

## 0.5 inch Commercial Surface Mount (SMT) Voltage Controlled Oscillator (VCO) From 10 MHz to 20 MHz With Phase Noise of -120 dBc/Hz

### Voltage Control Oscillators Technical Data Sheet

PE1V13000

#### Features

- 10 MHz to 20 MHz Bandwidth
- -120 dBc/Hz @ 10kHz offset
- Tuning Voltage 0.0V to 20V
- Pout = +10 dBm
- Harmonics = -11 dBc
- RoHs Compliant Assembly
- Hermetically Sealed Rugged SMT Package
- Designed to meet Fine & Gross leak per MIL-STD-883 Method 1014
- Designed to meet MIL-STD-202 Environmental Conditions

#### Applications

- Phase Locked Loop
- Function Generators
- Frequency Synthesizers
- Receivers
- Electronic Jamming Equipment
- Local Oscillator
- Wireless Communications
- SATCOM
- Optical Communications
- Military Electronic Systems

#### Description

The PE1V13000 is a High Reliability Low Noise Voltage Controlled Oscillator (VCO) which covers a 10 MHz to 20 MHz frequency band with a voltage tuning range from 0.0V to 20V. This design features exceptional phase noise performance of -120 dBc/Hz @ 10 kHz offset. Supply Voltage is +15V with a generated output power level of +10 dBm and 2nd harmonic output of -11 dBc typical. The assembly is RoHs compliant and available in a hermetically sealed 0.5" surface mount package with exposed leads that meets MIL-STD-883, Method 1014 fine & Gross leak conditions. This rugged package operates over a temperature range of -40oC to +85oC and is designed to also meet a variety of MIL-STD-202 test conditions including Humidity, Shock, and Vibration.

#### Electrical Specifications

Description	Minimum	Typical	Maximum	Units
Frequency Range	10		20	MHz
Tuning Voltage	0		20	Vdc
Supply Voltage (DC)	14	15	16	Vdc
Supply Current (DC)		16	18	mA
Phase Noise @ 1kHz Offset		-95	-92	dBc/Hz
Phase Noise @ 10kHz Offset		-120	-118	dBc/Hz
Phase Noise @ 100kHz Offset		-140	-138	dBc/Hz
Output Power	+9	+10	+11	dBm
Tuning Sensitivity (Kvco)	0.4		0.6	MHz/V
Pushing		0.02	0.05	MHz/Volt
Pulling (pk-pk)		50	100	KHz
Tuning Port Capacitance		150		pF
Load Impedance		50		Ohms
2nd Harmonics		-11	-9	dBc

Click the following link (or enter part number in "SEARCH" on website) to obtain additional part information including price, inventory and certifications: [0.5 inch Commercial Surface Mount \(SMT\) Voltage Controlled Oscillator \(VCO\) From 10 MHz to 20 MHz With Phase Noise of -120 dBc/Hz PE1V13000](#)



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### Mechanical Specifications

#### Size

Length	0.5 in [12.7 mm]
Width	0.5 in [12.7 mm]
Height	0.215 in [5.46 mm]

Mounting Surface Material and Plating	Copper Clad, Nickel, Gold
Design	Commercial
Package Style	Surface Mount

### Environmental Specifications

#### Temperature

Operating Range	-40 to +85 deg C
Storage Range	-55 to +125 deg C

Humidity	MIL-STD-202, Method 103, 90% RH, +65 C
Shock	MIL-STD-202, Method 213I
Vibration	MIL-STD-202, Method 204D
Temperature Cycle	MIL-STD-202, Method 107B
Thermal Shock	MIL-STD-883 Method 1014
Hermetic Seal	MIL-STD-883 Method 1014C
ESD Sensitivity	ESD Sensitive Material, Transport material in Approved ESD bags. Handle only in ESD Workstation.



### Compliance Certifications (visit [www.Pasternack.com](http://www.Pasternack.com) for current document)

RoHS Compliant	
REACH Compliant	01/01/1753

### Plotted and Other Data

Notes:

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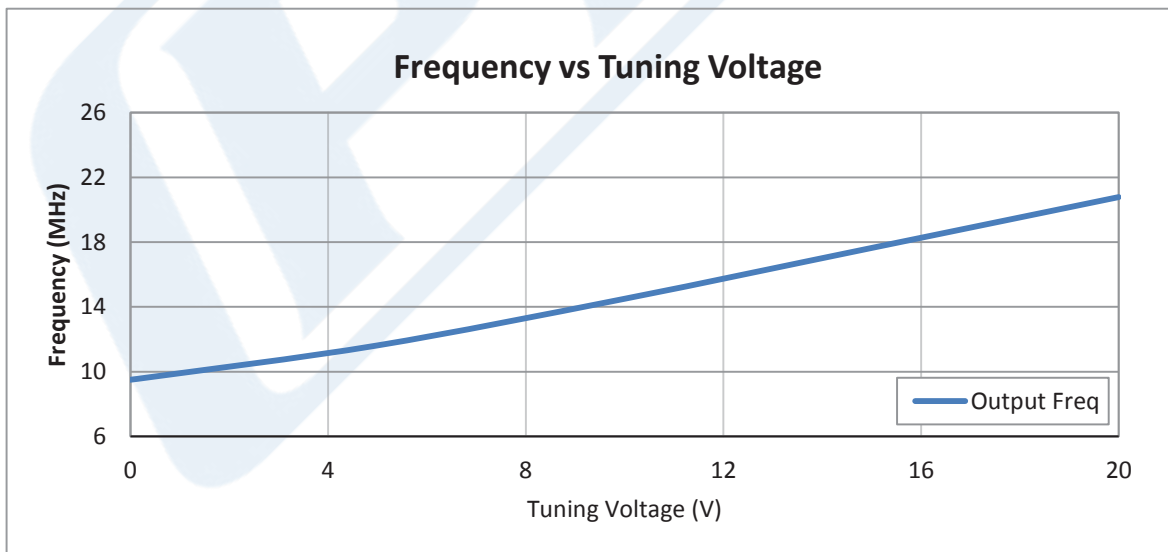
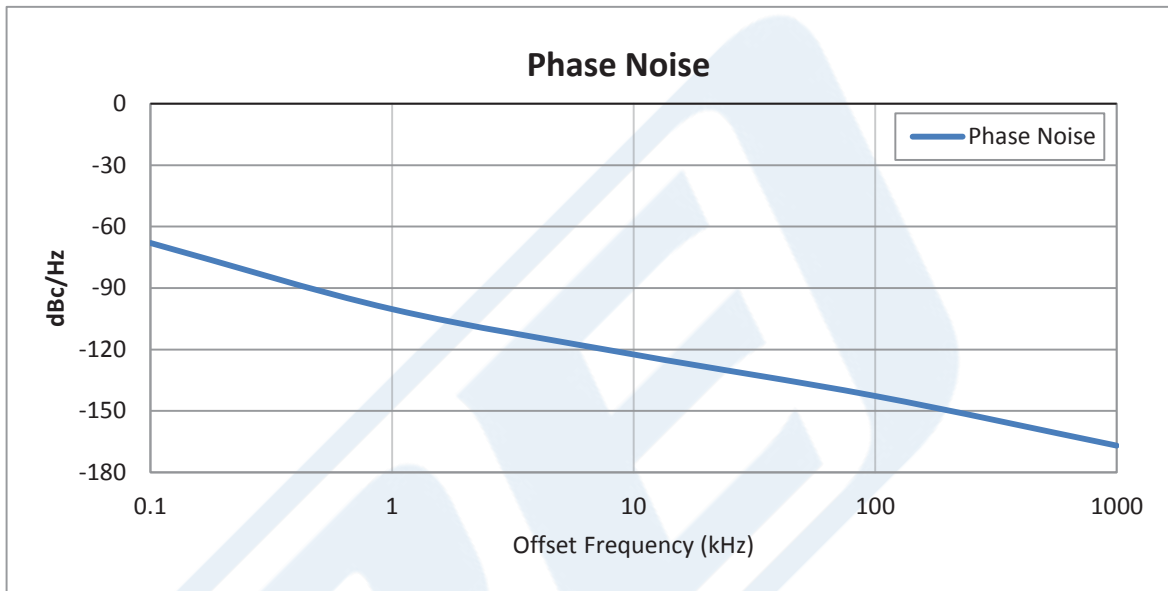


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Typical Performance Data



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0.5 inch Commercial Surface Mount (SMT) Voltage Controlled Oscillator (VCO) From 10 MHz to 20 MHz With Phase Noise of -120 dBc/Hz from Pasternack Enterprises has same day shipment for domestic and International orders. Our RF, microwave and millimeter wave products maintain a 99% availability and are part of the broadest selection in the industry.

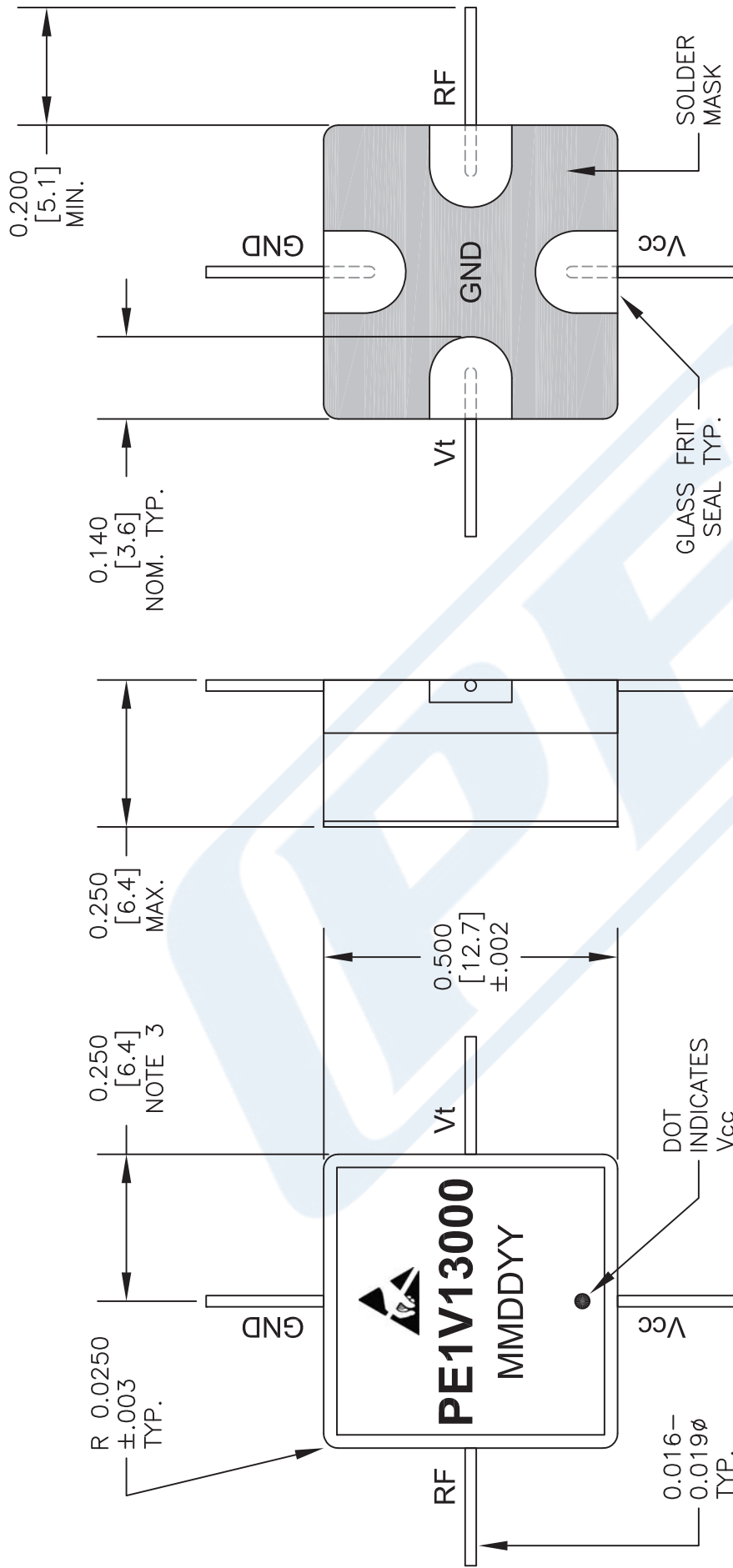
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URL: <http://www.pasternack.com/surface-mount-smt-voltage-controlled-oscillator-vco-20-mhz-pe1v13000-p.aspx>

The information contained in this document is accurate to the best of our knowledge and representative of the part described herein. It may be necessary to make modifications to the part and/or the documentation of the part, in order to implement improvements. Pasternack reserves the right to make such changes as required. Unless otherwise stated, all specifications are nominal. Pasternack does not make any representation or warranty regarding the suitability of the part described herein for any particular purpose, and Pasternack does not assume any liability arising out of the use of any part or documentation.

# PE1V13000 CAD Drawing

0.5 inch Commercial Surface Mount (SMT) Voltage Controlled Oscillator (VCO) From 10 MHz to 20 MHz With Phase Noise of -120 dBc/Hz



NOTES:  
 1. LEAD / BODY BASE MATERIAL IS KOVAR.  
 2. LEAD / BODY FINISH IS 50U" GOLD / NI.  
 3. MEASURED WITHIN .05" OF BODY.

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].

DWG TITLE  
**PE1V13000**

FSCM NO. 53919

SCALE N/A

SIZE A

CAD FILE 111815

2233

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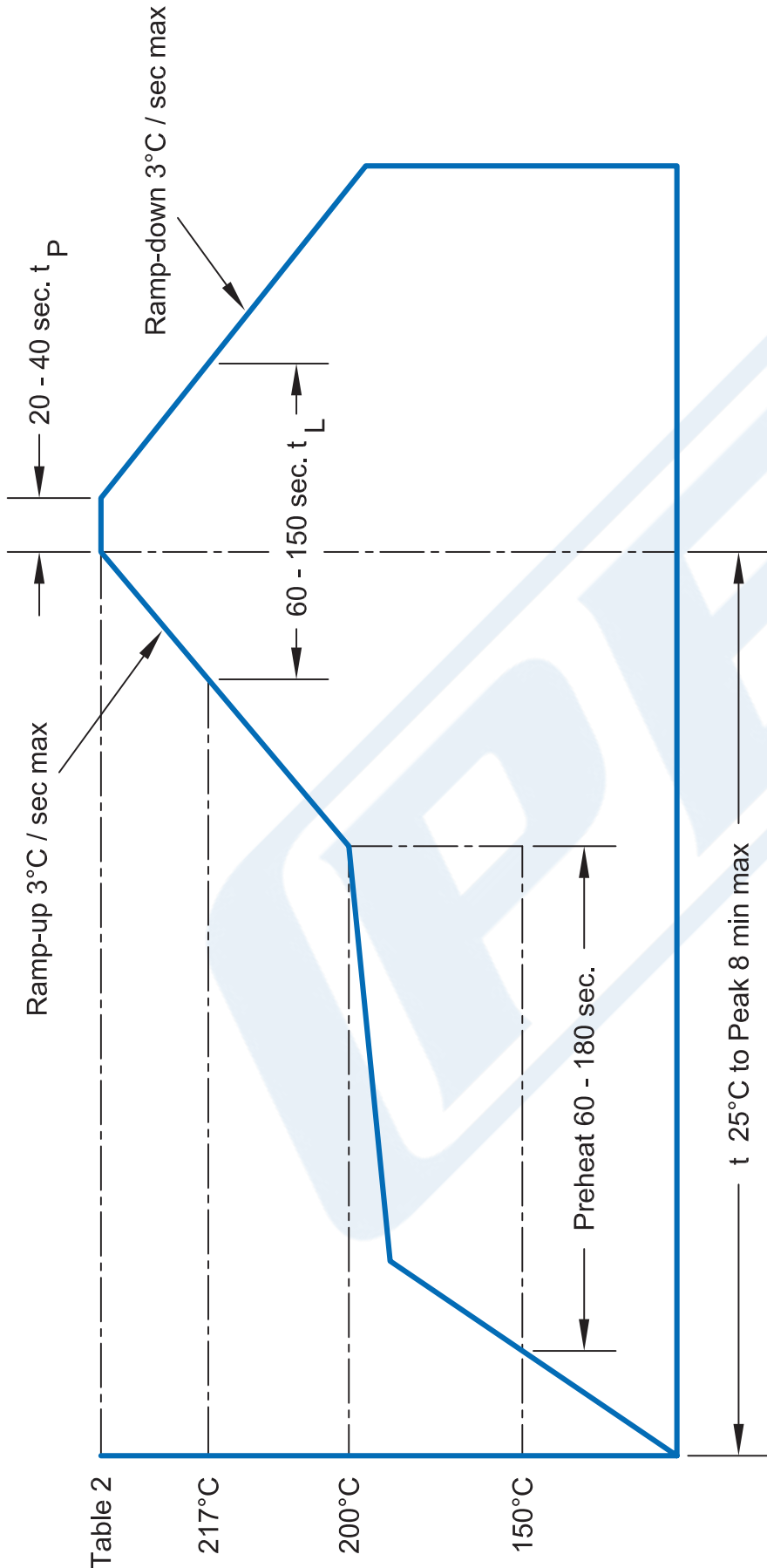


Table 2

217°C

200°C

150°C

Table 1

Item	Condition
Tip Temp. (max.)	260°
Iron Power (max.)	20 W
Time (max.)	3 Sec.
Note.	Avoid excess pressure to castelations

Table 2

Package re-flow temp	Pkg.	tp (°C)
	VS	260
	MMS	260
	MS	245
	All Others	245

**NOTES:**

1. ALL VCO'S HAVE A MS RATING OF 1
2. ALL PRODUCTS CONFORM TO JEDEC J-STD-020C FOR LEAD FREE PROCESSING.

**DWG TITLE**

**PE1V13000**

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