



Surface Mount (SMT) Voltage Controlled Oscillator (VCO) From 25 MHz to 50 MHz, Phase Noise of -120 dBc/Hz and 0.5 inch Package

## Voltage Control Oscillators Technical Data Sheet

**PE1V11002**

### Features

- 25 to 50 MHz Bandwidth
- -120 dBc/Hz @ 10kHz offset
- Tuning Voltage 0V to 15V
- Pout = +11.5 dBm
- Harmonics = -12 dBc
- RoHS Compliant Assembly
- 0.5" SMT package
- Industry Standard Mounting Footprint
- 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 PE1V11002 is a High Reliability Low Noise Voltage Controlled Oscillator (VCO) which covers a 25 MHz to 50 MHz frequency band with a voltage tuning range from 0V to 15V. 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 +11.5 dBm and 2nd harmonic output of -12 dBc typical. The assembly is RoHS compliant and available in a compact 0.5 inch SMT package with an industry standard mounting footprint. The bottom surface is copper clad with 2-5 micro inches of immersion Gold over 150 - 250 micro inches of Electro less Nickel which makes it resistant to oxidation for ease of soldering. The VCO operates over a temperature range of -40°C to +85°C and is designed to meet a variety of MIL-STD-202 test conditions including Humidity, Shock, and Vibration.

### Electrical Specifications

Description	Minimum	Typical	Maximum	Units
Frequency Range	25		50	MHz
Tuning Voltage	0		15	Vdc
Supply Voltage (DC)	14	15	16	Vdc
Supply Current (DC)		16	18	mA
Phase Noise @ 1kHz Offset		-93	-91	dBc/Hz
Phase Noise @ 10kHz Offset		-120	-118	dBc/Hz
Phase Noise @ 100kHz Offset		-140	-138	dBc/Hz
Output Power	+10	+11.5	+12.5	dBm
Tuning Sensitivity (Kvco)	1.5		2.5	MHz/V
Pushing		0.05	0.1	MHz/V
Pulling (pk-pk)		30	100	KHz
Tuning Port Capacitance		100		pF
Load Impedance		50		Ohms
2nd Harmonics		-12	-10	dBc

Click the following link (or enter part number in "SEARCH" on website) to obtain additional part information including price, inventory and certifications: [Surface Mount \(SMT\) Voltage Controlled Oscillator \(VCO\) From 25 MHz to 50 MHz, Phase Noise of -120 dBc/Hz and 0.5 inch Package PE1V11002](#)



Surface Mount (SMT) Voltage Controlled Oscillator (VCO) From 25 MHz to 50 MHz, Phase Noise of -120 dBc/Hz and 0.5 inch Package

## Voltage Control Oscillators Technical Data Sheet

**PE1V11002**

### Mechanical Specifications

#### Size

Length	0.5 in [12.7 mm]
Width	0.5 in [12.7 mm]
Height	0.13 in [3.3 mm]
Weight	0.01 lbs [4.54 g]
Body Material and Plating	Copper Clad, Nickel, Gold
Design	Commercial

### 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

#### 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	12/17/2015

### Plotted and Other Data

Notes:

Click the following link (or enter part number in "SEARCH" on website) to obtain additional part information including price, inventory and certifications: [Surface Mount \(SMT\) Voltage Controlled Oscillator \(VCO\) From 25 MHz to 50 MHz, Phase Noise of -120 dBc/Hz and 0.5 inch Package PE1V11002](#)

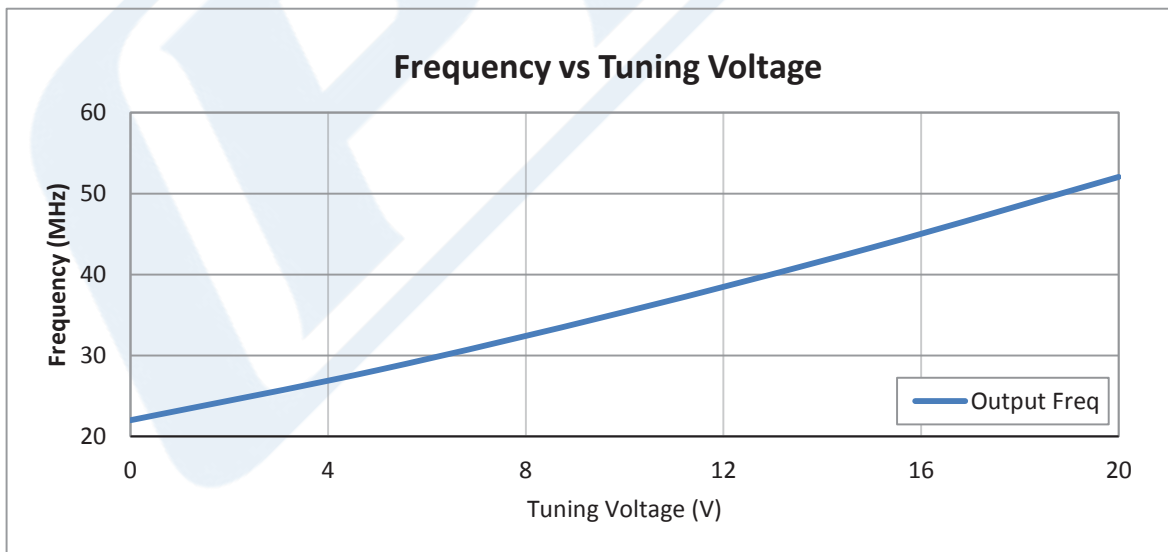
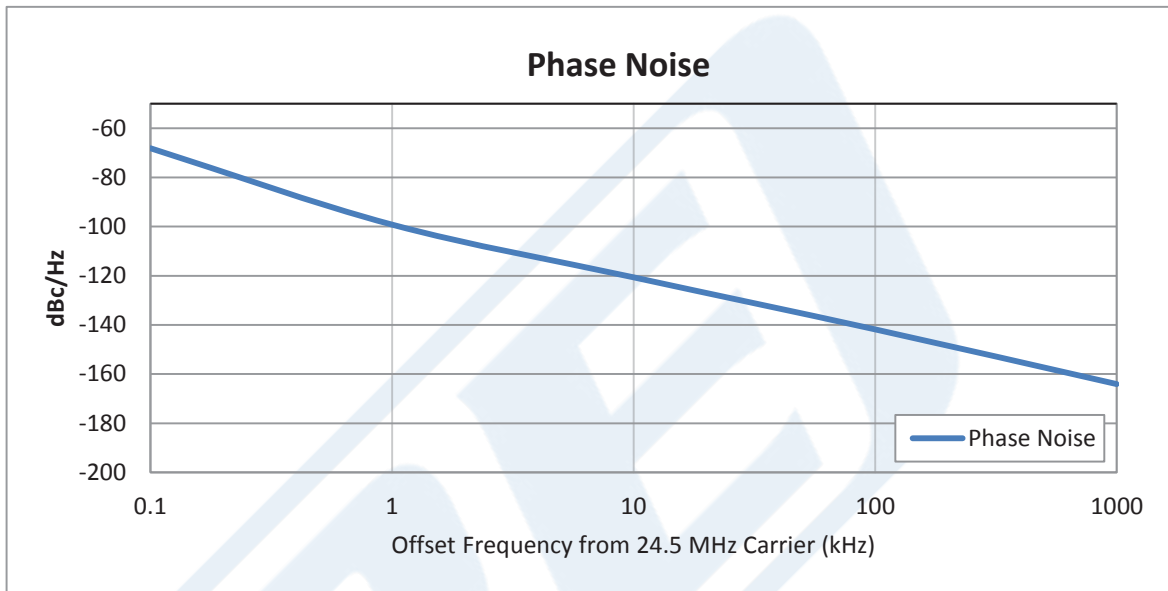


Surface Mount (SMT) Voltage Controlled Oscillator (VCO) From 25 MHz to 50 MHz, Phase Noise of -120 dBc/Hz and 0.5 inch Package

**Voltage Control Oscillators Technical Data Sheet**

**PE1V11002**

**Typical Performance Data**



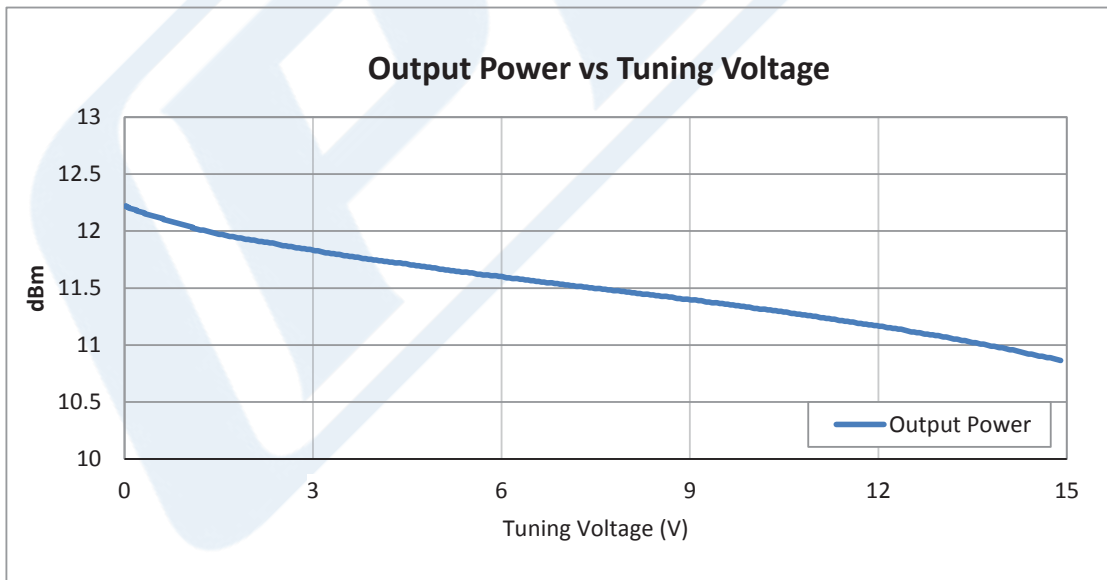
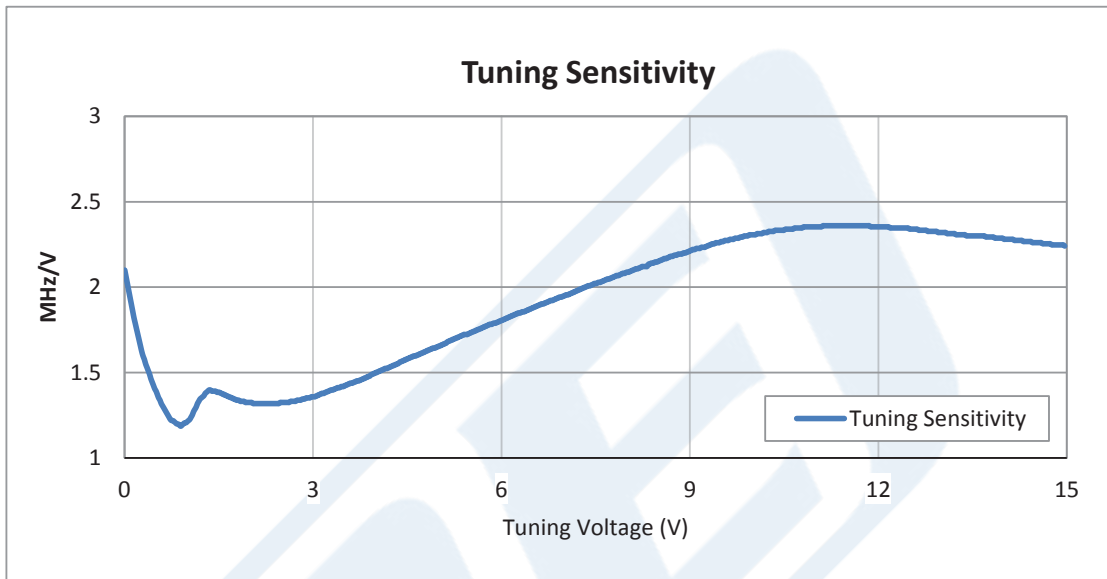
Click the following link (or enter part number in "SEARCH" on website) to obtain additional part information including price, inventory and certifications: [Surface Mount \(SMT\) Voltage Controlled Oscillator \(VCO\) From 25 MHz to 50 MHz, Phase Noise of -120 dBc/Hz and 0.5 inch Package PE1V11002](#)



Surface Mount (SMT) Voltage Controlled Oscillator (VCO) From 25 MHz to 50 MHz, Phase Noise of -120 dBc/Hz and 0.5 inch Package

**Voltage Control Oscillators Technical Data Sheet**

**PE1V11002**



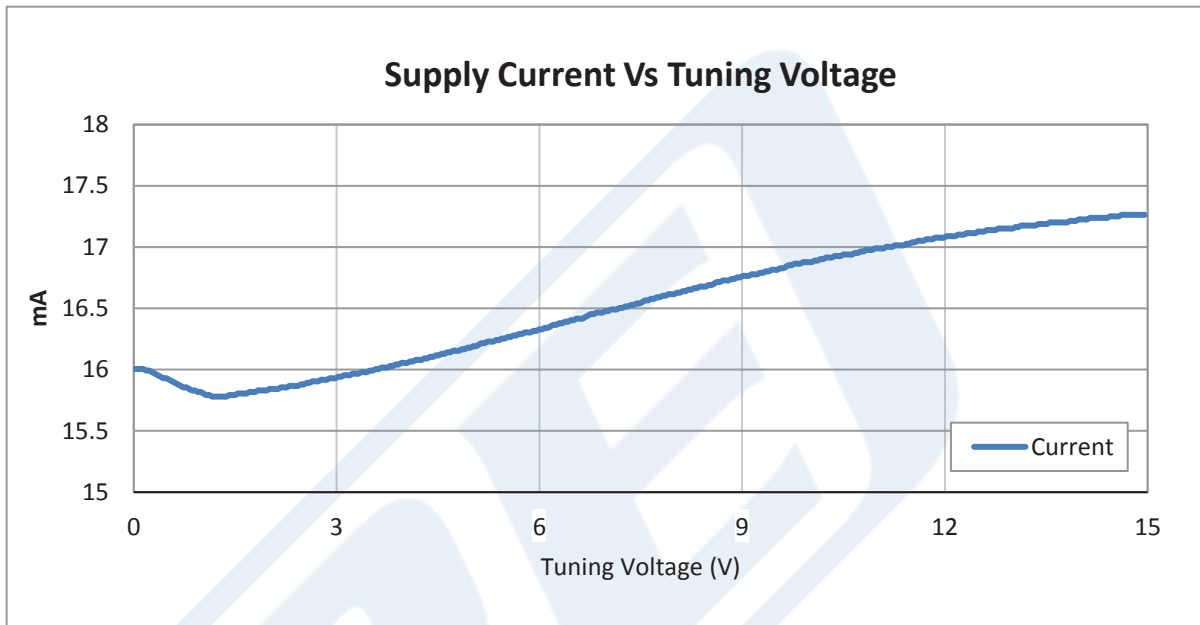
Click the following link (or enter part number in "SEARCH" on website) to obtain additional part information including price, inventory and certifications: [Surface Mount \(SMT\) Voltage Controlled Oscillator \(VCO\) From 25 MHz to 50 MHz, Phase Noise of -120 dBc/Hz and 0.5 inch Package PE1V11002](#)



Surface Mount (SMT) Voltage Controlled Oscillator (VCO) From 25 MHz to 50 MHz, Phase Noise of -120 dBc/Hz and 0.5 inch Package

## Voltage Control Oscillators Technical Data Sheet

**PE1V11002**



Surface Mount (SMT) Voltage Controlled Oscillator (VCO) From 25 MHz to 50 MHz, Phase Noise of -120 dBc/Hz and 0.5 inch Package 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.

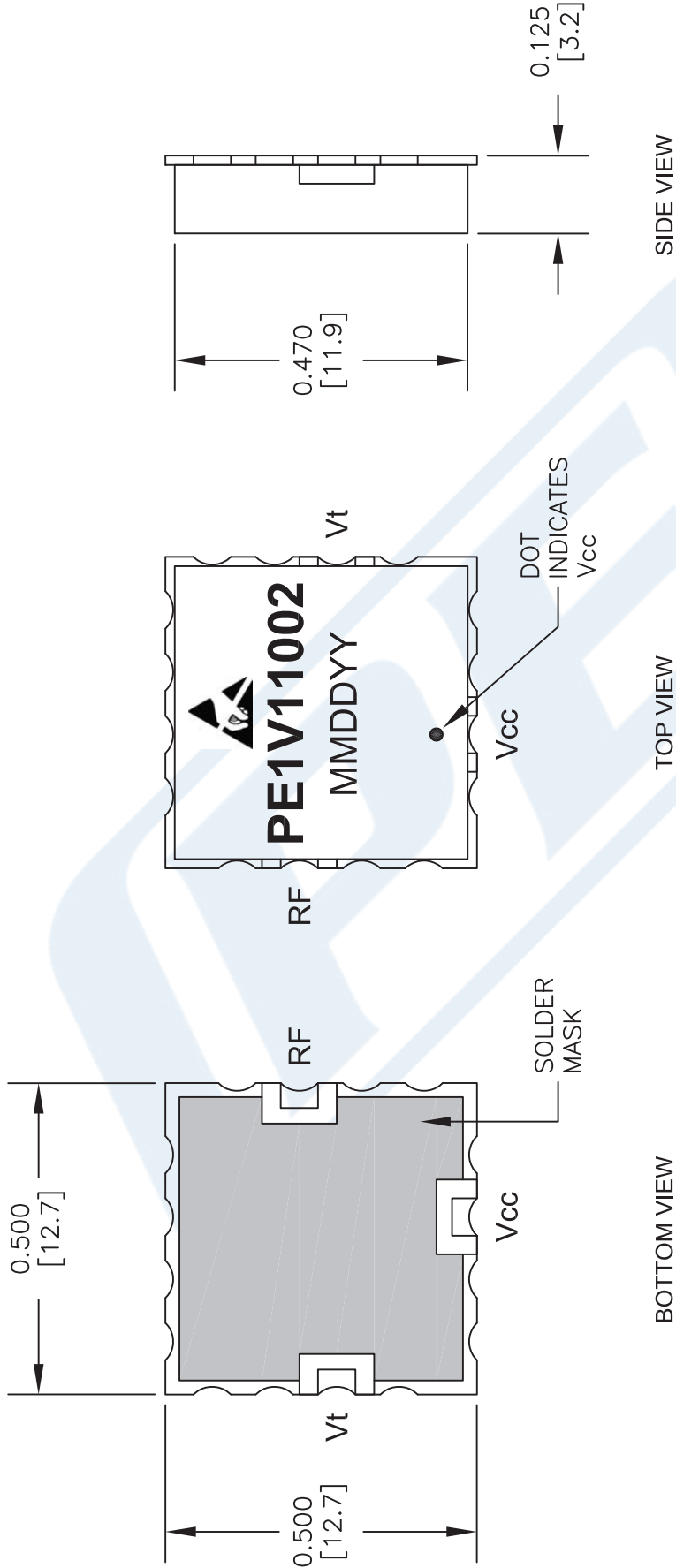
Click the following link (or enter part number in "SEARCH" on website) to obtain additional part information including price, inventory and certifications: [Surface Mount \(SMT\) Voltage Controlled Oscillator \(VCO\) From 25 MHz to 50 MHz, Phase Noise of -120 dBc/Hz and 0.5 inch Package PE1V11002](#)

URL: <http://www.pasternack.com/surface-mount-smt-voltage-controlled-oscillator-vco-50-mhz-pe1v11002-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.

# PE1V11002 CAD Drawing

Surface Mount (SMT) Voltage Controlled Oscillator (VCO) From 25 MHz to 50 MHz, Phase Noise of -120 dBc/Hz and 0.5 inch Package



**NOTES:**

1. THE CASE IS GROUND.
2. UNLESS OTHERWISE SPECIFIED ALL DIMENSIONS ARE IN INCHES [mm].
3. UNLESS OTHERWISE SPECIFIED FINISH IS 150-250 MICRO INCHES ELECTROLESS NICKEL OVER COPPER CLAD PCB, 2-5 MICRO INCHES IMMERSION GOLD, OVER NICKEL.
4. MOD PORT NOT AVAILABLE ON ALL MODELS.

DWG TITLE

**PE1V11002**

- 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].



Pasternack Enterprises, Inc.  
 P.O. Box 16759 | Irvine | CA | 92623  
**Phone:** (949) 261-1920 | **Fax:** (949) 261-7451  
**Website:** www.pasternack.com | **E-Mail:** sales@pasternack.com

FSCM NO. 53919

CAD FILE 021216

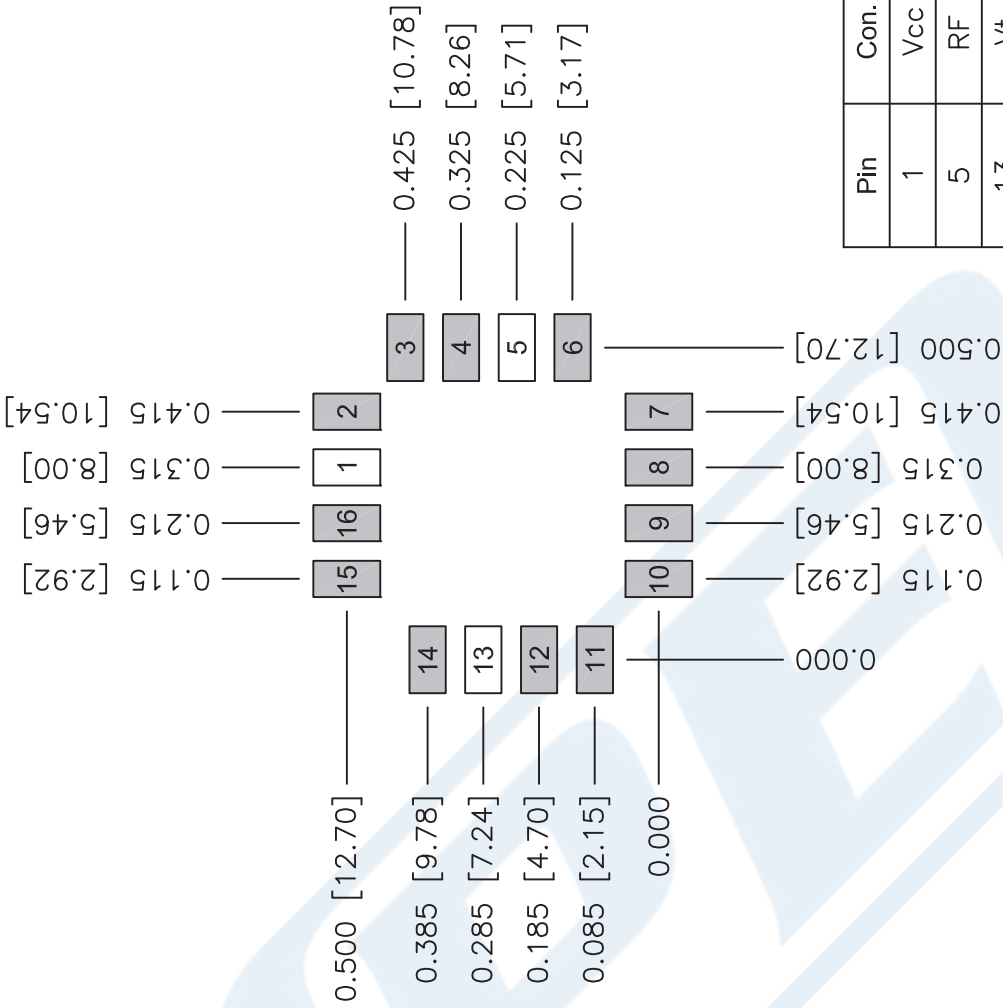
SCALE N/A

SIZE A

2233

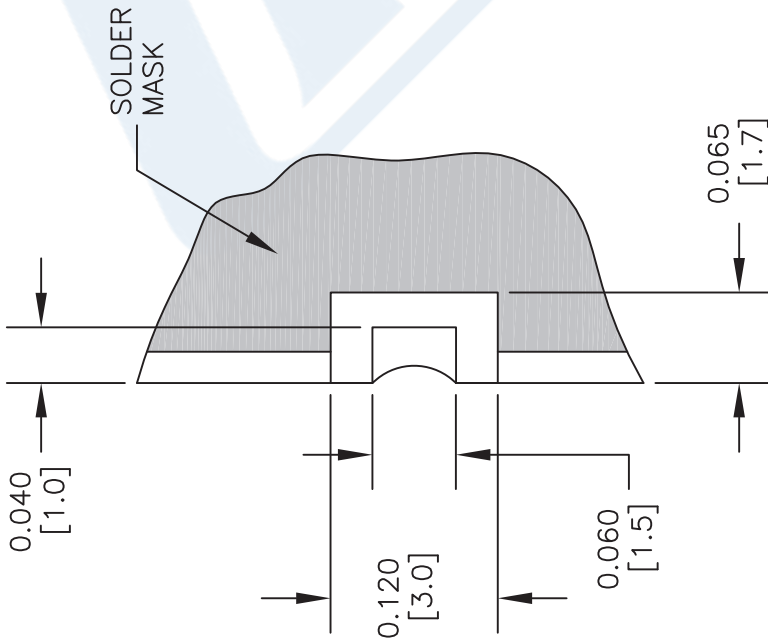
# PE1V11002 CAD Drawing

Surface Mount (SMT) Voltage Controlled Oscillator (VCO) From 25 MHz to 50 MHz, Phase Noise of -120 dBc/Hz and 0.5 inch Package



Pin	Con.
1	V <sub>CC</sub>
5	RF
13	V <sub>t</sub>
Others	GND

PCB PAD LAYOUT



PAD DETAIL

**NOTES:**

1. THE CASE IS GROUND.
2. UNLESS OTHERWISE SPECIFIED ALL DIMENSIONS ARE IN INCHES [mm].
3. UNLESS OTHERWISE SPECIFIED FINISH IS 150-250 MICRO INCHES ELECTROLESS NICKEL OVER COPPER CLAD PCB, 2-5 MICRO INCHES IMMERSION GOLD, OVER NICKEL.
4. MOD PORT NOT AVAILABLE ON ALL MODELS.

DWG TITLE

**PE1V11002**

- 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].



Pasternack Enterprises, Inc.  
 P.O. Box 16759 | Irvine | CA | 92623  
**Phone:** (949) 261-1920 | **Fax:** (949) 261-7451  
**Website:** www.pasternack.com | **E-Mail:** sales@pasternack.com

FSCM NO. 53919

CAD FILE 021216

SCALE N/A

SIZE A

2233

# PE1V11002 CAD Drawing

Surface Mount (SMT) Voltage Controlled Oscillator (VCO) From 25 MHz to 50 MHz, Phase Noise of -120 dBc/Hz and 0.5 inch Package

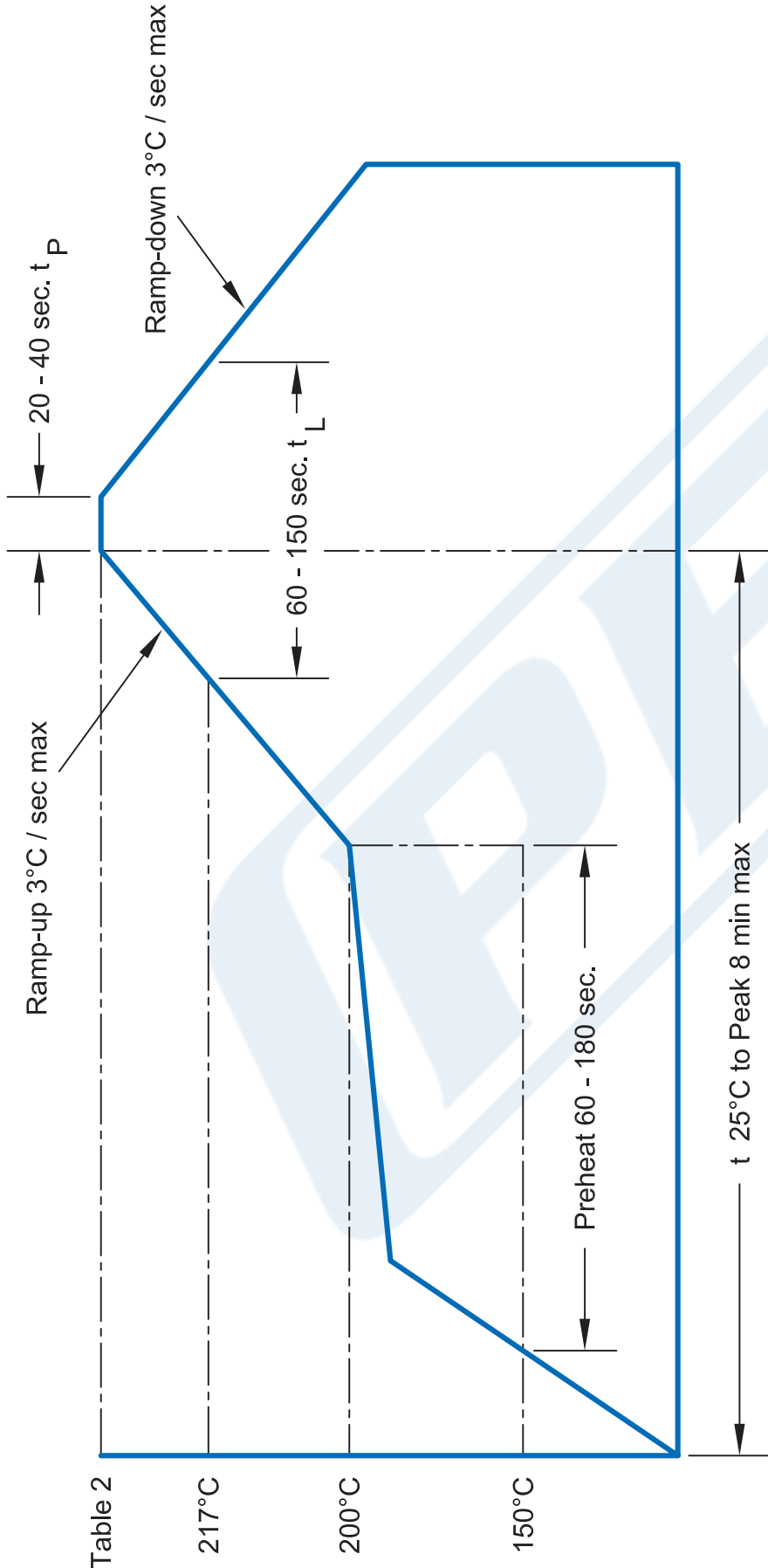


Table 2

217°C

200°C

150°C

Table 1

### Hand Soldering

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)
PE2V Series	260
PE1V11 Series	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

**PE1V11002**

- 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].

**PE PASTERNAK®**  
 THE ENGINEER'S RF SOURCE  
 Pasternack Enterprises, Inc.  
 P.O. Box 16759 | Irvine | CA | 92623  
 Phone: (949) 261-1920 | Fax: (949) 261-7451  
 Website: www.pasternack.com | E-Mail: sales@pasternack.com

FSCM NO. 53919

CAD FILE 021216

SCALE N/A

SIZE A

2233