



# 0.5 inch Commercial Surface Mount (SMT) Voltage Controlled Oscillator (VCO) From 2.1 GHz to 2.3 GHz With Phase Noise of -101 dBc/Hz

## Voltage Control Oscillators Technical Data Sheet

PE1V14007

### Features

- 2100 MHz to 2300 MHz Bandwidth
- -102 dBc/Hz @ 10kHz offset
- Tuning Voltage 0.0V to 4.5v
- Pout = +4.5 dBm
- Harmonics = -35 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 PE1V14007 is a High Reliability Low Noise Voltage Controlled Oscillator (VCO) which covers a 2100 MHz to 2300 MHz frequency band with a voltage tuning range from 0.0V to 4.5V. This design features exceptional phase noise performance of -101 dBc/Hz @ 10 kHz offset. Supply Voltage is +5V with a generated output power level of +4.5 dBm and 2nd harmonic output of -35 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	2.1		2.3	GHz
Tuning Voltage	0		4.5	Vdc
Supply Voltage (DC)	4.5	5	5.5	Vdc
Supply Current (DC)		16	18	mA
Phase Noise @ 1kHz Offset		-76	-73	dBc/Hz
Phase Noise @ 10kHz Offset		-101	-100	dBc/Hz
Phase Noise @ 100kHz Offset		-122	-120	dBc/Hz
Output Power	+3	+4.5	+6	dBm
Tuning Sensitivity (Kvco)	45		70	MHz/V
Pushing		2.5	4	MHz/Volt
Pulling (pk-pk)		300	800	KHz
Tuning Port Capacitance		5.6		pF
Load Impedance		50		Ohms
2nd Harmonics		-35	-25	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 2.1 GHz to 2.3 GHz With Phase Noise of -101 dBc/Hz PE1V14007](#)





0.5 inch Commercial Surface Mount (SMT) Voltage  
Controlled Oscillator (VCO) From 2.1 GHz to  
2.3 GHz With Phase Noise of -101 dBc/Hz

## Voltage Control Oscillators Technical Data Sheet

PE1V14007

### Mechanical Specifications

#### Size

Length	0.5 in [12.7 mm]
Width	0.5 in [12.7 mm]
Height	0.125 in [3.18 mm]
Weight	0 lbs [0 g]
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

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:

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 2.1 GHz to 2.3 GHz With Phase Noise of -101 dBc/Hz PE1V14007](#)

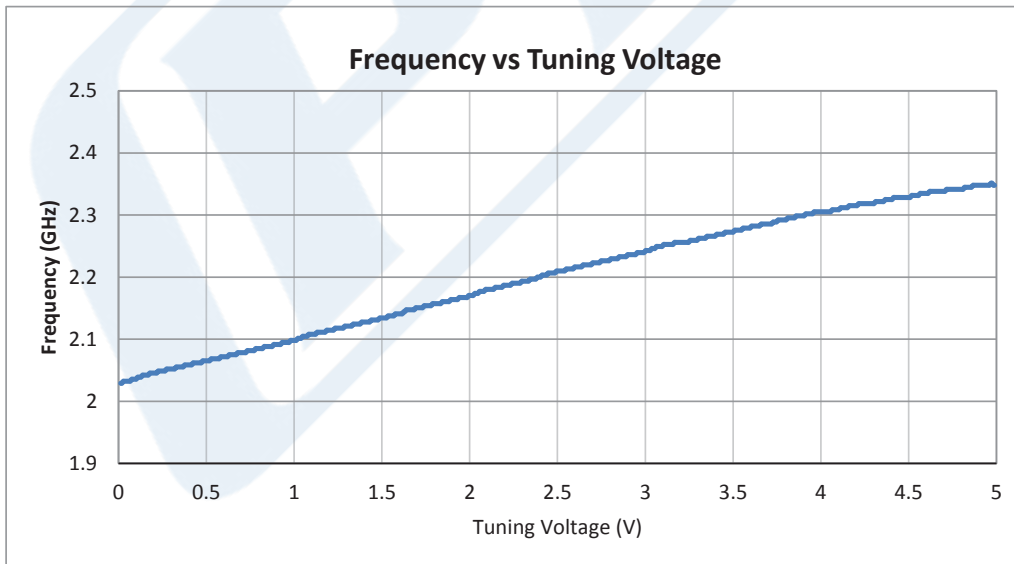
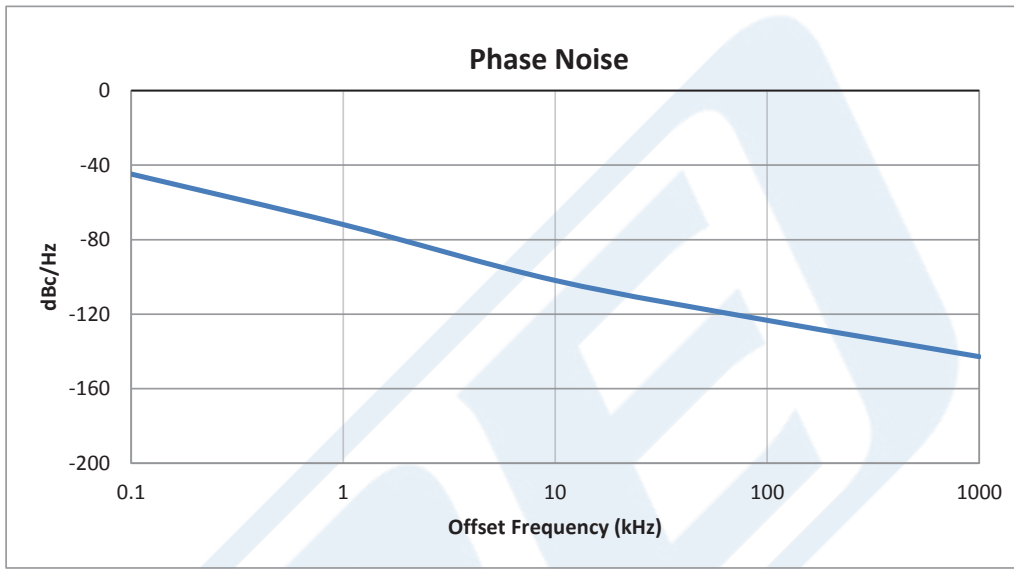


0.5 inch Commercial Surface Mount (SMT) Voltage  
Controlled Oscillator (VCO) From 2.1 GHz to  
2.3 GHz With Phase Noise of -101 dBc/Hz

Voltage Control Oscillators Technical Data Sheet

PE1V14007

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: [0.5 inch Commercial Surface Mount \(SMT\) Voltage Controlled Oscillator \(VCO\) From 2.1 GHz to 2.3 GHz With Phase Noise of -101 dBc/Hz PE1V14007](#)

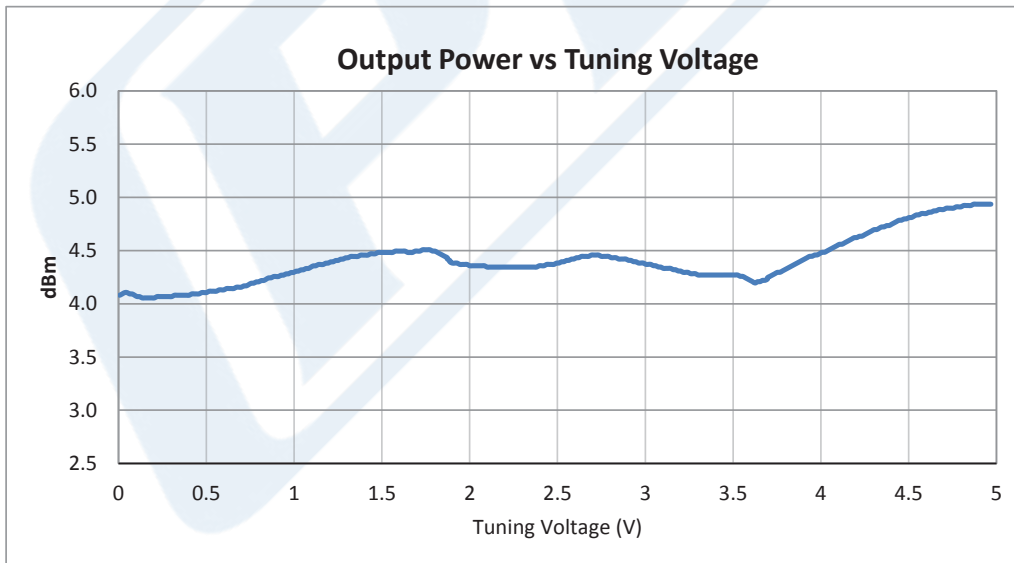
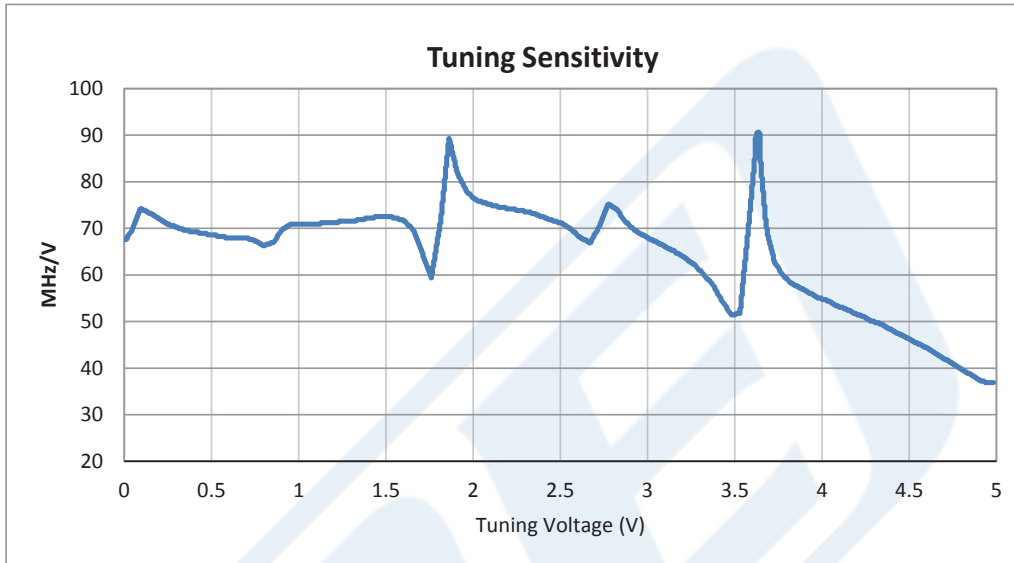




0.5 inch Commercial Surface Mount (SMT) Voltage  
Controlled Oscillator (VCO) From 2.1 GHz to  
2.3 GHz With Phase Noise of -101 dBc/Hz

Voltage Control Oscillators Technical Data Sheet

PE1V14007



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 2.1 GHz to 2.3 GHz With Phase Noise of -101 dBc/Hz PE1V14007](#)

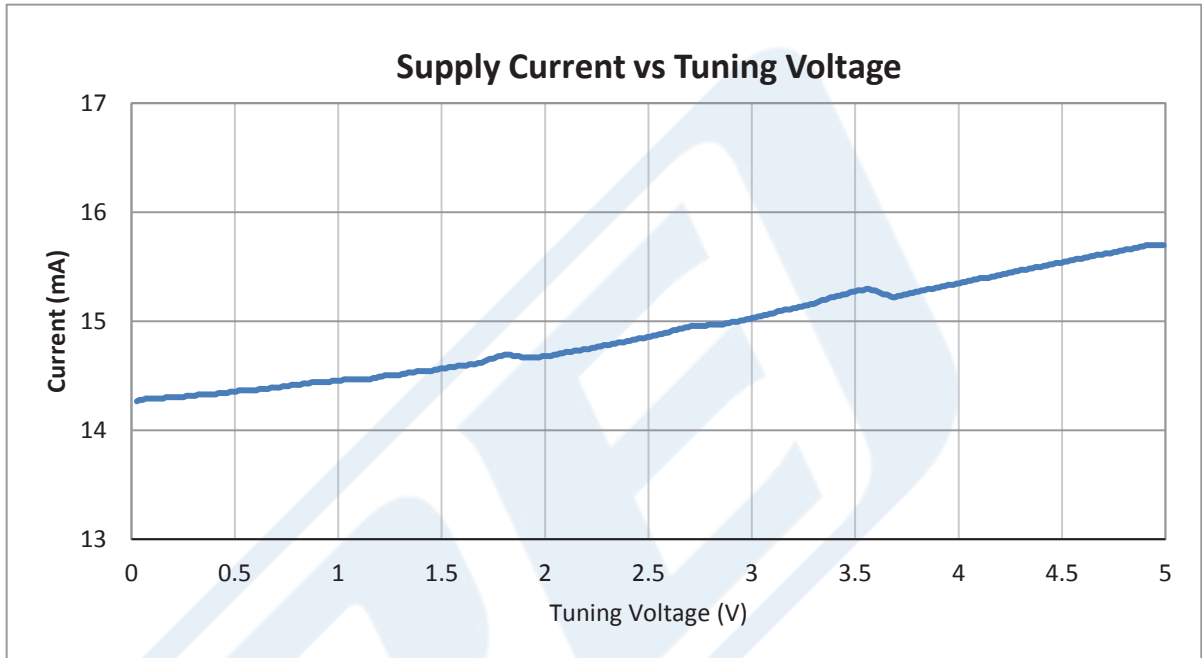




0.5 inch Commercial Surface Mount (SMT) Voltage  
Controlled Oscillator (VCO) From 2.1 GHz to  
2.3 GHz With Phase Noise of -101 dBc/Hz

## Voltage Control Oscillators Technical Data Sheet

PE1V14007



0.5 inch Commercial Surface Mount (SMT) Voltage Controlled Oscillator (VCO) From 2.1 GHz to 2.3 GHz With Phase Noise of -101 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.

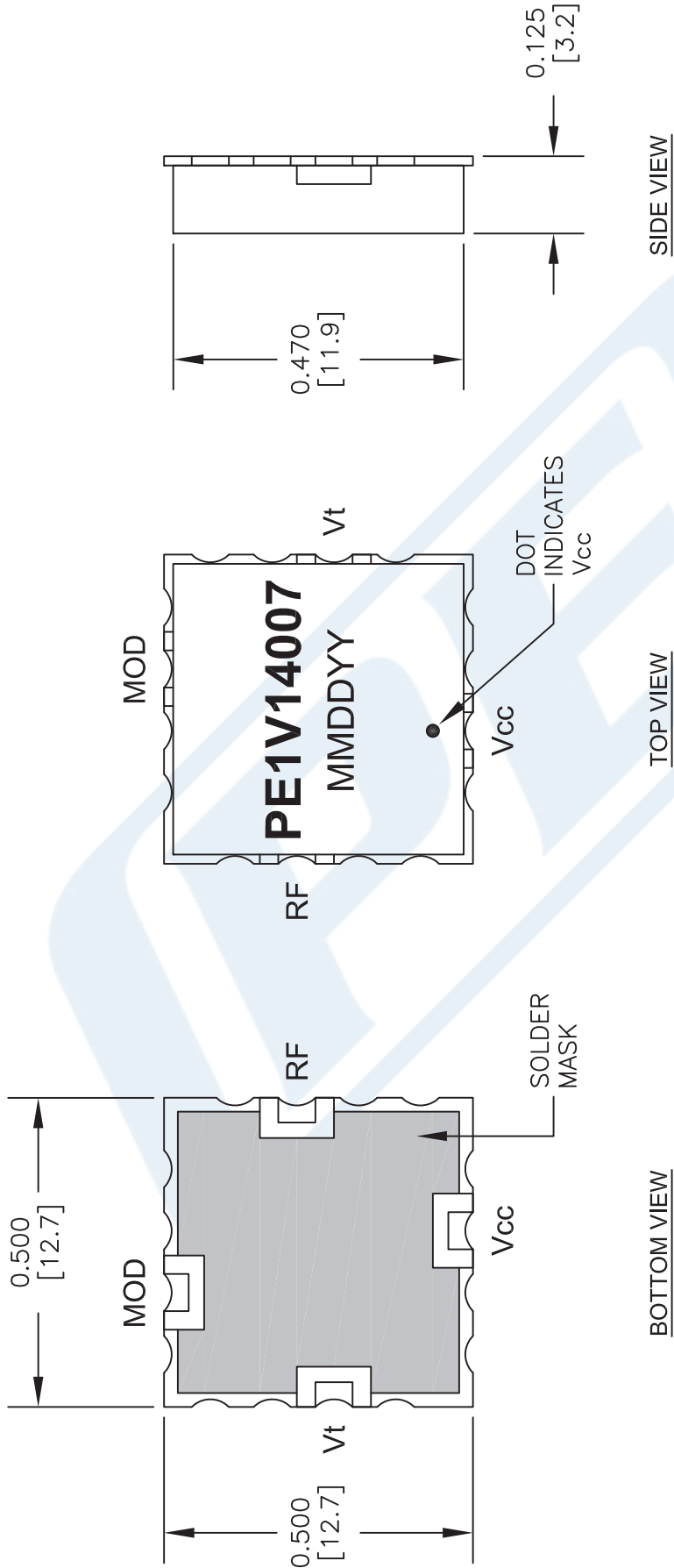
Click the following link (or enter part number in "SEARCH" on website) to obtain additional part information including price, inventory and certifications: [0.5 inch Commercial Surface Mount \(SMT\) Voltage Controlled Oscillator \(VCO\) From 2.1 GHz to 2.3 GHz With Phase Noise of -101 dBc/Hz PE1V14007](http://www.pasternack.com/surface-mount-smt-voltage-controlled-oscillator-vco-2.3-ghz-pe1v14007-p.aspx)

URL: <http://www.pasternack.com/surface-mount-smt-voltage-controlled-oscillator-vco-2.3-ghz-pe1v14007-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.

# PE1V14007 CAD Drawing

0.5 inch Commercial Surface Mount (SMT) Voltage Controlled Oscillator (VCO) From 2.1 GHz to 2.3 GHz With Phase Noise of -101 dBc/Hz



- 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.

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  
**PE1V14007**

FSCM NO. 53919

CAD FILE 082015

SCALE N/A

SIZE A

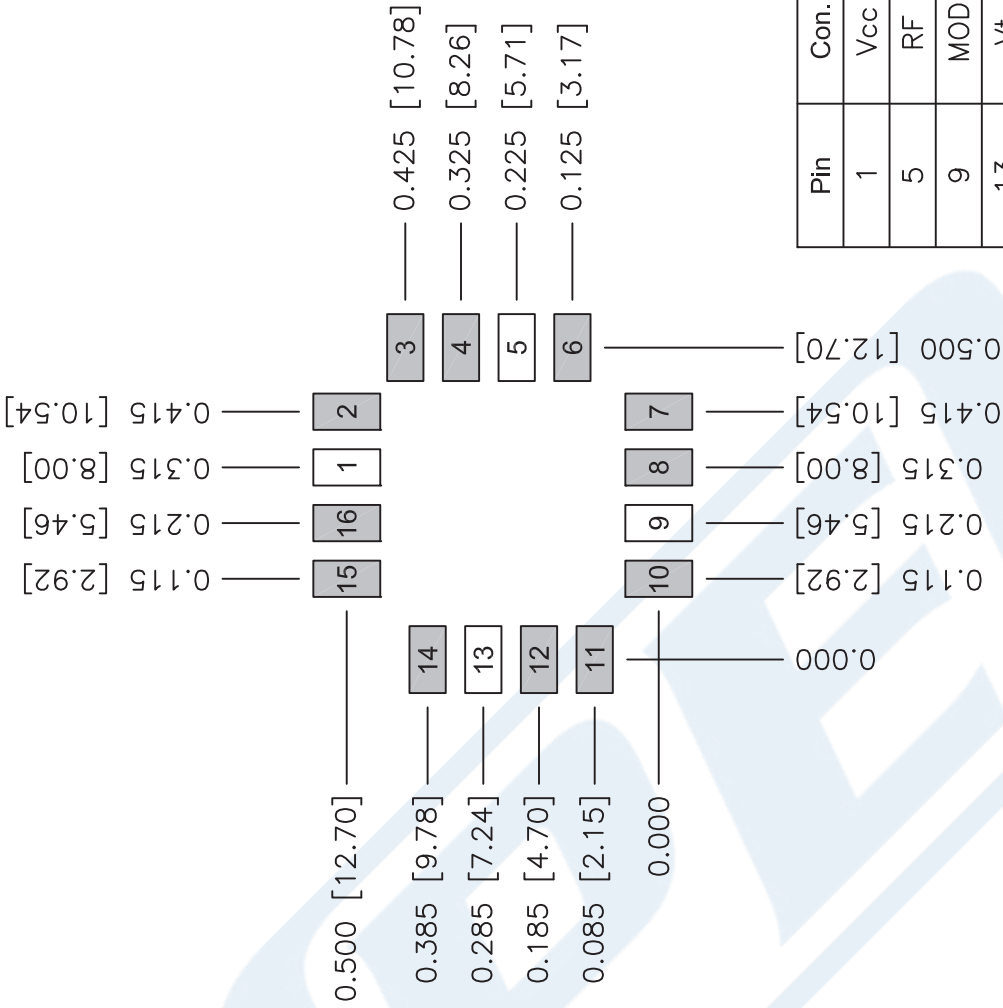
2233

**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



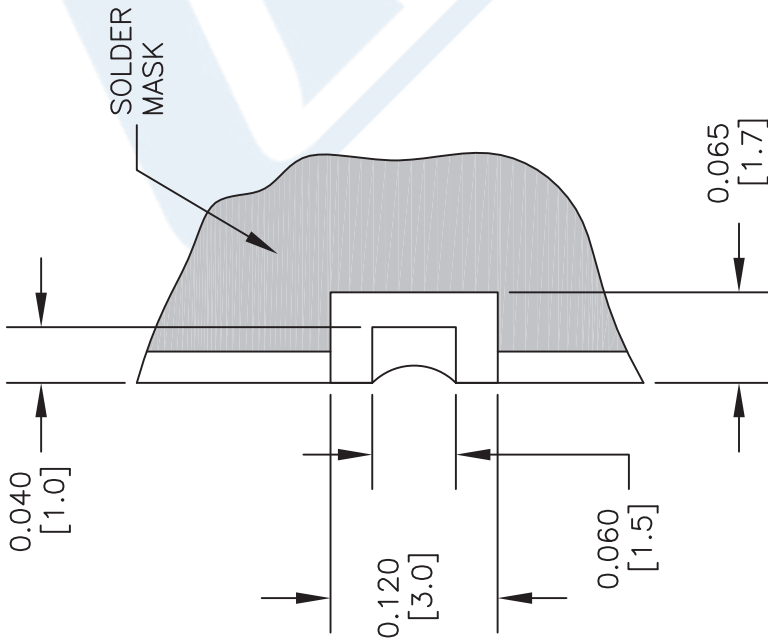
# PE1V14007 CAD Drawing

0.5 inch Commercial Surface Mount (SMT) Voltage Controlled Oscillator (VCO) From 2.1 GHz to 2.3 GHz With Phase Noise of -101 dBc/Hz



Pin	Con.
1	Vcc
5	RF
9	MOD
13	Vt
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

**PE1V14007**

- 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 082015

SCALE N/A

SIZE A

2233

# PE1V14007 CAD Drawing

0.5 inch Commercial Surface Mount (SMT) Voltage Controlled Oscillator (VCO) From 2.1 GHz to 2.3 GHz With Phase Noise of -101 dBc/Hz

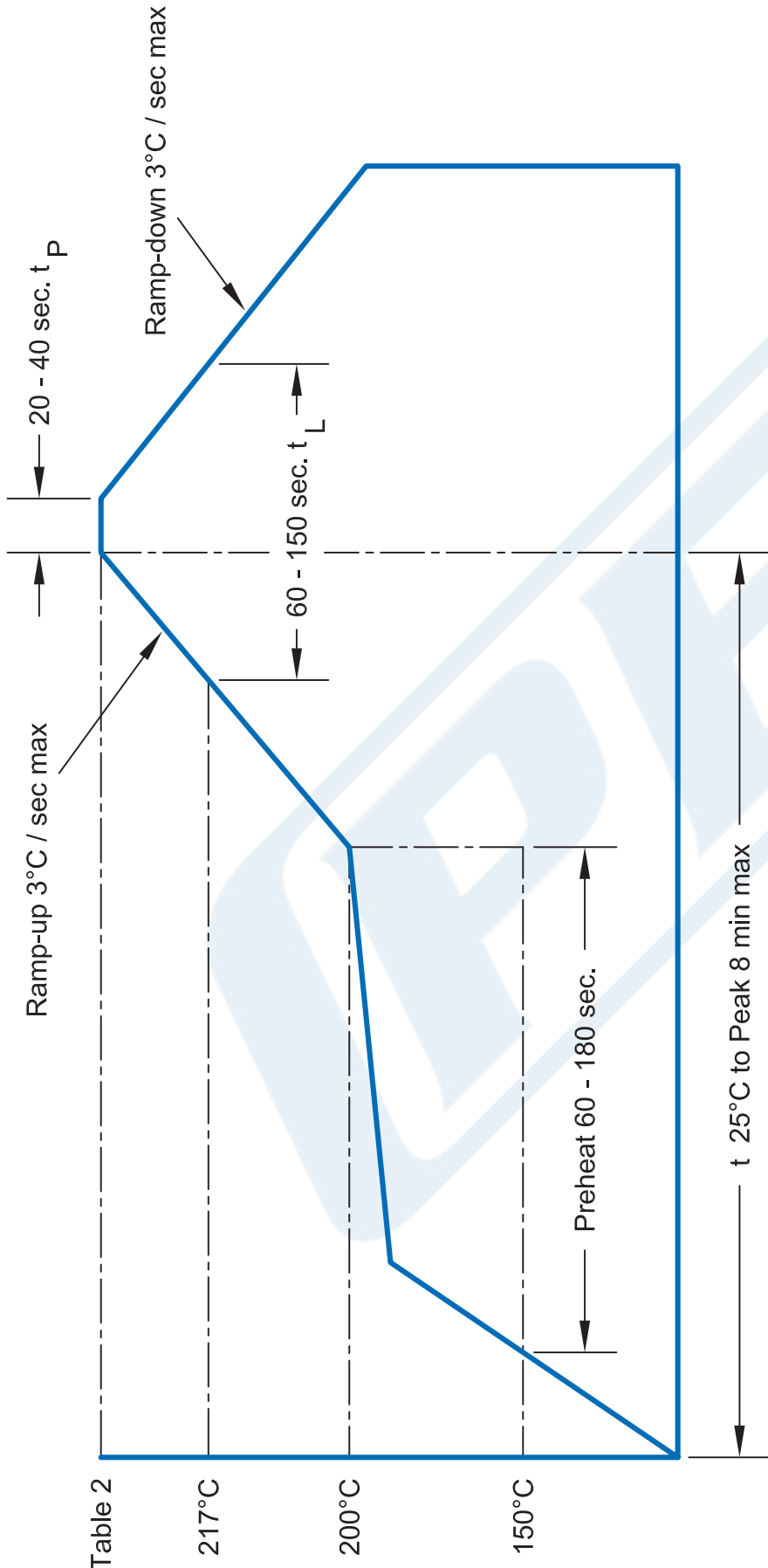


Table 2

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

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

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

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

## PE1V14007

FSCM NO. 53919

CAD FILE 082015

SCALE N/A

SIZE A

2233

**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