



0.5 inch Commercial Surface Mount (SMT) Voltage Controlled Oscillator (VCO) From 950 MHz to 1.1 GHz With Phase Noise of -104 dBc/Hz

Voltage Control Oscillators Technical Data Sheet

PE1V14001

Features

- 950 MHz to 1100 MHz Bandwidth
- -104 dBc/Hz @ 10kHz offset
- Tuning Voltage 0.0V to 4.5v
- Pout = +9.0 dBm
- Harmonics = -18 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 PE1V14001 is a High Reliability Low Noise Voltage Controlled Oscillator (VCO) which covers a 950 MHz to 1100 MHz frequency band with a voltage tuning range from 0.0V to 4.5V. This design features exceptional phase noise performance of -104 dBc/Hz @ 10 kHz offset. Supply Voltage is +5V with a generated output power level of +9.0 dBm and 2nd harmonic output of -18 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	0.95		1.1	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		-82	-80	dBc/Hz
Phase Noise @ 10kHz Offset		-104	-103	dBc/Hz
Phase Noise @ 100kHz Offset		-124	-123	dBc/Hz
Output Power	+8	+9	+10	dBm
Tuning Sensitivity (Kvco)	35		55	MHz/V
Pushing		0.8	2.2	MHz/Volt
Pulling (pk-pk)		300	800	KHz
Tuning Port Capacitance		20		pF
Load Impedance		50		Ohms
2nd Harmonics		-18	-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 950 MHz to 1.1 GHz With Phase Noise of -104 dBc/Hz PE1V14001](#)



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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 for current document)

RoHS Compliant

REACH Compliant

01/01/1753

Plotted and Other Data

Notes:

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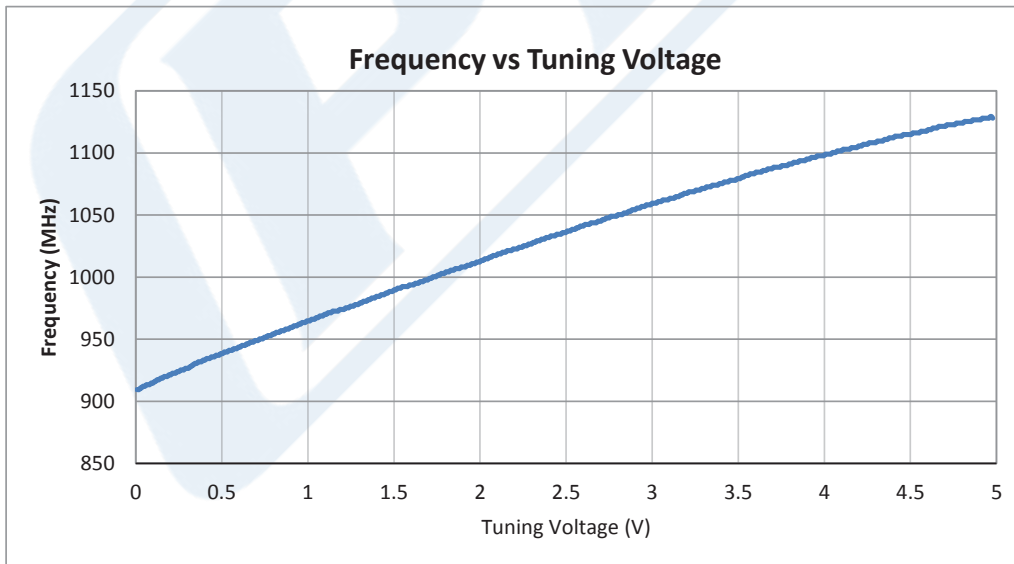
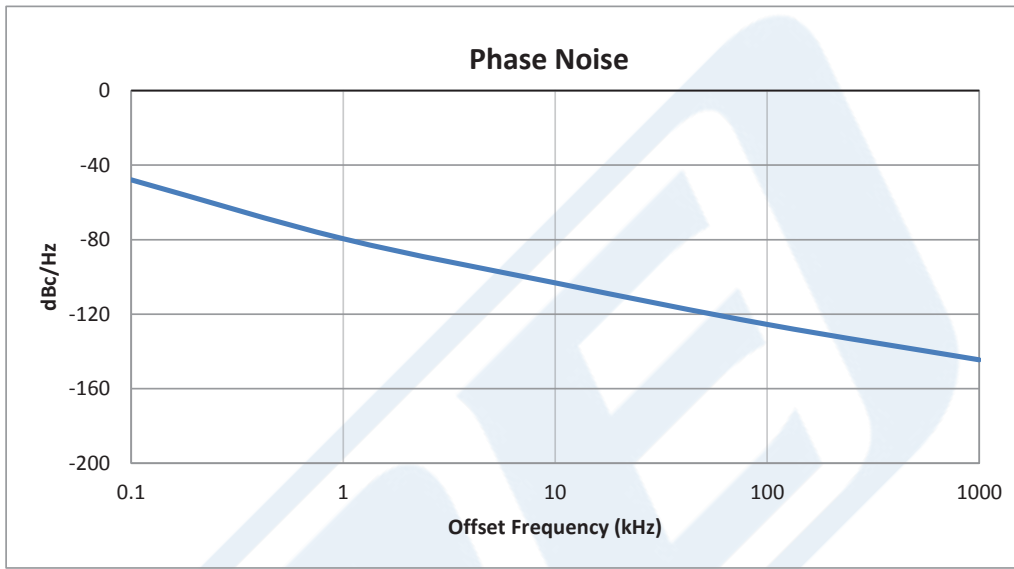


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Typical Performance Data



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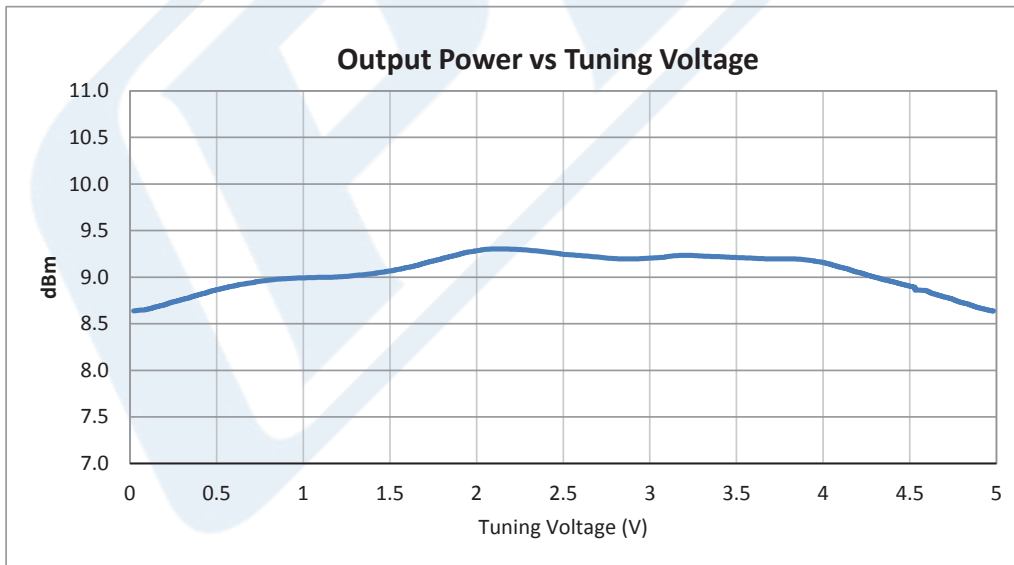
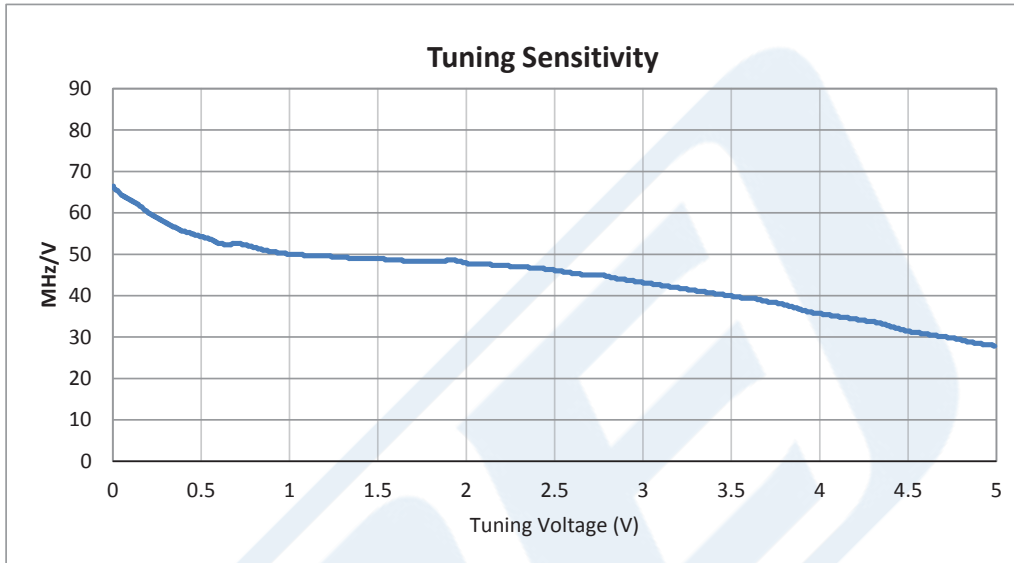




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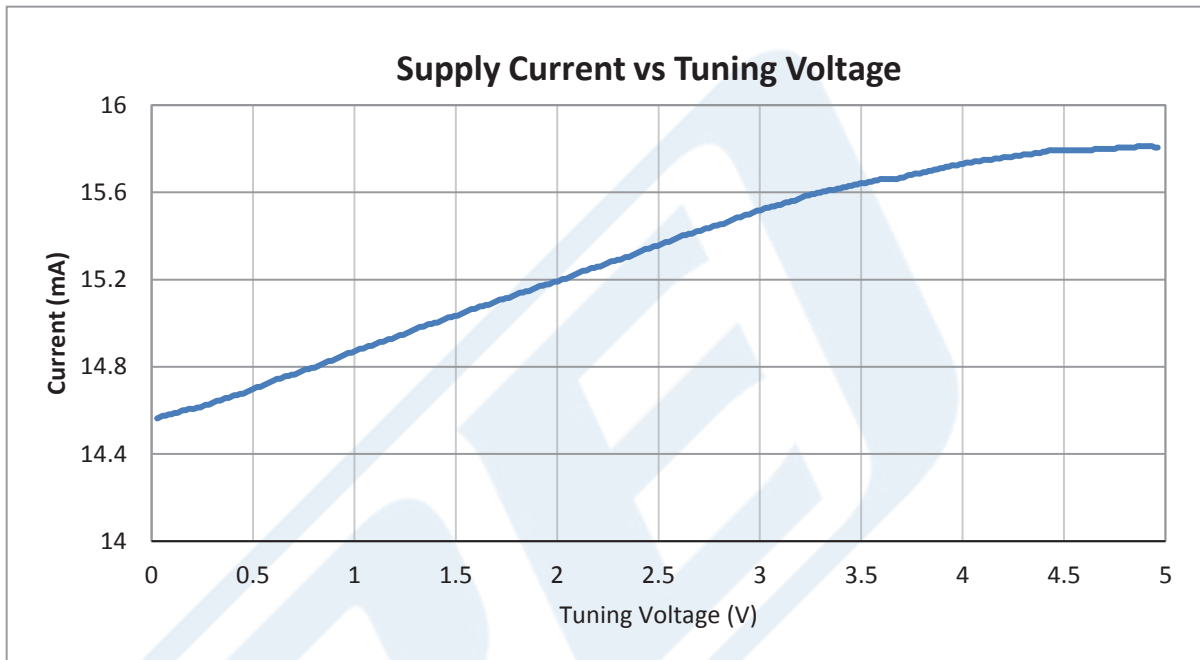




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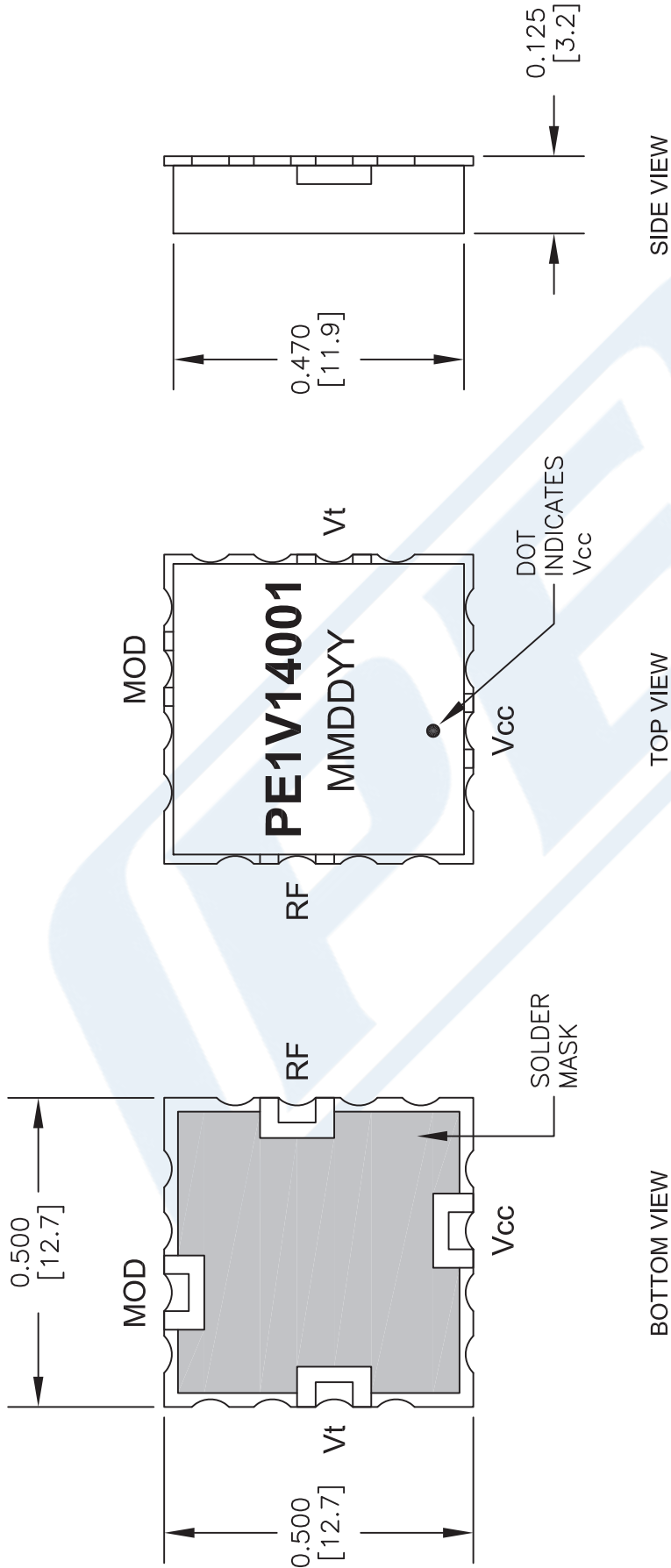
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PE1V14001 CAD Drawing

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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

PE1V14001

- NOTES:
1. UNLESS OTHERWISE SPECIFIED ALL DIMENSIONS ARE NOMINAL.
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FSCM NO. 53919

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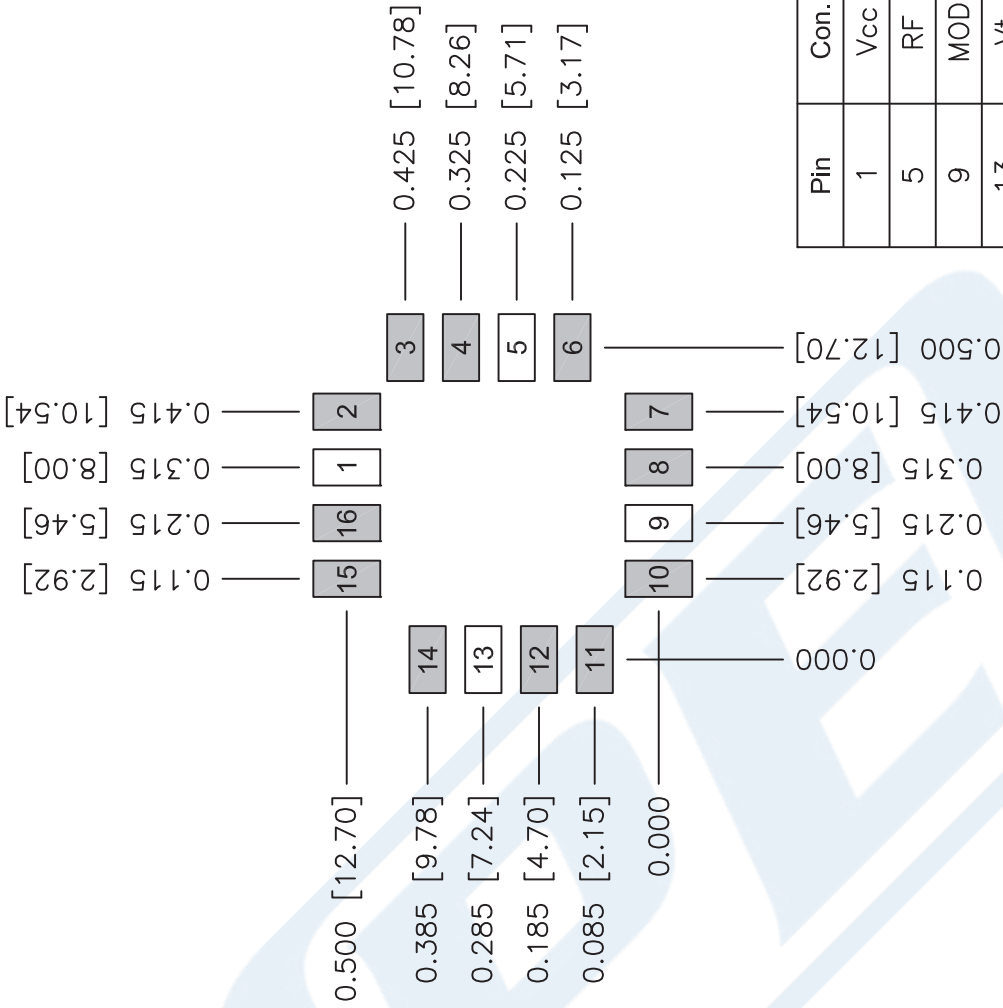
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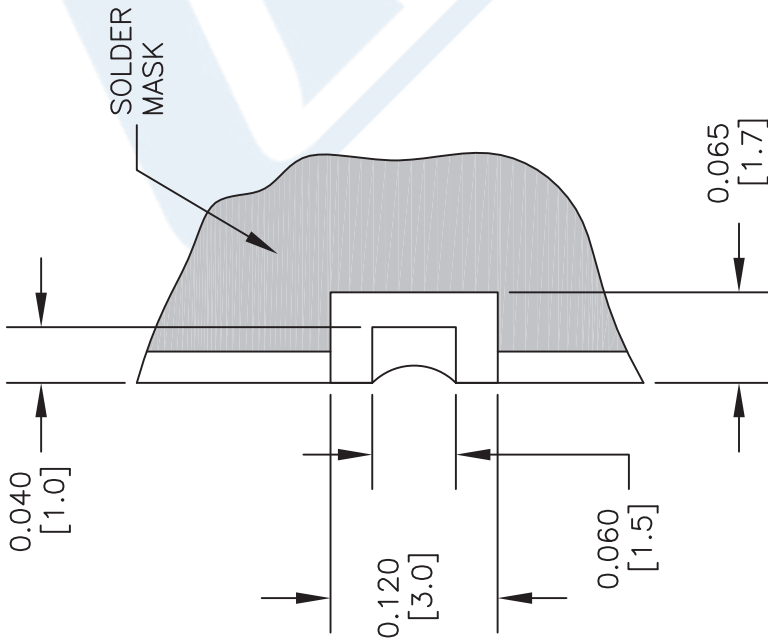
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Pin	Con.
1	Vcc
5	RF
9	MOD
13	Vt
Others	GND

PCB PAD LAYOUT



PAD DETAIL

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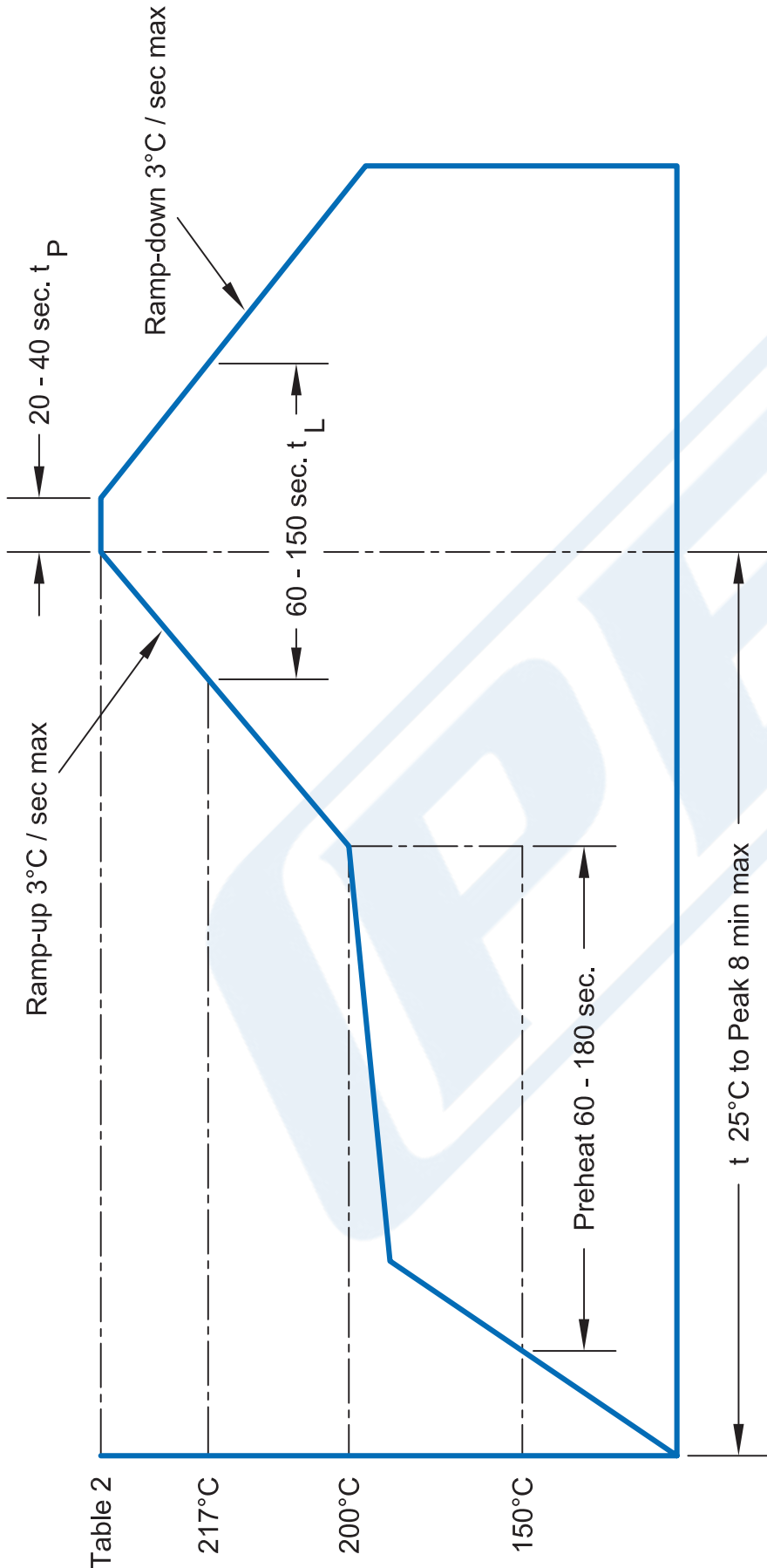


Table 2

217°C

200°C

150°C

Preheat 60 - 180 sec.

t 25°C to Peak 8 min max

20 - 40 sec. t_P

Ramp-down 3°C / sec max

60 - 150 sec. t_L

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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