



Voltage Controlled Oscillator (VCO) From 38.4 GHz to 43.2 GHz, Phase Noise of -98 dBc/Hz and 2.4mm

## Voltage Control Oscillators Technical Data Sheet

PE1V34003

### Features

- VCO Module with Integrated Buffer Amplifier
- GaAs MMIC Technology
- Wide Tuning Bandwidth
- Vtune Range 0V to +13V
- Output Power +13 dBm
- SSB Phase Noise -98 dBc/Hz @100Hz offset
- Single Positive Supply +5V
- Regulated Voltage Supply
- Hermetically Sealed Module
- Mil Spec Compliant
- Field Replaceable 2.4mm Connectors
- -55°C to +85°C Operating Temperature

### Applications

- Electronic Warfare
- Electronic Countermeasures
- Microwave Radio
- Radar
- Industrial
- Medical Equipment
- Test Instrumentation
- Lab Instrumentation

### Description

The PE1V34003 Voltage Controlled Oscillator operates across the frequency range of 38.4 GHz to 43.2 GHz. The design utilizes leading edge GaAs MMIC technology which incorporates the resonator, negative resistance device, and varactor diode. An internal voltage regulator provides excellent frequency pushing of 40 MHz/V. The design also incorporates an output buffer amplifier that provides output power up to +13 dBm. Phase noise performance is stable over temperature at -98 dBc/Hz @ 100 KHz offset, with a tuning voltage range of 0 to +13 Volts. Bias is from a single +5V DC supply. The drop-in package is hermetically sealed with field replaceable 2.4mm connectors and has an operating temperature range of -55°C to +85°C. And for added confidence, this rugged package assembly is designed to meet MIL-STD-883 test conditions for Hermeticity and Temperature Cycle.

### Electrical Specifications

Description	Minimum	Typical	Maximum	Units
Frequency Range	38.4		43.2	GHz
Tuning Voltage	0		13	Vdc
Supply Voltage (DC)		5		Vdc
Supply Current (DC)		195		mA
Tune Port Leakage Current			0.01	mA
Phase Noise @ 10kHz Offset		-74		dBc/Hz
Phase Noise @ 100kHz Offset		-98		dBc/Hz
Output Return Loss		17		dB
Output Power	+10	+13		dBm
Pushing		40		MHz/V
2nd Harmonics		-30		dBc

Click the following link (or enter part number in "SEARCH" on website) to obtain additional part information including price, inventory and certifications: [Voltage Controlled Oscillator \(VCO\) From 38.4 GHz to 43.2 GHz, Phase Noise of -98 dBc/Hz and 2.4mm PE1V34003](#)



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### Performance by Frequency

Description	Min.	Typ.	Max.	Units
Frequency Range		38.4 - 43.2		GHz
Power Output	10	13		dBm
SSB Phase Noise @ 10 KHz Offset		-74		dBc/Hz
SSB Phase Noise @ 100 KHz Offset		-98		dBc/Hz
Jitter (50 KHz To 80 MHz) (Calculated)		37		fs
Tune Voltage (Vtune)	2		13	V
Sub Harmonic (Fo/4)		-40		dBc
Sub Harmonic (Fo/2)		-30		dBc
Frequency Pushing		40		MHz/V
Frequency Pulling (Into 2:0:1 Load)		5		kHz pp
Output Return Loss		17		dB
Voltage Supply (Vdc)	4.5	5	5.5	V
Supply Current		350	400	mA

### Mechanical Specifications

#### Size

Length	0.65 in [16.51 mm]
Width	0.65 in [16.51 mm]
Height	0.23 in [5.84 mm]
Weight	0.064 lbs [29.03 g]

#### Configuration

Design	Commercial
Connector Option	Field Replaceable
Control Connector	Solder Pin
Output Connector	2.4mm Female

### Environmental Specifications

#### Temperature

Operating Range	-55 to +85 deg C
Storage Range	-65 to +150 deg C

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Temperature Cycle  
Hermetic Seal

ESD Sensitivity



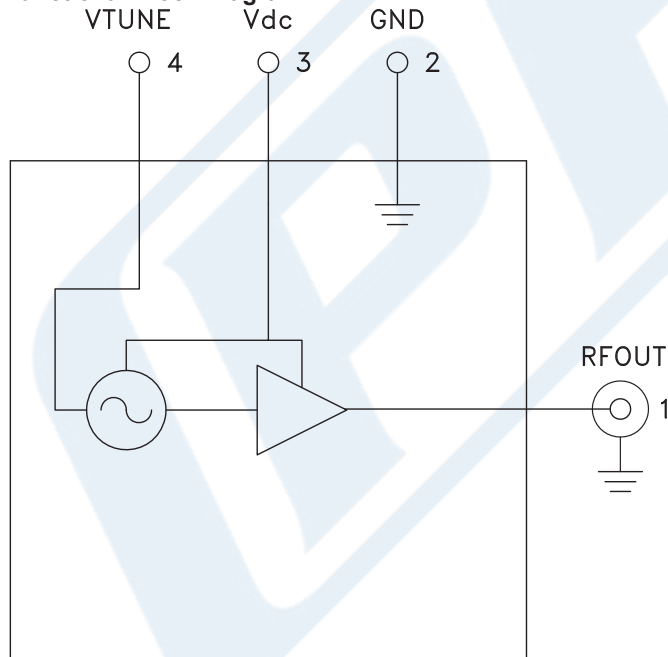
MIL-STD-883, Method 101C, Cond B  
Gross Leak MIL-STD-883 Method 1014C1/Fine Leak  
MIL-STD-883, Method 1014A2, 5 x 10-8 atm cc  
ESD Sensitive Material, Transport material in Approved  
ESD bags. Handle only in ESD Workstation.

**Compliance Certifications** (see [product page](#) for current document)

### Plotted and Other Data

Notes:

#### Functional Block Diagram



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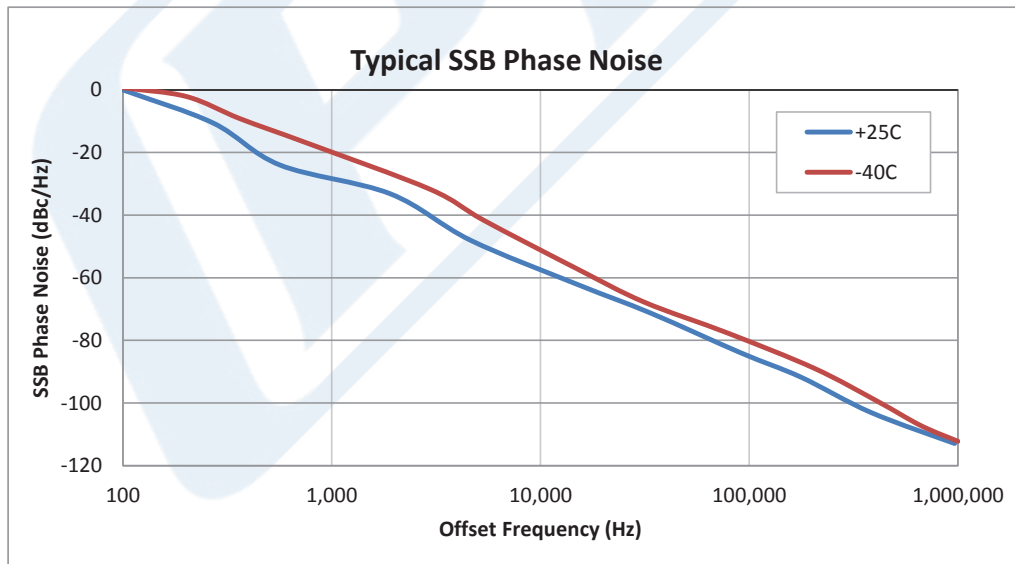
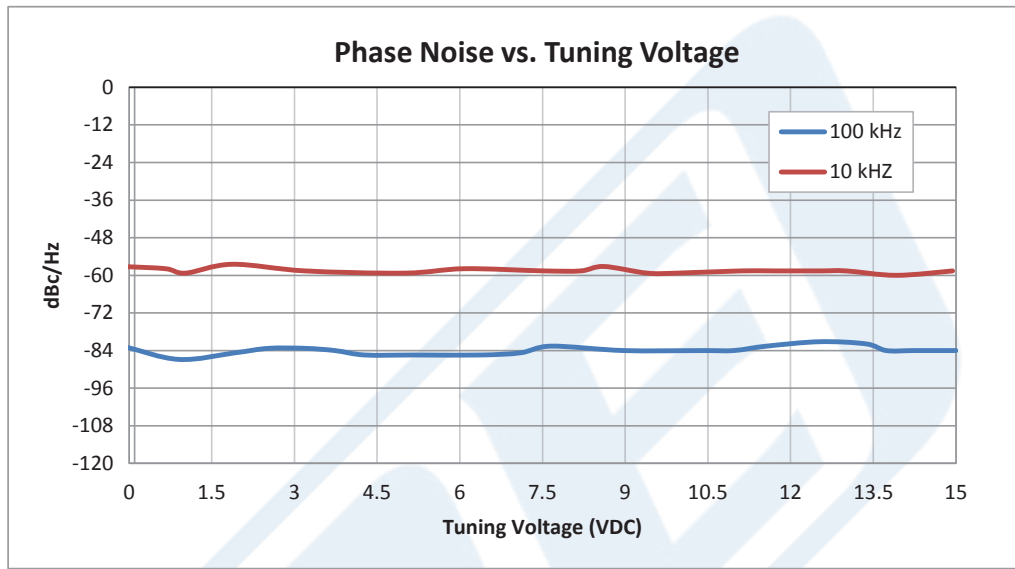


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### Typical Performance Data



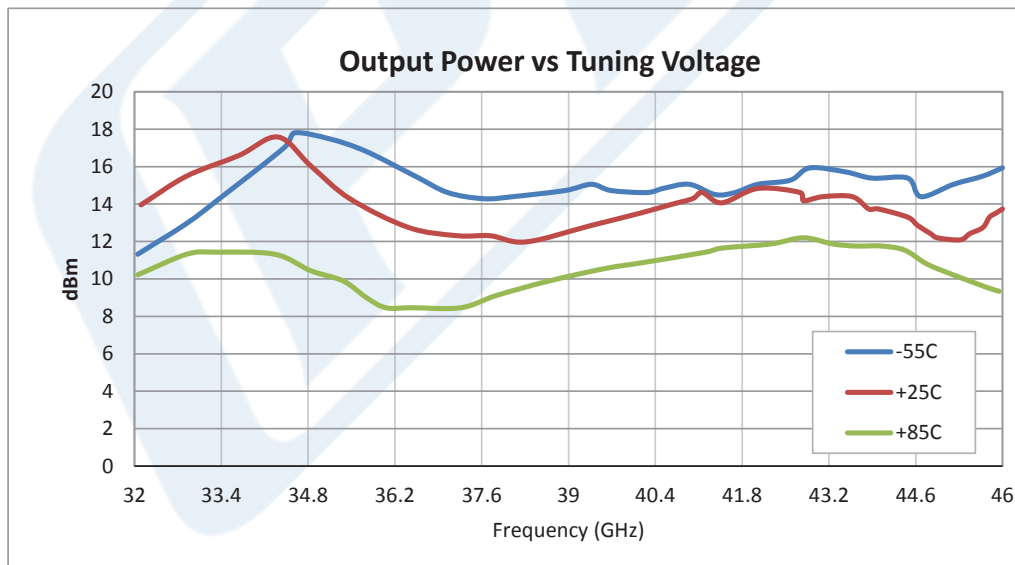
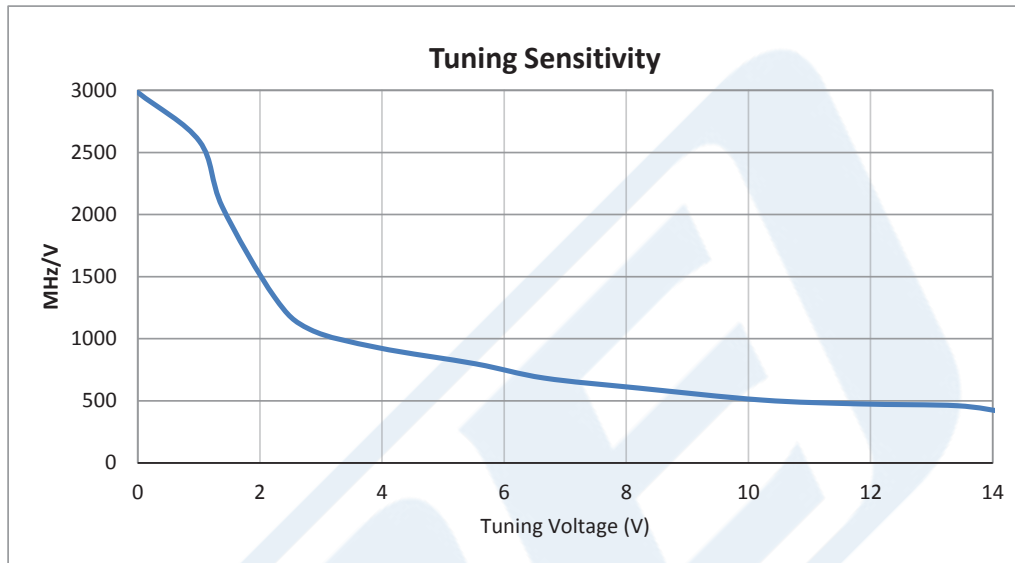
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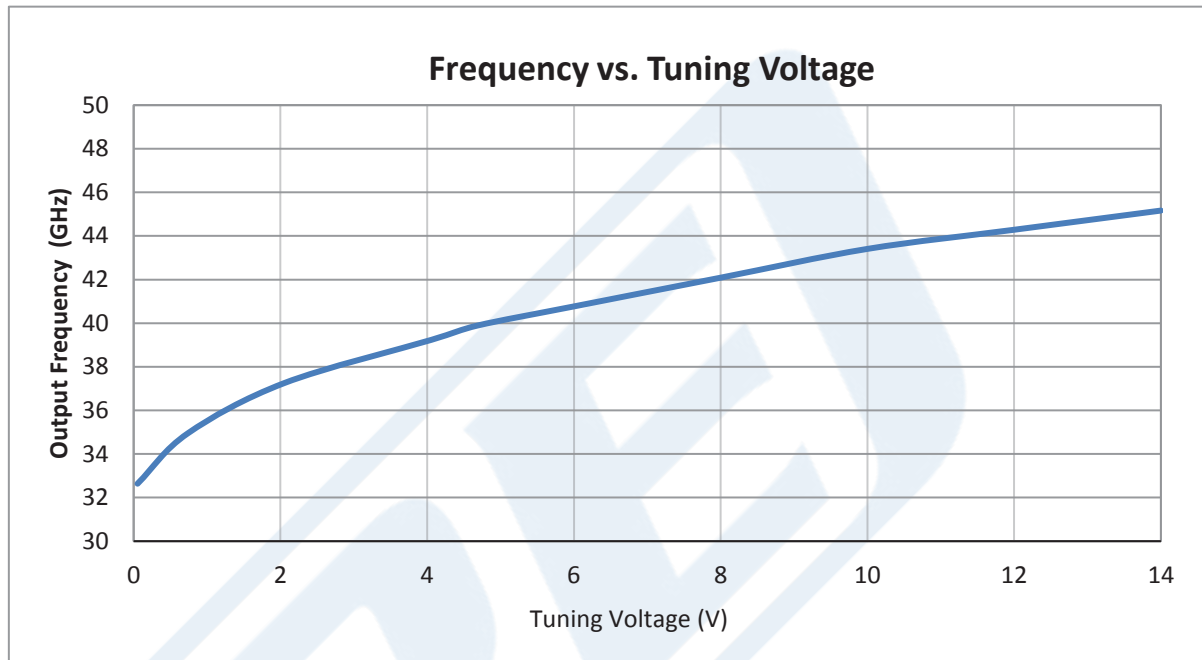
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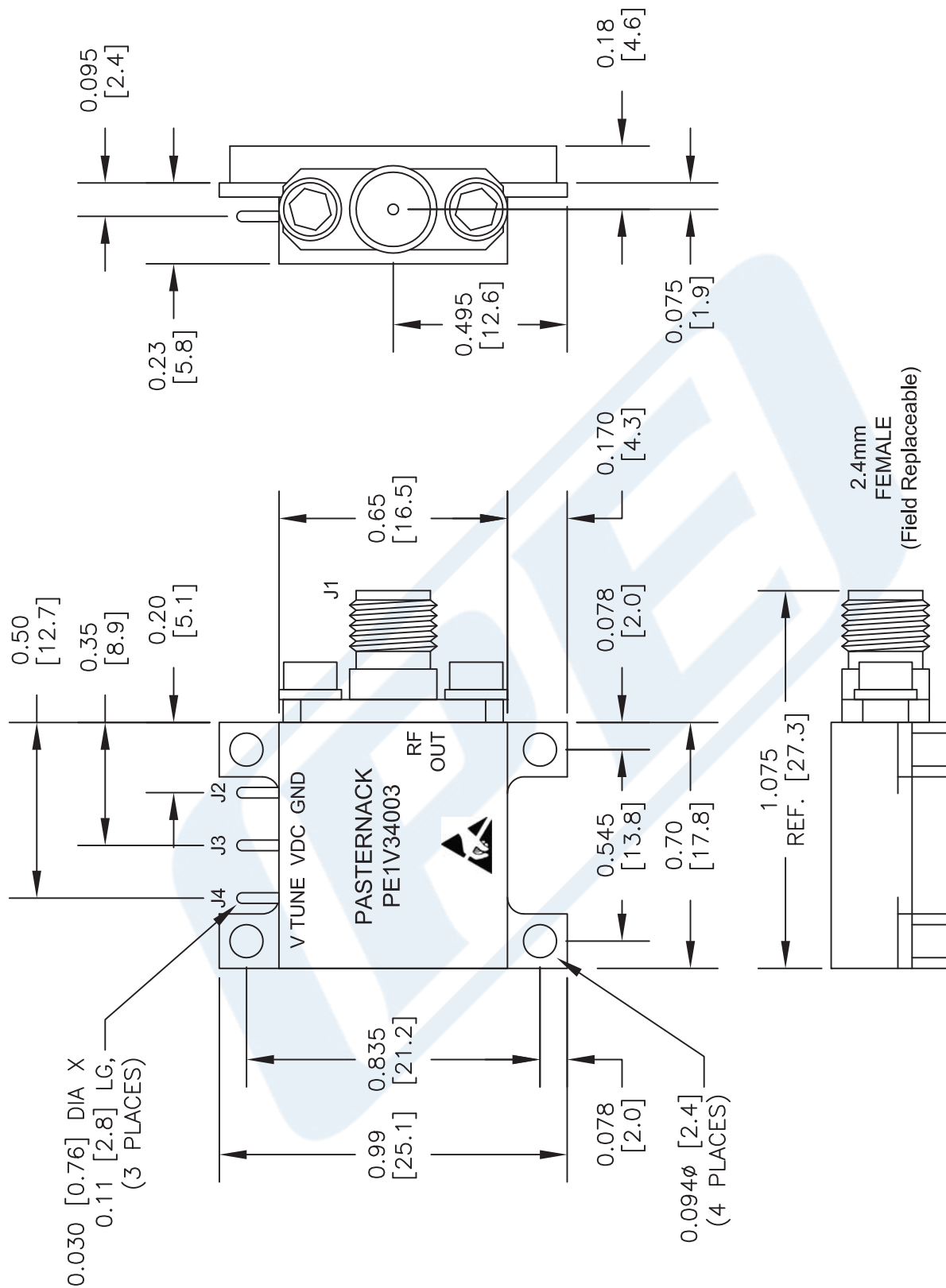
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**NOTE:**  
HEAT SINK REQUIRED FOR PROPER OPERATION,  
UNIT IS COOLED BY CONDUCTING TO HEAT SINK.

**PE PASTERNAK®**  
THE ENGINEER'S RF SOURCE

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DWG TITLE  
**PE1V34003**

NOTES:  
1. UNLESS OTHERWISE SPECIFIED ALL DIMENSIONS ARE NOMINAL.  
2. ALL SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE AT ANY TIME.  
3. DIMENSIONS ARE IN INCHES [mm].

FSCM NO. 53919

**CAD FILE**      **050916**

**SIZE A**

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