



0.5 inch Commercial Surface Mount (SMT) Voltage Controlled Oscillator (VCO) From 4.77 GHz to 5.01 GHz With Phase Noise of -98 dBc/Hz

Voltage Control Oscillators Technical Data Sheet

PE1V14010

Features

- 4770 MHz to 5010 MHz Bandwidth
- -98 dBc/Hz @ 10kHz offset
- Tuning Voltage 0.0V to 7.5v
- Pout = +5.0 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 PE1V14010 is a High Reliability Low Noise Voltage Controlled Oscillator (VCO) which covers a 4770 MHz to 5010 MHz frequency band with a voltage tuning range from 0.0V to 7.5V. This design features exceptional phase noise performance of -98 dBc/Hz @ 10 kHz offset. Supply Voltage is +8V with a generated output power level of +5.0 dBm and 2nd harmonic output of -20 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	4.77		5.01	GHz
Tuning Voltage	0		7.5	Vdc
Supply Voltage (DC)	7.5	8	8.5	Vdc
Supply Current (DC)		24	27	mA
Phase Noise @ 1kHz Offset		-70	-68	dBc/Hz
Phase Noise @ 10kHz Offset		-98	-96	dBc/Hz
Phase Noise @ 100kHz Offset		-120	-118	dBc/Hz
Output Power	+3	+5	+7.5	dBm
Output Power Delta @-40 deg C			+1	dBm
Output Power Delta @+85 deg C			+1	dBm
Tuning Sensitivity (Kvco)	31		61	MHz/V
Pushing		4	5	MHz/Volt
Pulling (pk-pk)		4	4.5	MHz
Tuning Port Capacitance		6.8		pF
Load Impedance		50		Ohms

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 4.77 GHz to 5.01 GHz With Phase Noise of -98 dBc/Hz PE1V14010](#)





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Frequency Drift @-40 deg C	18	MHz
Frequency Drift @+85 deg C	-17000	KHz
2nd Harmonics	-20	-18
		dBc

Mechanical Specifications

Size

Length	0.5 in [12.7 mm]
Width	0.5 in [12.7 mm]
Height	0.125 in [3.18 mm]
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

Plotted and Other Data

Notes:

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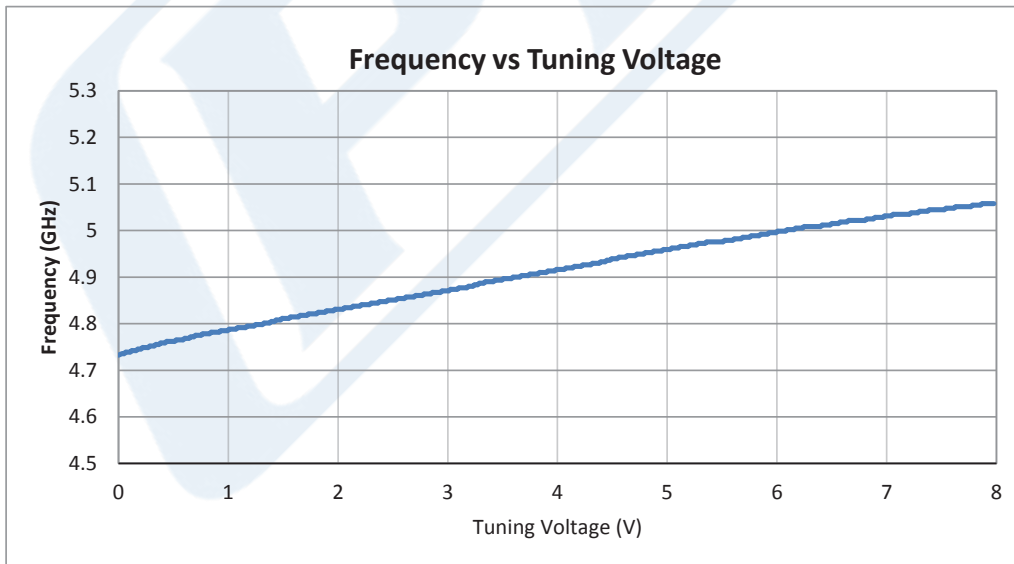
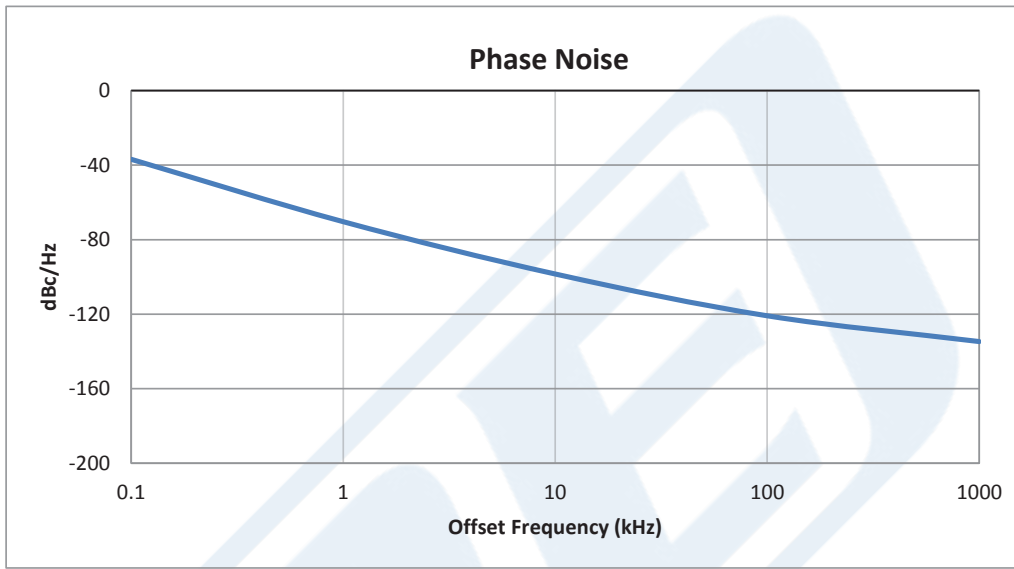


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Typical Performance Data



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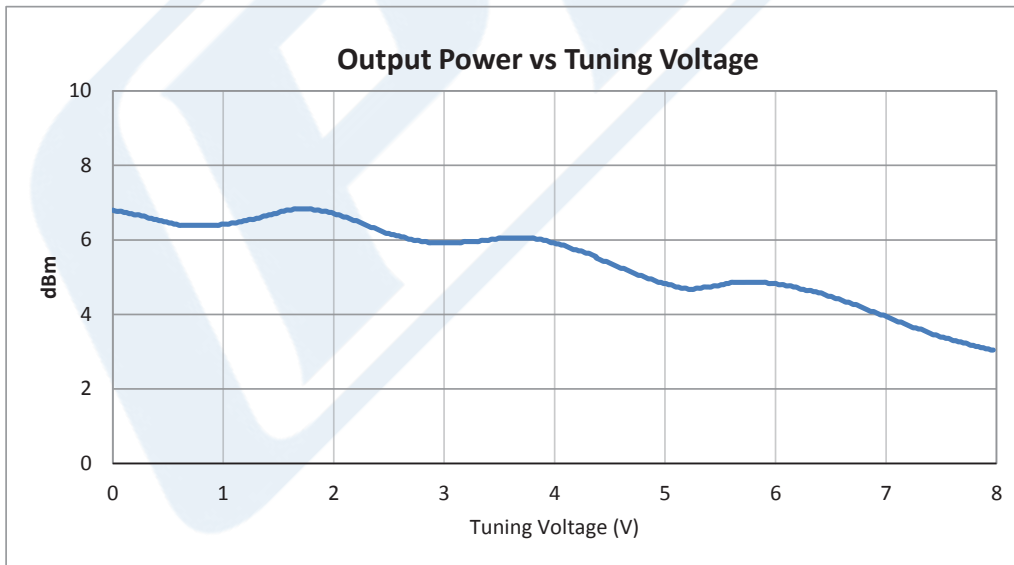
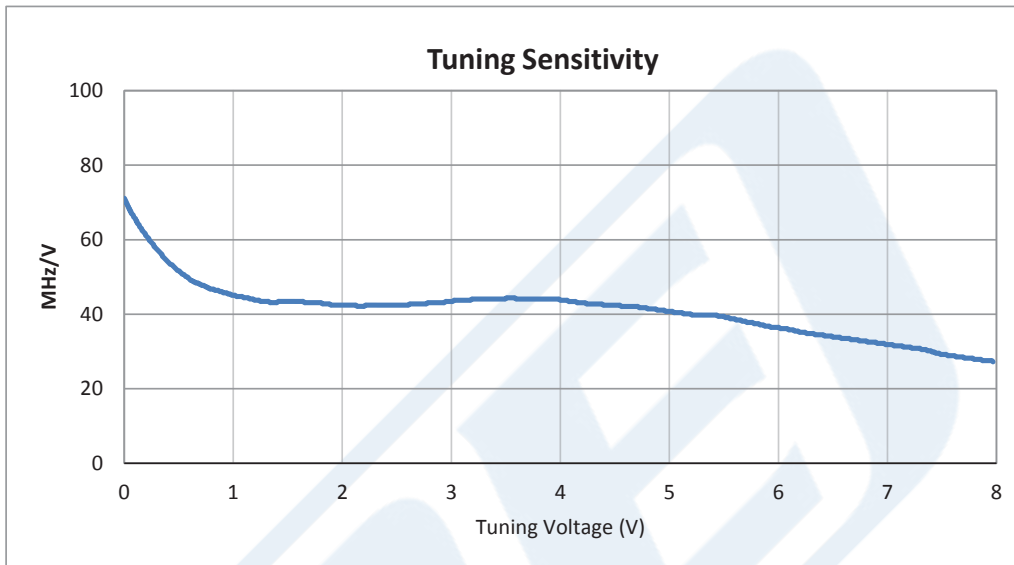




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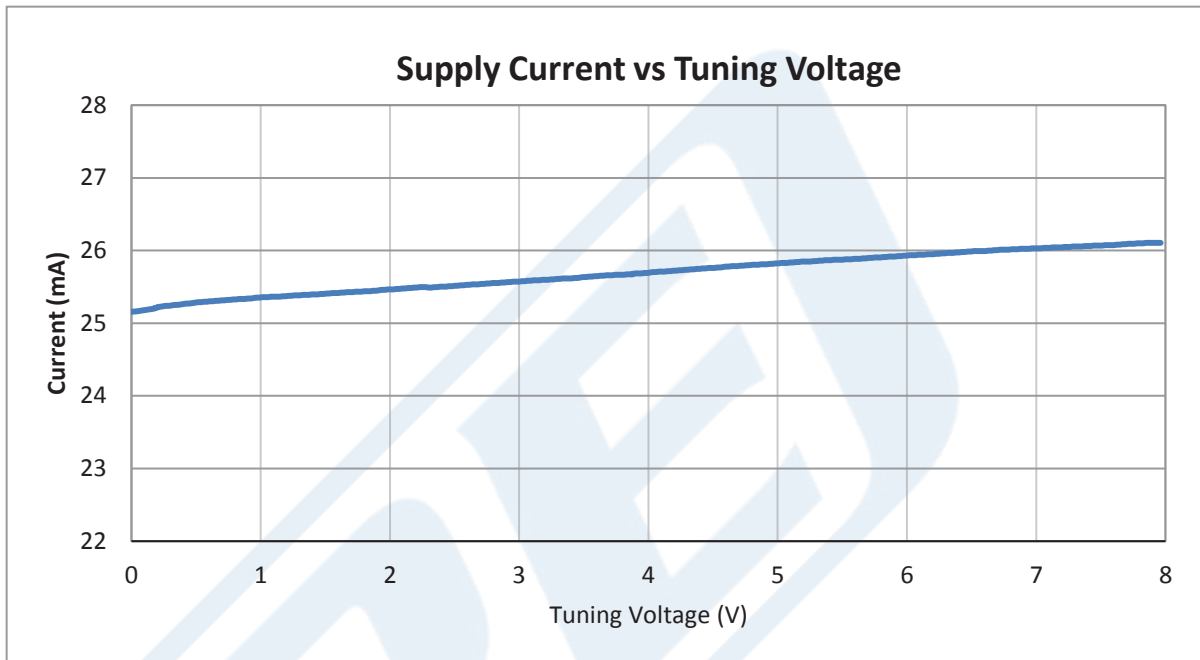




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0.5 inch Commercial Surface Mount (SMT) Voltage Controlled Oscillator (VCO) From 4.77 GHz to 5.01 GHz With Phase Noise of -98 dBc/Hz from Pasternack Enterprises has same day shipment for domestic and International orders. Our RF, microwave and millimeter wave products maintain a 99% availability and are part of the broadest selection in the industry.

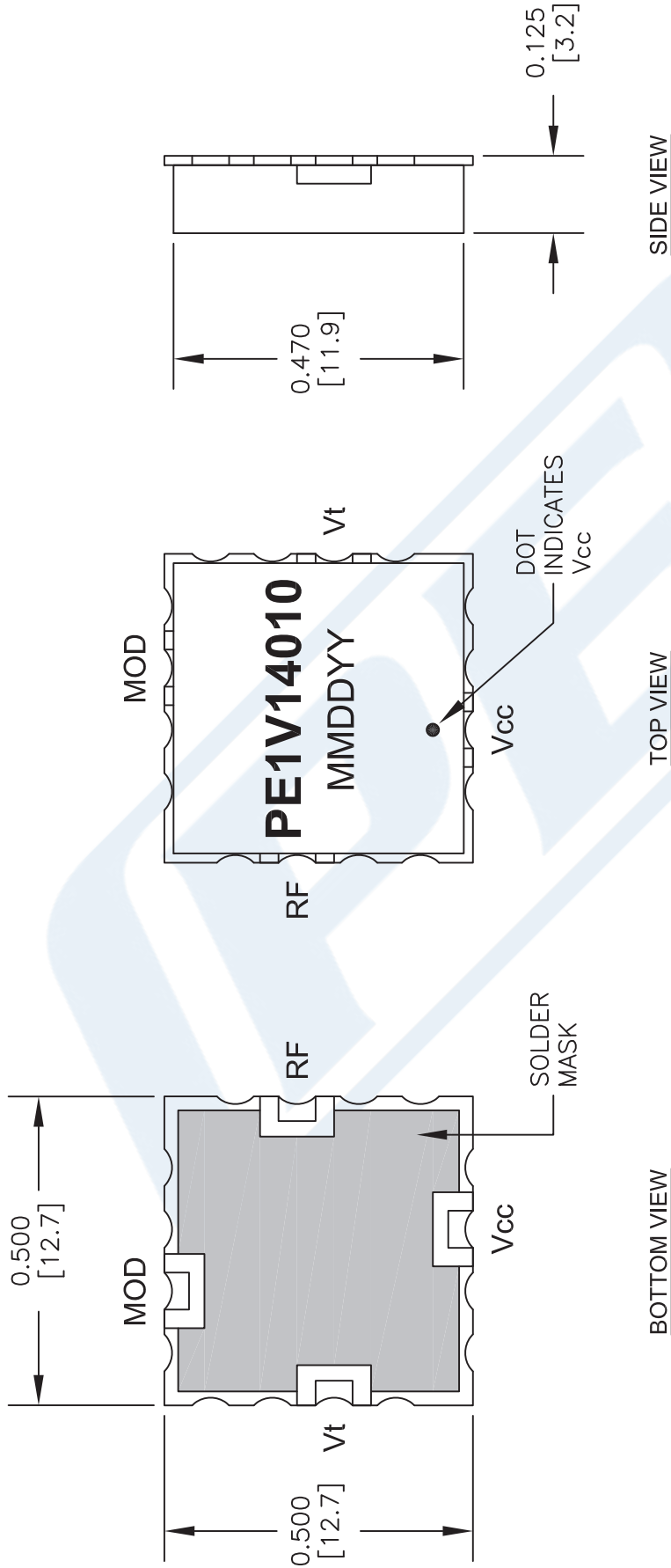
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PE1V14010 CAD Drawing

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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.

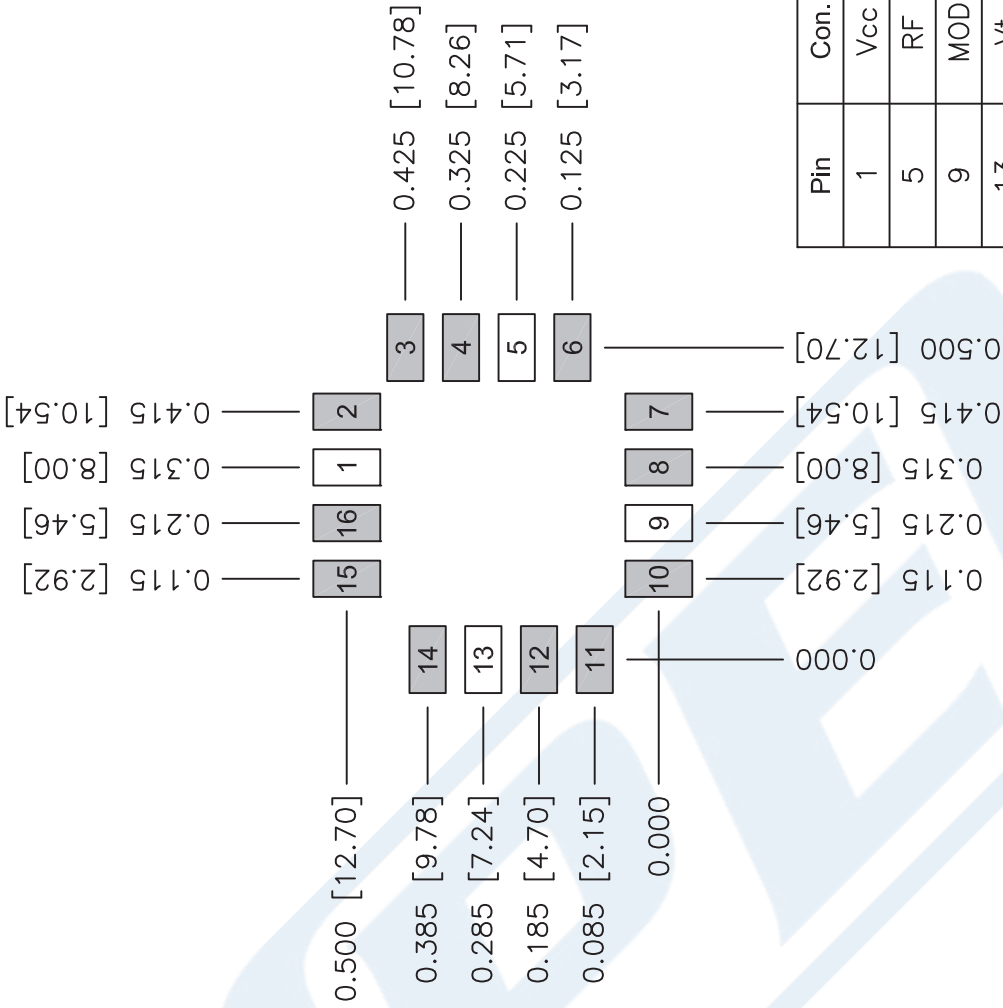
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DWG TITLE	
PE1V14010	
FSCM NO. 53919	CAD FILE 082015
SCALE N/A	SIZE A
2233	

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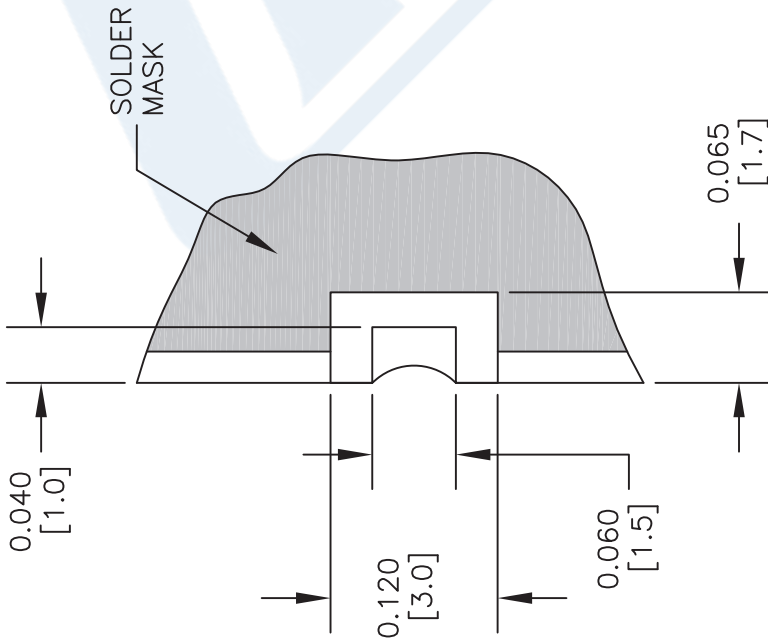
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Pin	Con.
1	Vcc
5	RF
9	MOD
13	Vt
Others	GND

PCB PAD LAYOUT



PAD DETAIL

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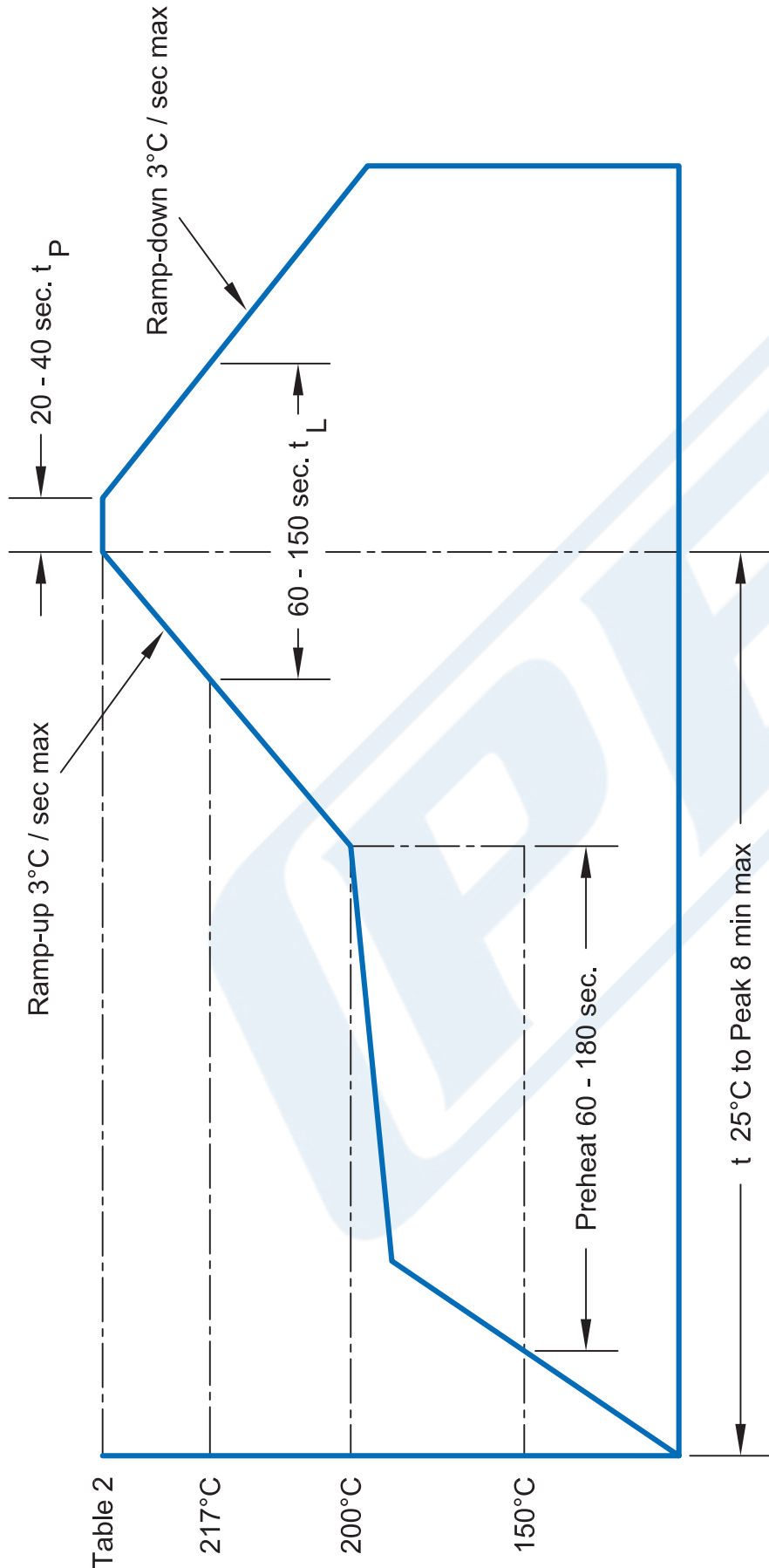


Table 2

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.

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