



Surface Mount (SMT) Voltage Controlled Oscillator (VCO) From 1 GHz to 2 GHz, Phase Noise of -90 dBc/Hz and 0.175 inch Package

Voltage Control Oscillators Technical Data Sheet

PE2V005

Features

- 1.0 GHz to 2.0 GHz Bandwidth
- -90 dBc/Hz @ 10kHz offset
- Tuning Voltage 0V to 20V
- Pout = +10.0 dBm
- Harmonics = -7 dBc
- RoHS Compliant Assembly
- 0.175" 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 PE2V005 is a High Reliability Low Noise Voltage Controlled Oscillator (VCO) which covers a 1.0 GHz to 2.0 GHz frequency band with a voltage tuning range from 0V to 20V. This design features exceptional phase noise performance of -90 dBc/Hz @ 10 kHz offset. Supply Voltage is +12V with a generated output power level of +10.0 dBm and 2nd harmonic output of -7 dBc typical. The assembly is RoHS compliant and available in a compact 0.175 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		2	GHz
Tuning Voltage	0		20	Vdc
Supply Voltage (DC)	11.75	12	12.25	Vdc
Supply Current (DC)		23	25	mA
Phase Noise @ 10kHz Offset		-90	-87	dBc/Hz
Phase Noise @ 100kHz Offset		-112	-110	dBc/Hz
Output Power	+9	+10	+12	dBm
Tuning Sensitivity (Kvco)	36		82	MHz/V
Pushing		2	5	MHz/V
Pulling (pk-pk)		20	40	MHz
Load Impedance		50		Ohms
2nd Harmonics		-7	-5	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 1 GHz to 2 GHz, Phase Noise of -90 dBc/Hz and 0.175 inch Package PE2V005](#)



Surface Mount (SMT) Voltage Controlled Oscillator (VCO) From 1 GHz to 2 GHz, Phase Noise of -90 dBc/Hz and 0.175 inch Package

Voltage Control Oscillators Technical Data Sheet

PE2V005

Mechanical Specifications

Size

Length	0.175 in [4.45 mm]
Width	0.175 in [4.45 mm]
Height	0.075 in [1.91 mm]
Weight	0.009 lbs [4.08 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.



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 1 GHz to 2 GHz, Phase Noise of -90 dBc/Hz and 0.175 inch Package PE2V005](#)



Surface Mount (SMT) Voltage Controlled Oscillator (VCO) From 1 GHz to 2 GHz, Phase Noise of -90 dBc/Hz and 0.175 inch Package

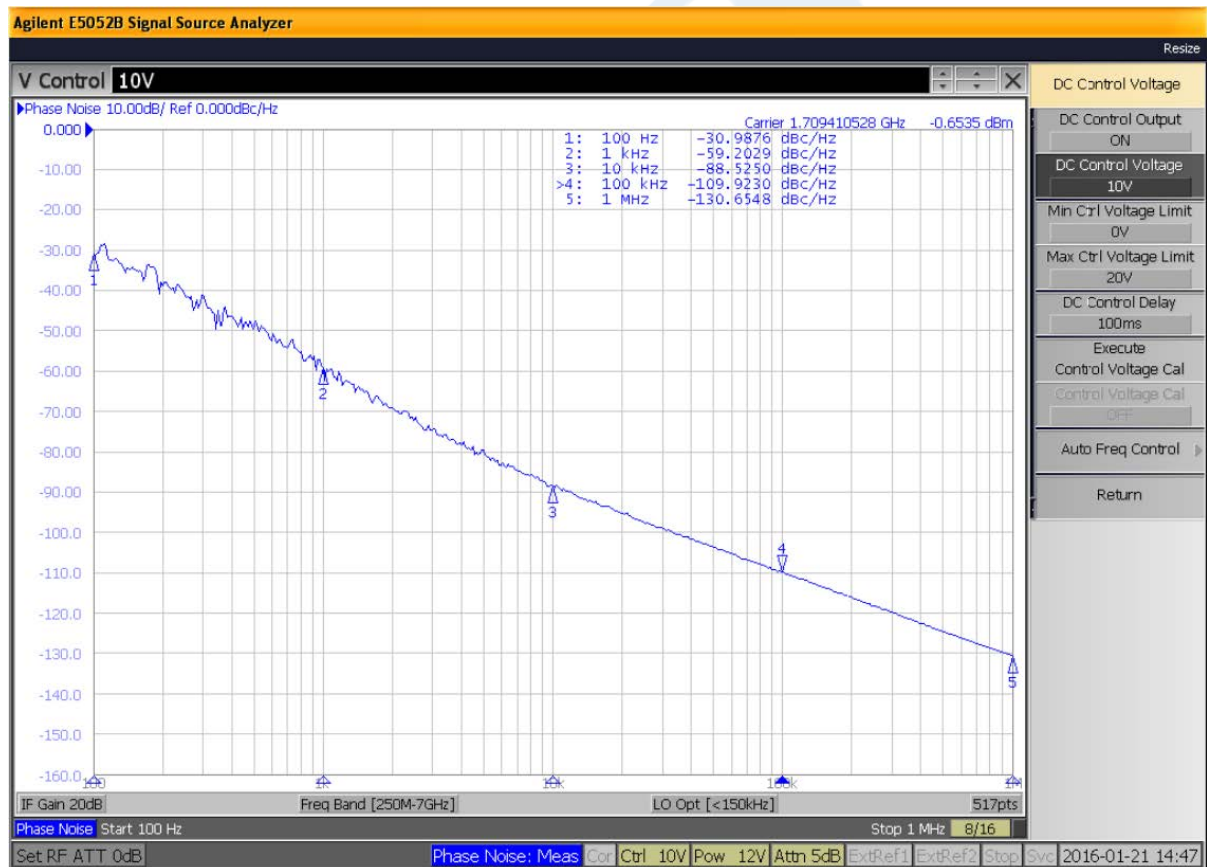
Voltage Control Oscillators Technical Data Sheet

PE2V005

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

Plotted and Other Data

Typical Performance Data



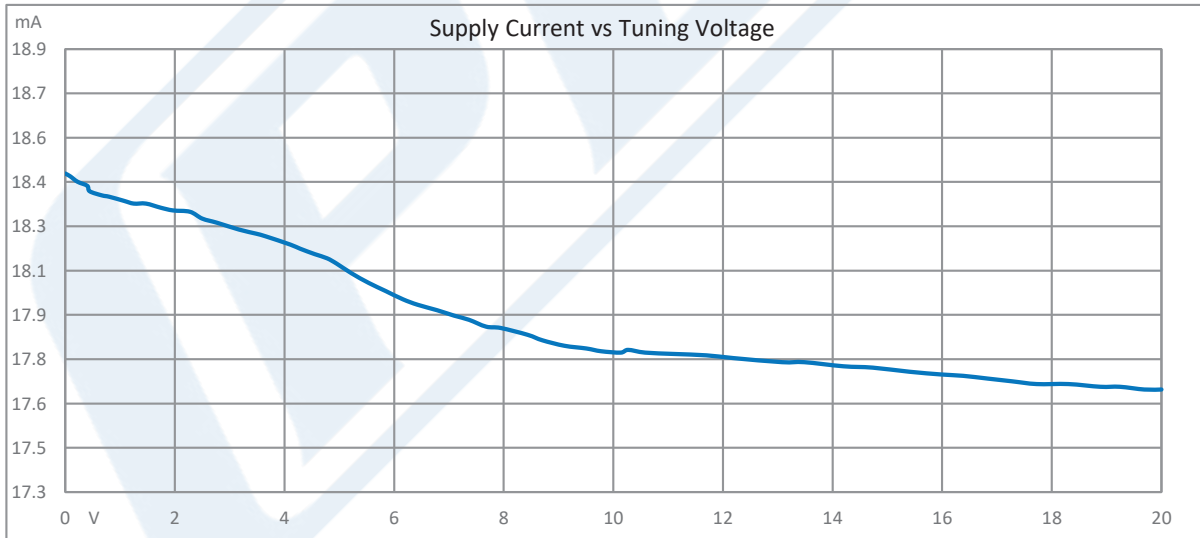
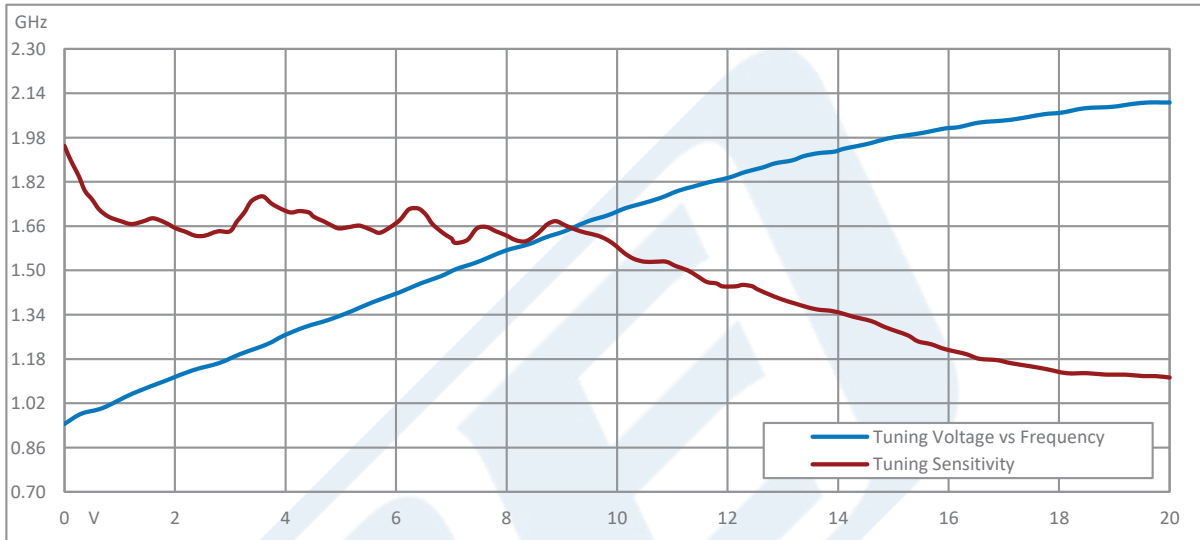
Click the following link (or enter part number in "SEARCH" on website) to obtain additional part information including price, inventory and certifications: [Surface Mount \(SMT\) Voltage Controlled Oscillator \(VCO\) From 1 GHz to 2 GHz, Phase Noise of -90 dBc/Hz and 0.175 inch Package PE2V005](#)



Surface Mount (SMT) Voltage Controlled Oscillator (VCO) From 1 GHz to 2 GHz, Phase Noise of -90 dBc/Hz and 0.175 inch Package

Voltage Control Oscillators Technical Data Sheet

PE2V005



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 1 GHz to 2 GHz, Phase Noise of -90 dBc/Hz and 0.175 inch Package PE2V005](#)



Surface Mount (SMT) Voltage Controlled Oscillator
(VCO) From 1 GHz to 2 GHz, Phase Noise of
-90 dBc/Hz and 0.175 inch Package

Voltage Control Oscillators Technical Data Sheet

PE2V005

Surface Mount (SMT) Voltage Controlled Oscillator (VCO) From 1 GHz to 2 GHz, Phase Noise of -90 dBc/Hz and 0.175 inch Package from Pasternack Enterprises has same day shipment for domestic and International orders. Our RF, microwave and millimeter wave products maintain a 99.4% availability and are part of the broadest selection in the industry.

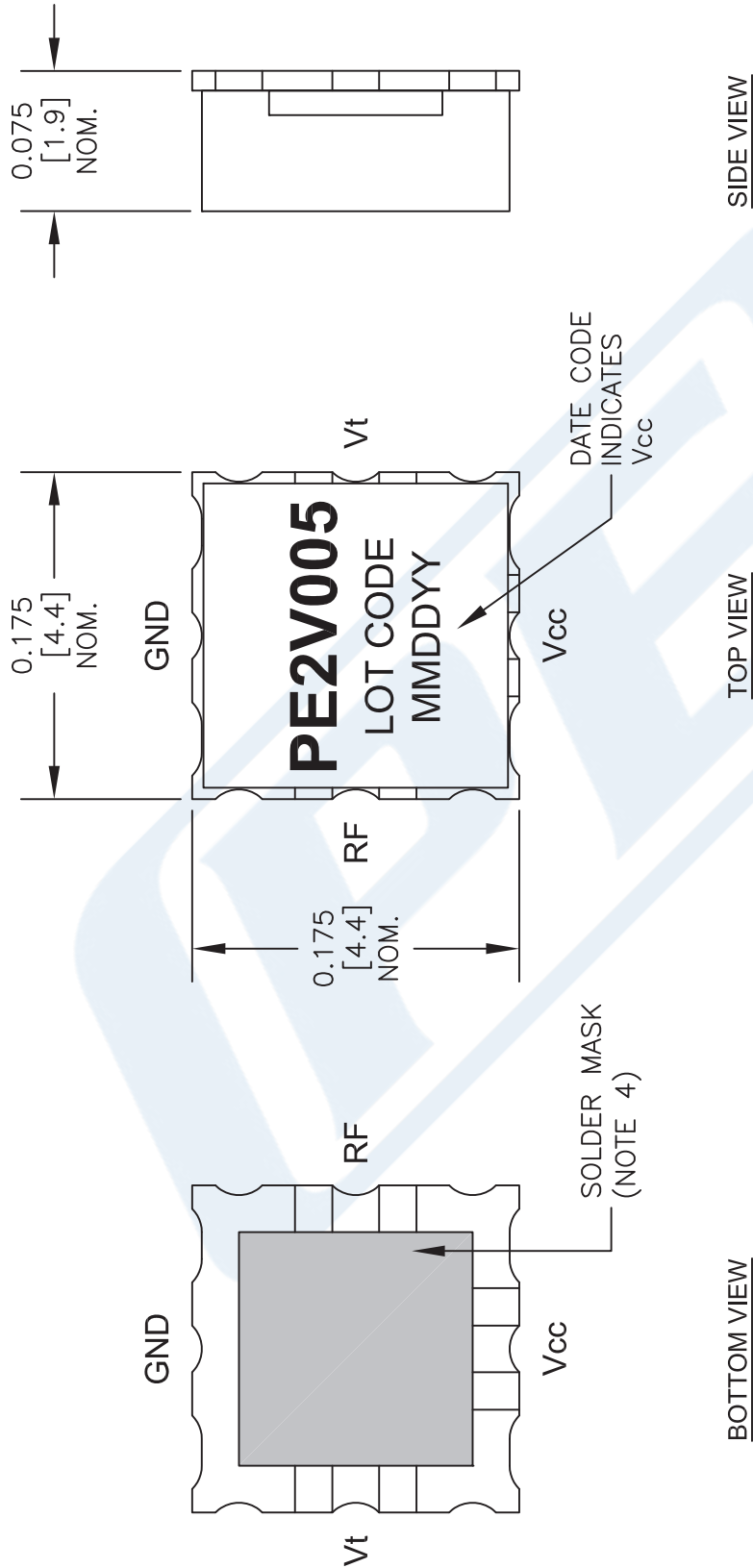
Click the following link (or enter part number in "SEARCH" on website) to obtain additional part information including price, inventory and certifications: [Surface Mount \(SMT\) Voltage Controlled Oscillator \(VCO\) From 1 GHz to 2 GHz, Phase Noise of -90 dBc/Hz and 0.175 inch Package PE2V005](#)

URL: <https://www.pasternack.com/surface-mount-smt-voltage-controlled-oscillator-vco-2-ghz-pe2v005-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.

PE2V005 CAD Drawing

Surface Mount (SMT) Voltage Controlled Oscillator (VCO) From 1 GHz to 2 GHz, Phase Noise of -90 dBc/Hz and 0.175 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. SOLDER MASK NOT USED FOR APPLICATIONS GREATER THAN 6GHZ.

DWG TITLE

PE2V005

- 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 020916

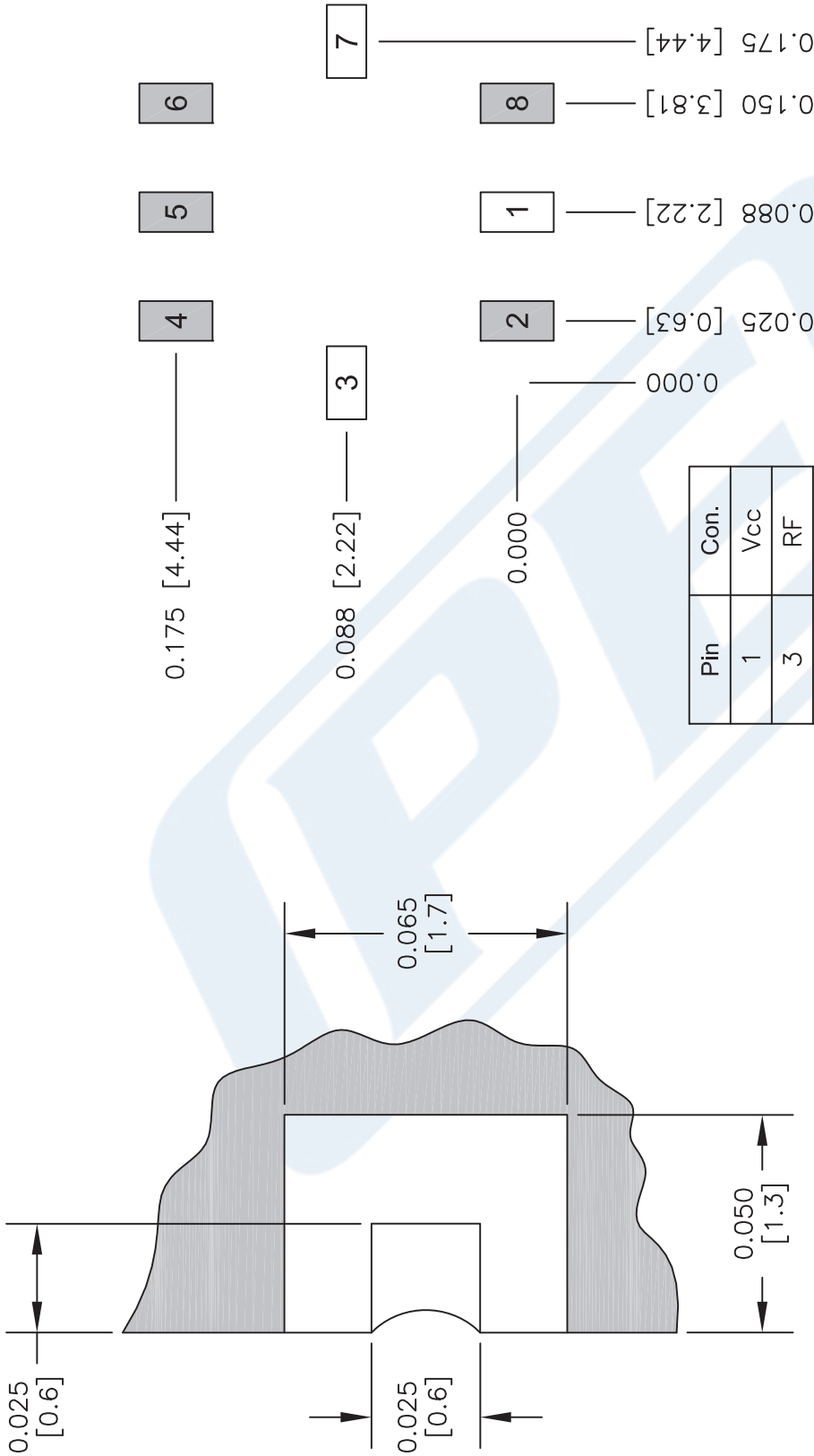
SCALE N/A

SIZE A

2233

PE2V005 CAD Drawing

Surface Mount (SMT) Voltage Controlled Oscillator (VCO) From 1 GHz to 2 GHz, Phase Noise of -90 dBc/Hz and 0.175 inch Package



Pin	Con.
1	Vcc
3	RF
7	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. SOLDER MASK NOT USED FOR APPLICATIONS GREATER THAN 6GHZ.

DWG TITLE

PE2V005

- 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 020916

SCALE N/A

SIZE A

2233

PE2V005 CAD Drawing

Surface Mount (SMT) Voltage Controlled Oscillator (VCO) From 1 GHz to 2 GHz, Phase Noise of -90 dBc/Hz and 0.175 inch Package

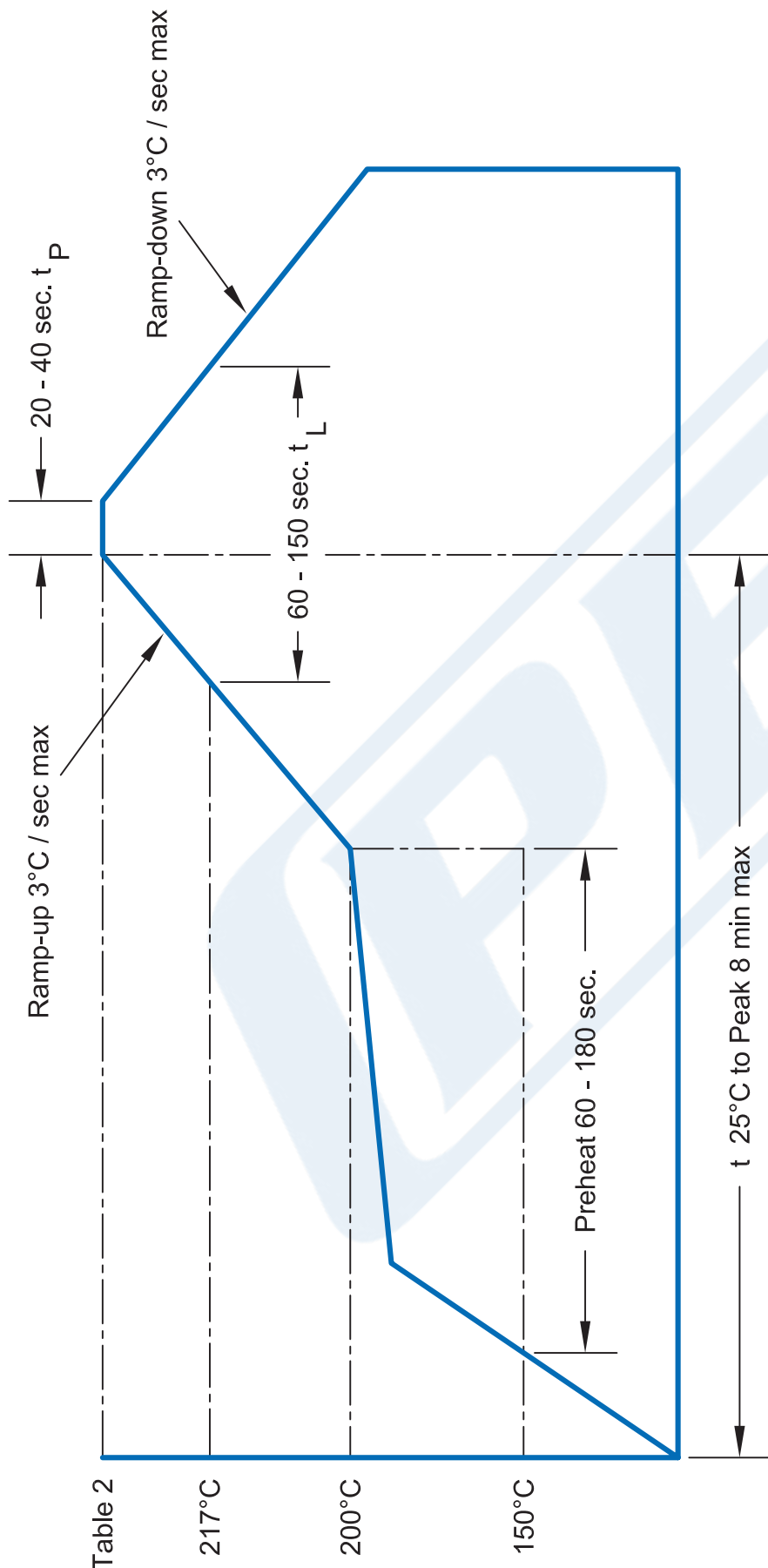


Table 2

217°C

200°C

150°C

Package re-flow temp	
Pkg.	tp (°C)
PE2V Series	260
PE1V11 Series	245
All Others	245

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.

DWG TITLE

PE2V005

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 020916

SCALE N/A

SIZE A

2233