



# 0.5 inch Commercial Surface Mount (SMT) Voltage Controlled Oscillator (VCO) From 1.8 GHz to 2 GHz With Phase Noise of -100 dBc/Hz

## Voltage Control Oscillators Technical Data Sheet

PE1V14005

### Features

- 1800 MHz to 2000 MHz Bandwidth
- -100 dBc/Hz @ 10kHz offset
- Tuning Voltage 0.0V to 4.5v
- Pout = +4.5 dBm
- Harmonics = -20 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 PE1V14005 is a High Reliability Low Noise Voltage Controlled Oscillator (VCO) which covers a 1800 MHz to 2000 MHz frequency band with a voltage tuning range from 0.0V to 4.5V. This design features exceptional phase noise performance of -100 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 VCO has a buffer amplifier for increased design flexibility. 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	1.8		2	GHz
Tuning Voltage	0		4.5	Vdc
Supply Voltage (DC)	4.5	5	5.5	Vdc
Supply Current (DC)		18	20	mA
Phase Noise @ 1kHz Offset		-77	-74	dBc/Hz
Phase Noise @ 10kHz Offset		-100	-98	dBc/Hz
Phase Noise @ 100kHz Offset		-120	-118	dBc/Hz
Output Power	+3	+4.5	+5.5	dBm
Tuning Sensitivity (Kvco)	65		95	MHz/V
Pushing		1.5	4	MHz/Volt
Pulling (pk-pk)		600	1.5	KHz
Tuning Port Capacitance		8.2		pF
Load Impedance		50		Ohms
2nd Harmonics		-20	-15	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 1.8 GHz to 2 GHz With Phase Noise of -100 dBc/Hz PE1V14005](#)





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### 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:

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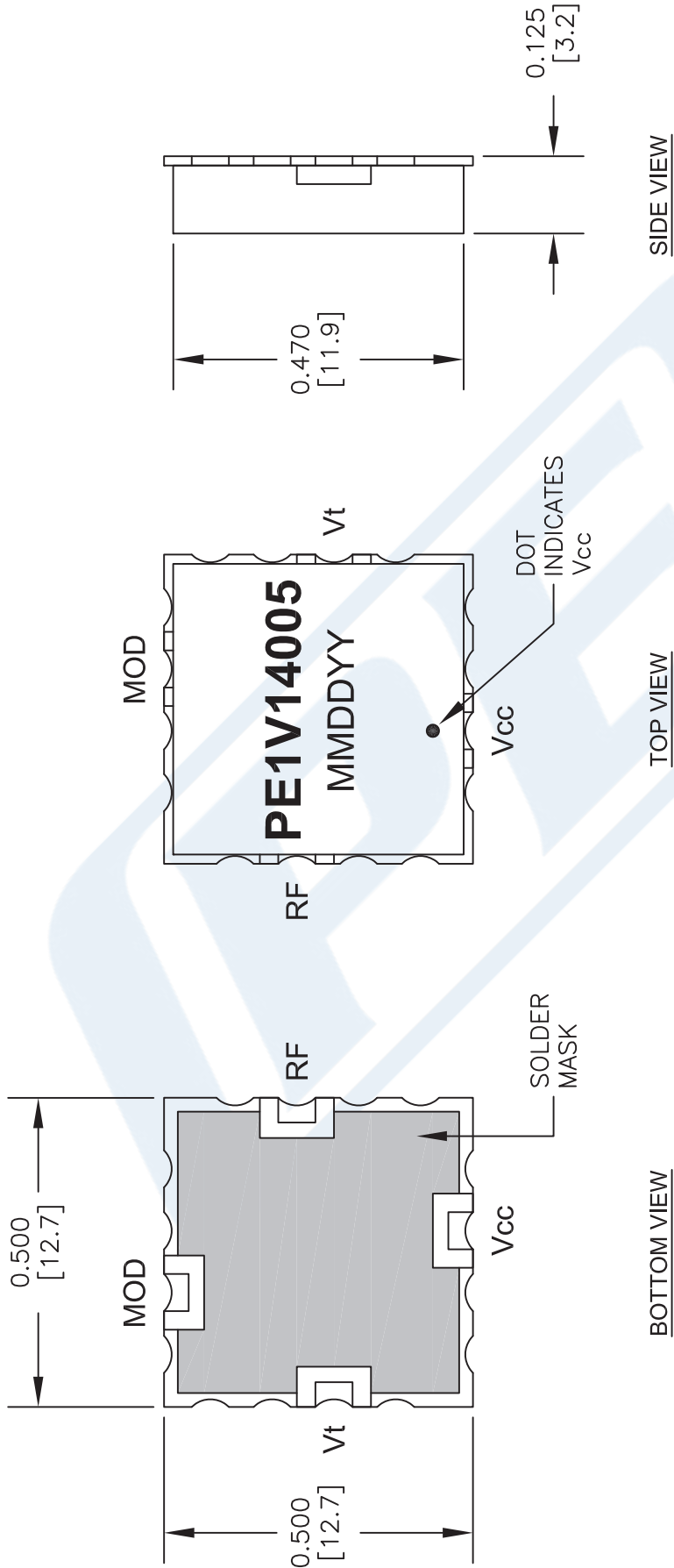
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# PE1V14005 CAD Drawing

0.5 inch Commercial Surface Mount (SMT) Voltage Controlled Oscillator (VCO) From 1.8 GHz to 2 GHz With Phase Noise of -100 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.

DWG TITLE

**PE1V14005**

NOTES:  
 1. UNLESS OTHERWISE SPECIFIED ALL DIMENSIONS ARE NOMINAL.  
 2. ALL SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE AT ANY TIME.  
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**Pasternack Enterprises, Inc.**  
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**FSCM NO. 53919**

CAD FILE 082015

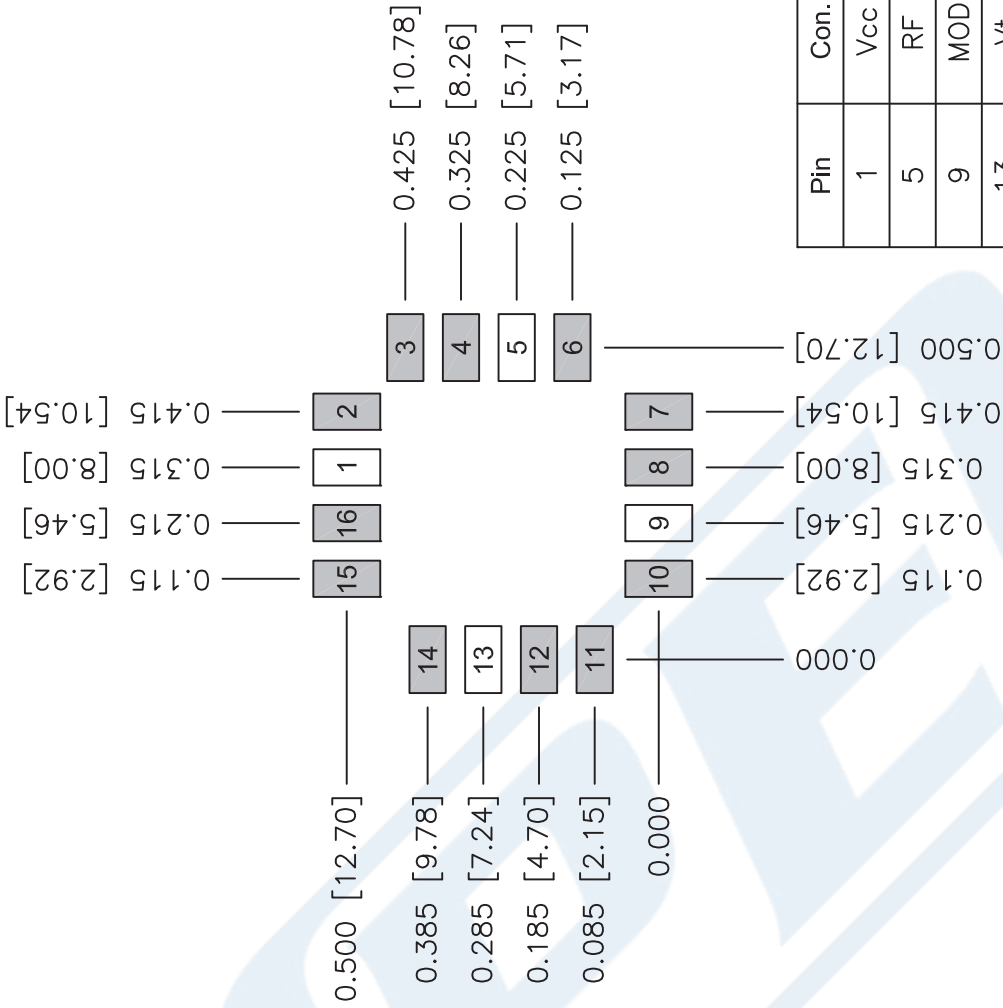
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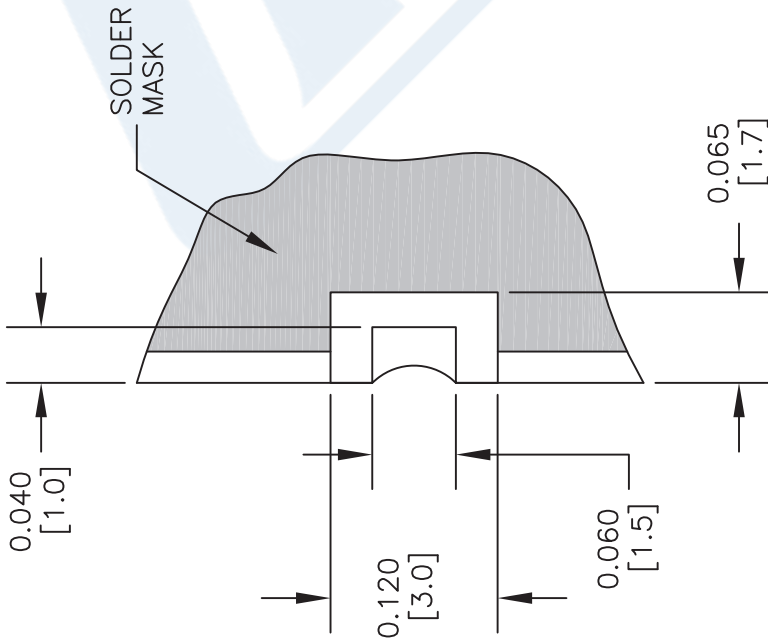
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Pin	Con.
1	Vcc
5	RF
9	MOD
13	Vt
Others	GND

PCB PAD LAYOUT



PAD DETAIL

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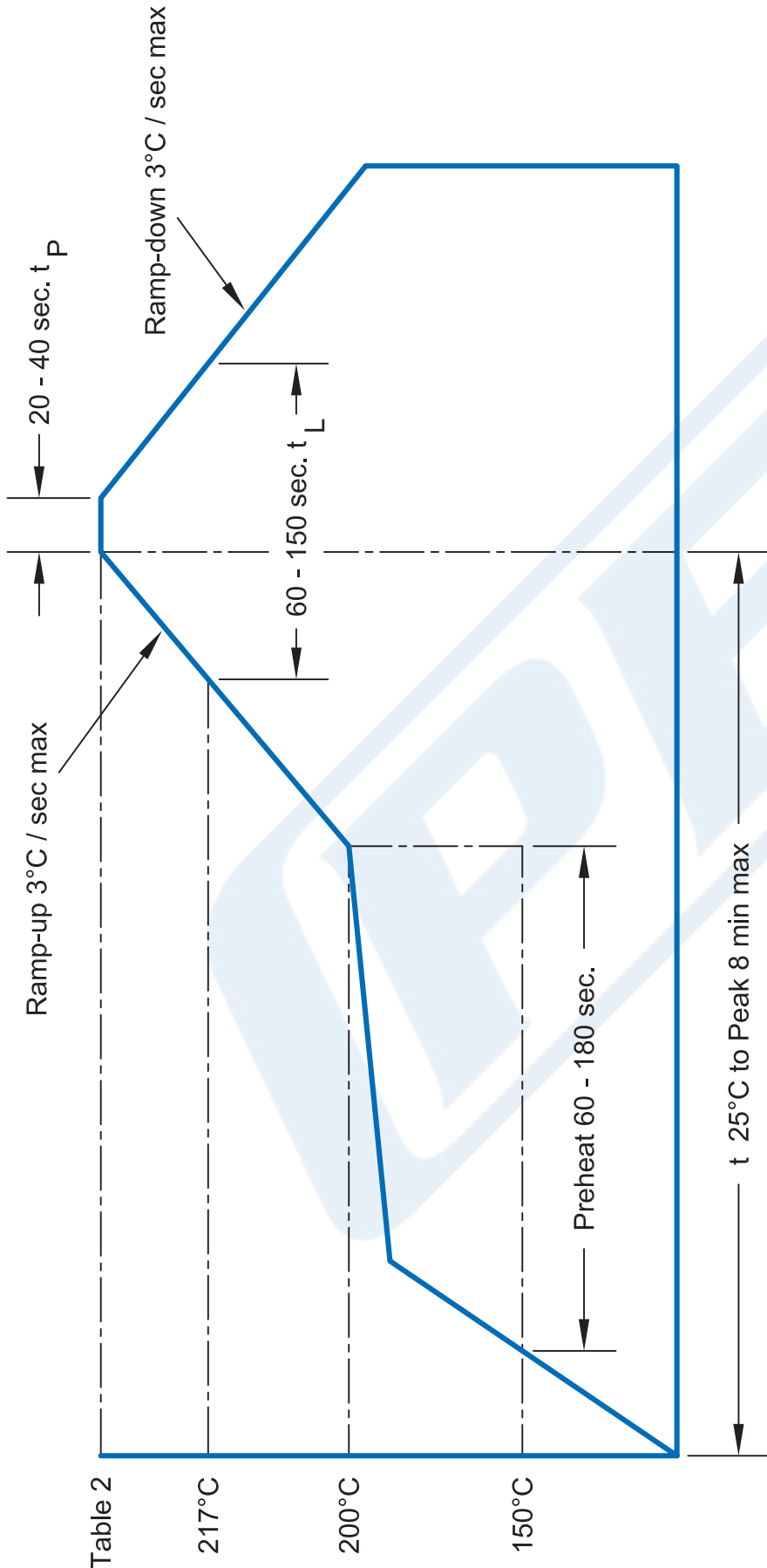


Table 2

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)
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.

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