



# 0.5 inch Hermetic Surface Mount (SMT) Voltage Controlled Oscillator (VCO) From 25 MHz to 50 MHz With Phase Noise of -114 dBc/Hz

## Voltage Control Oscillators Technical Data Sheet

PE1V13002

### Features

- 25 to 50 MHz Bandwidth
- -114 dBc/Hz @ 10kHz offset
- Tuning Voltage 0.5V to 20V
- Pout = +11.5 dBm
- Harmonics = -10 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 PE1V13002 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 0.5V to 20V. This design features exceptional phase noise performance of -114 dBc/Hz @ 10 kHz offset. Supply Voltage is +15V with a generated output power level of +11.5 dBm and 2nd harmonic output of -10 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 -40°C to +85°C 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	25		50	MHz
Tuning Voltage	0.5		20	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		-114		dBc/Hz
Phase Noise @ 100kHz Offset		-134		dBc/Hz
Output Power	+9	+11.5	+12.5	dBm
Tuning Sensitivity (Kvco)	1.5		2.5	MHz/V
Pushing		0.1		MHz/Volt
Pulling (pk-pk)		100		KHz
Tuning Port Capacitance		100		pF
Load Impedance		50		Ohms
2nd Harmonics		-10		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 Hermetic Surface Mount \(SMT\) Voltage Controlled Oscillator \(VCO\) From 25 MHz to 50 MHz With Phase Noise of -114 dBc/Hz PE1V13002](#)





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**Mechanical Specifications**

<b>Size</b>	
Length	0.5 in [12.7 mm]
Width	0.5 in [12.7 mm]
Height	0.215 in [5.46 mm]
Weight	0.02 lbs [9.07 g]
Mounting Surface Material and Plating	Copper Clad, Nickel, Gold
Design	Hermetic
Package Style	Surface Mount

**Environmental Specifications**

<b>Temperature</b>	
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 1014A, 1 x 10-8 atm cc/s
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	12/17/2015

**Plotted and Other Data**

Notes:

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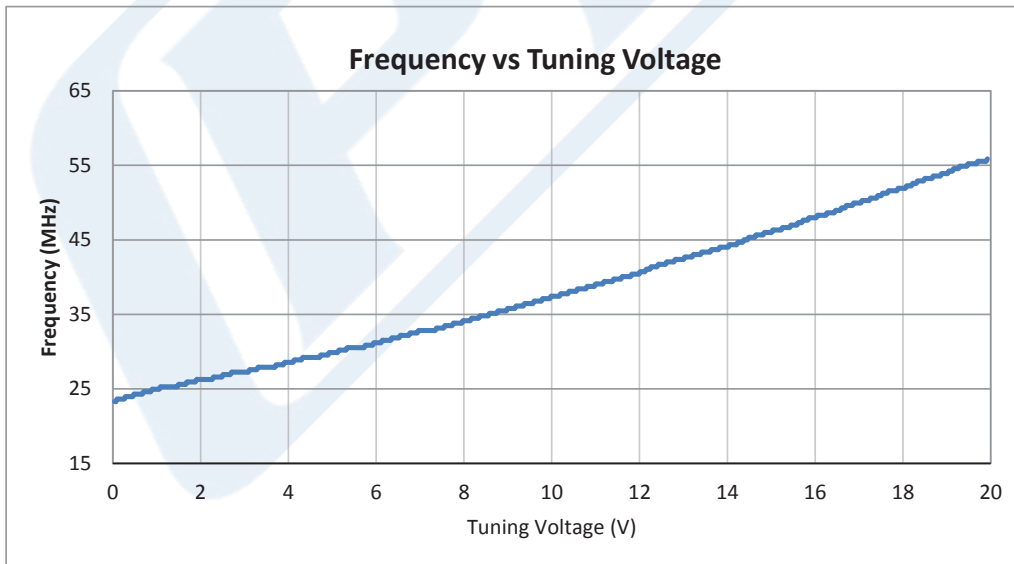
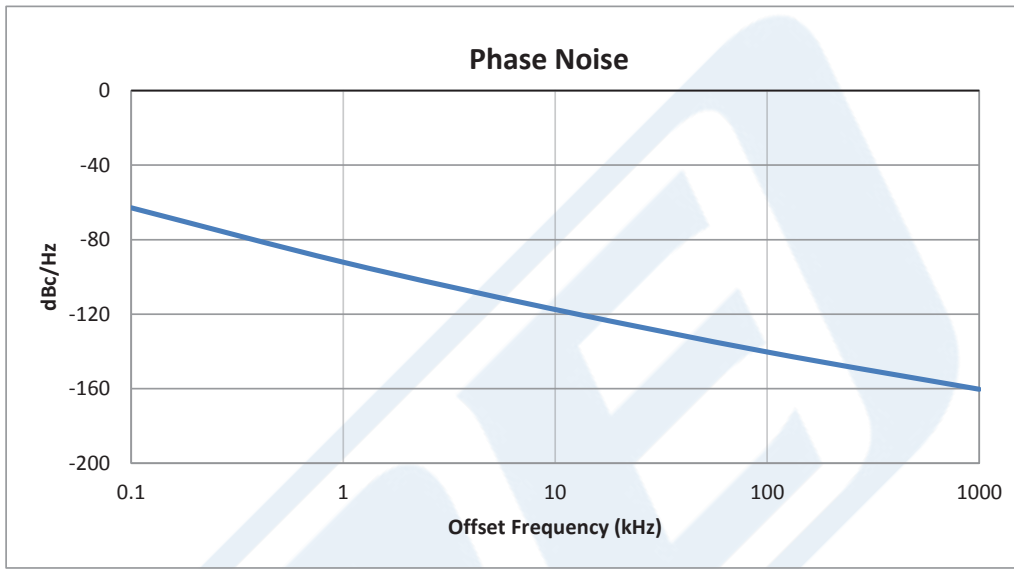


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Typical Performance Data



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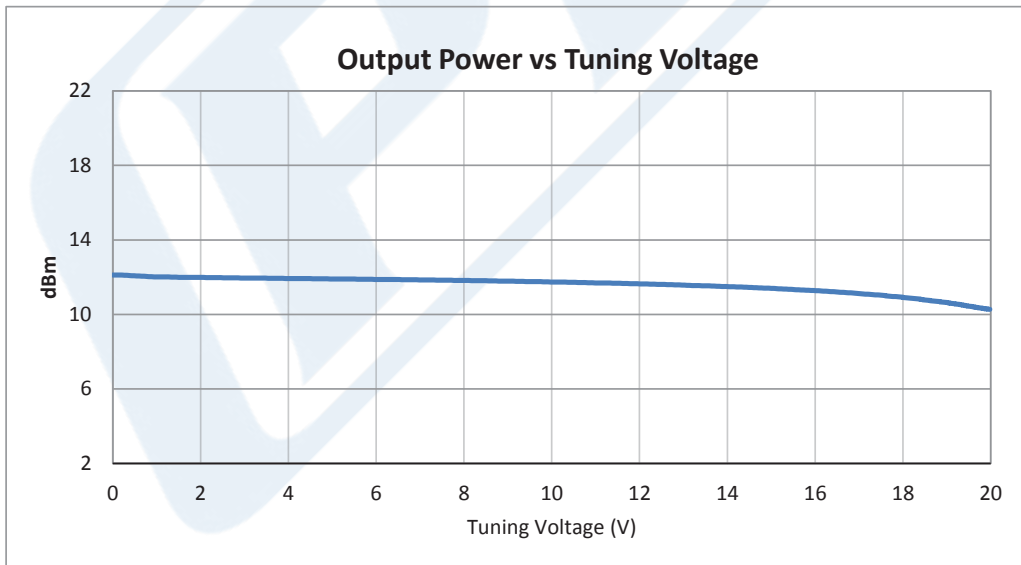
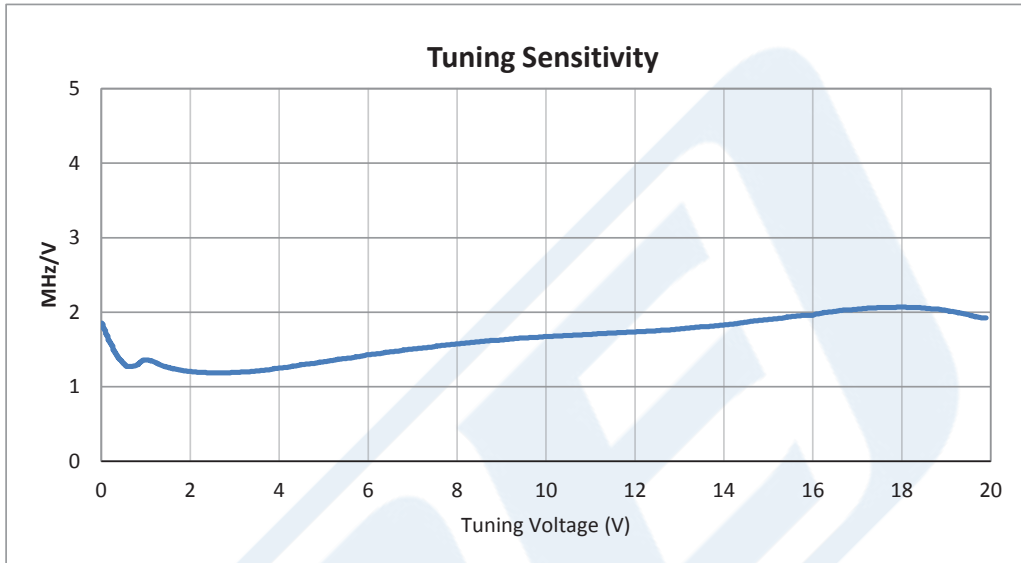




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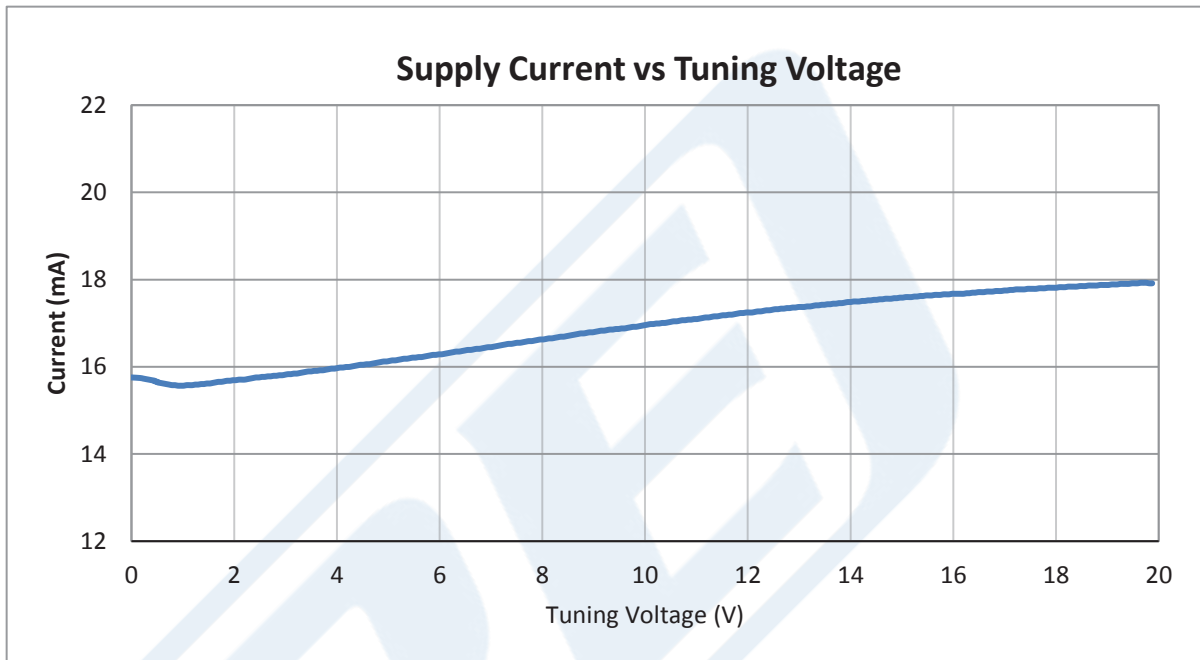




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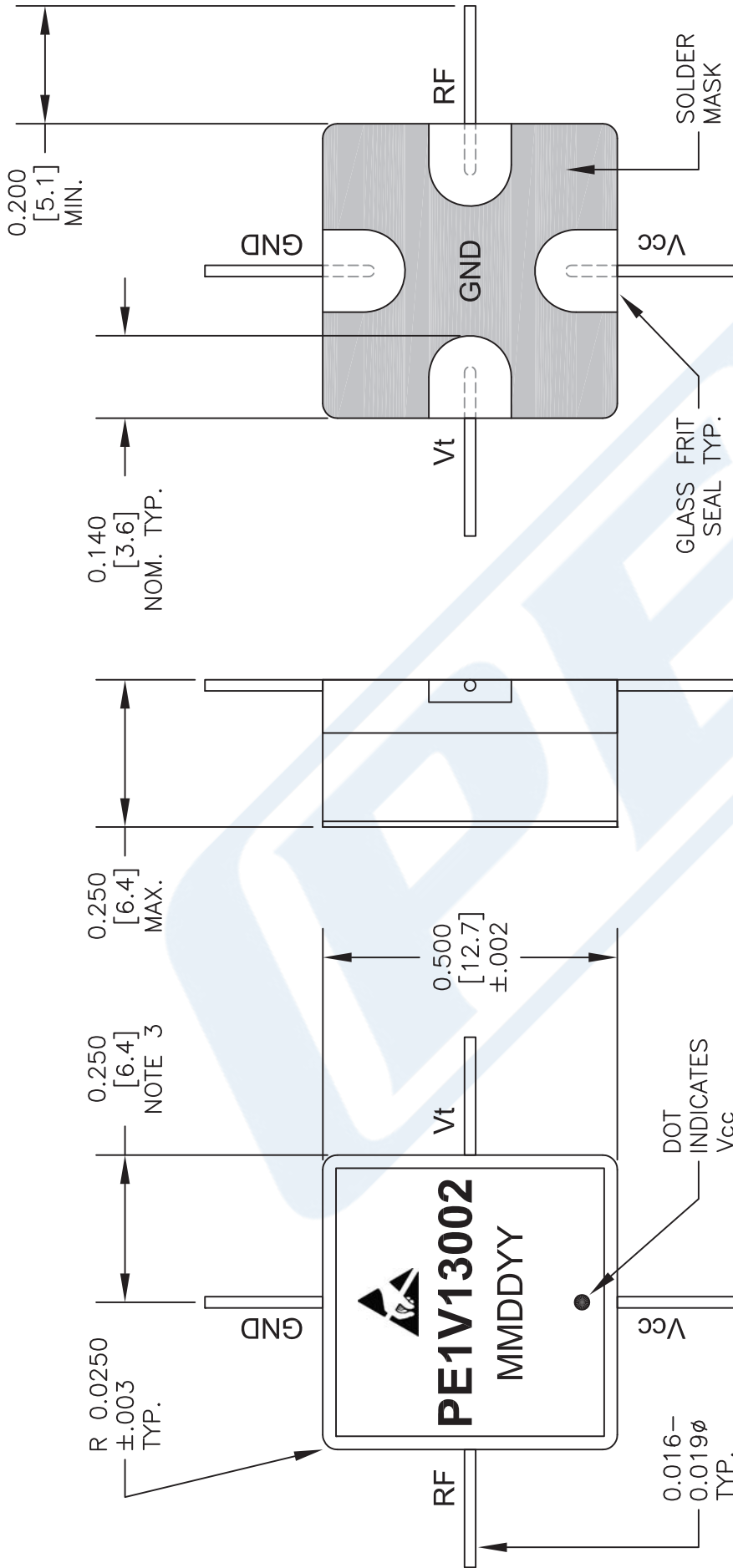
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# PE1V13002 CAD Drawing

0.5 inch Hermetic Surface Mount (SMT) Voltage Controlled Oscillator (VCO) From 25 MHz to 50 MHz With Phase Noise of -114 dBc/Hz



**NOTES:**

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

DWG TITLE

**PE1V13002**

- 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].

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FSCM NO. 53919

CAD FILE 021116

SCALE N/A

SIZE A

2233

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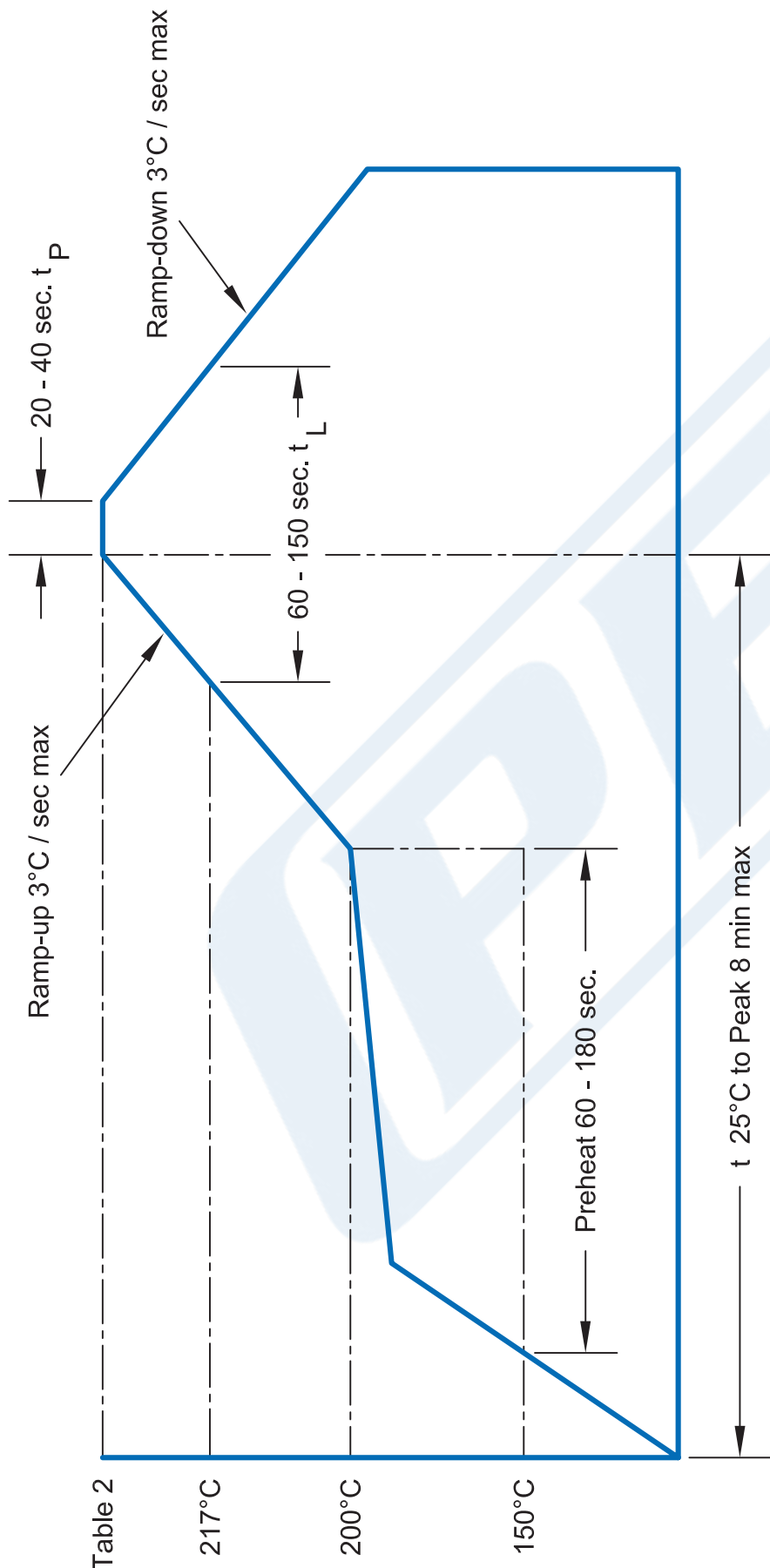


Table 2

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)
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.

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