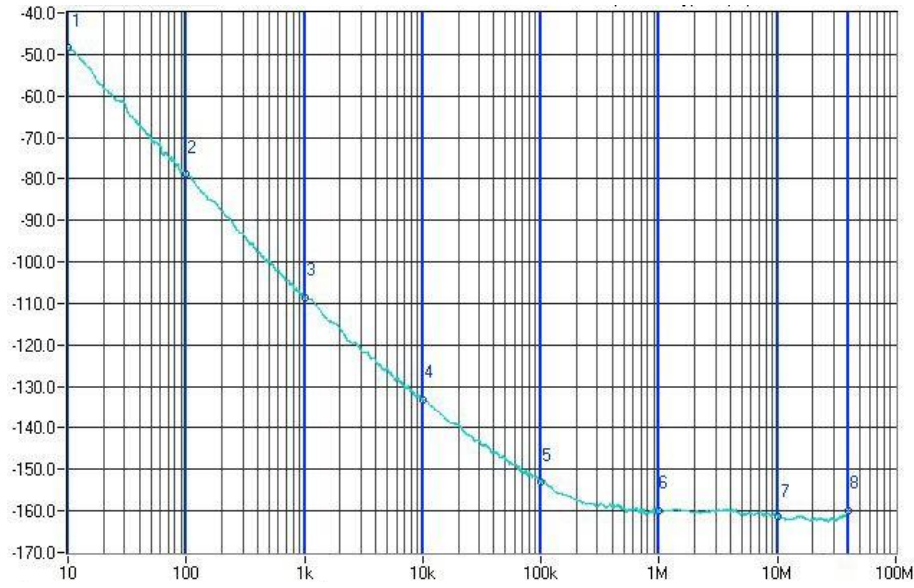


1) Formed Leads Are Available

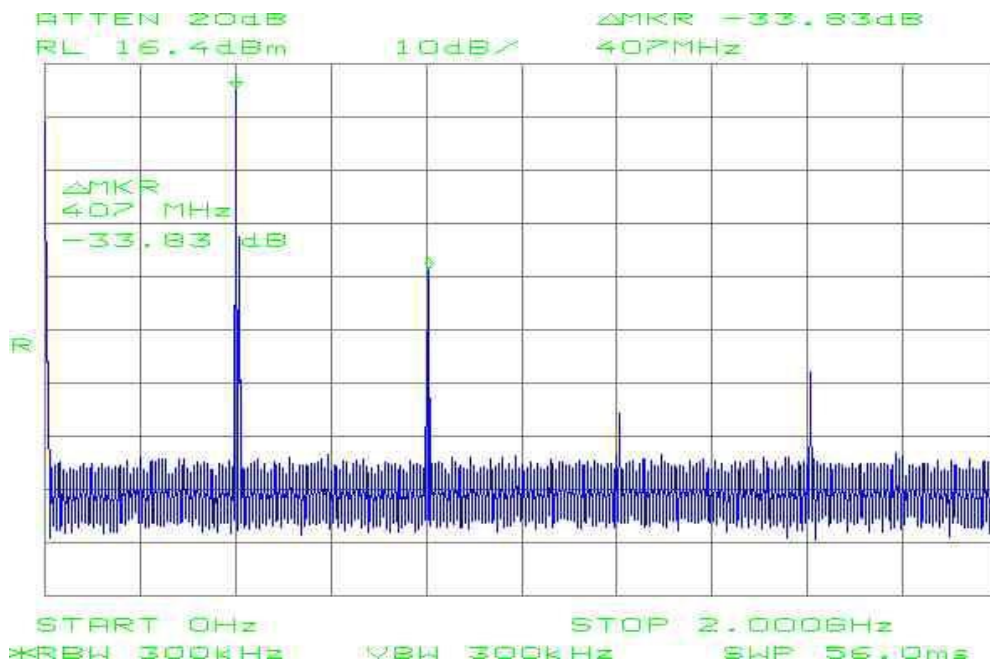
# Radiation Tolerant Voltage Controlled SAW Oscillator

Space-Qualified VCSO with Ruggedized Hybrid Construction

## Phase Noise & Spurious Data



Typical AP725 Series SSB Phase Noise



API725 Series Output to 2 GHz