

SINEWAVE UHF VCXO



ESD Sensitive

14.35 x 9.27 x 6.48 mm

Datasheet #0630C

Features

- Wide frequency range – 200.0MHz to 1.000GHz
- High Reliability -NEL HALT/HASS qualified for crystal oscillator start-up conditions
- Ultra Low Phase Noise and Jitter
- High Shock Resistance, to 1000g
- Absolute Pull Range (APR) to ± 1000 ppm
- SONET ± 20 ppm overall free-run stability available

Applications

- Fiber Channel
- 10 GbE
- Infiniband
- Network processors
- SONET/SDH
- COTS/Dual use

Absolute Maximum Ratings

Parameters	Symbol	Condition	Min	Typ	Max	Unit	Notes
Operating Temperature Range	To		-40		+85	°C	
Storage Temperature Range	Tst		-50		+90	°C	
Supply voltage	Vcc		-0.5		5.5	V	

Electrical (1)

Parameters	Symbol	Condition	Min	Typ	Max	Unit	Notes
Nominal Frequency	Fo		200		1000	MHz	
Supply Voltage	Vcc	Code 0 Code A	4.75 3.135	5.0 3.3	5.25 3.465	V	
Supply Current	Icc	Vcc=3.3V, 50 ohm load Vcc=5.0V, 50 ohm load		60 80	75 90	mA	
Output Power	Pout	Vcc=3.3V, 50 ohm load $\leq 400\text{MHz}$ Vcc=5.0V, 50 ohm load $\leq 400\text{MHz}$	0 4	3 7	16	dBm	
Output Power	Pout	Vcc=3.3V, 50 ohm load >400MHz Vcc=5.0V, 50 ohm load >400MHz	-5 0	0 5	5	dBm	
Load		Internally AC coupled	45	50	55	Ohm	
Output Impedance				50		Ohm	
Return Loss				10		dB	
Jitter	Integrated	J	Integrated from Phase Noise, 12KHz to 20MHz, RMS		0.1	0.2	ps
			100Hz to 80KHz, RMS			1.0	ps
			50KHz to 80MHz			0.3	ps
	Wavecrest characterized		Random, period		2.5		ps
Accumul., pk-to-pk				25		ps	
Deterministic				1		ps	
Phase Noise	$\epsilon(\Delta f)$	622.08MHz, APR 50 ppm or less	@ 10 Hz @100 Hz @1 KHz @10KHz @100KHz @>1MHz	-65 -90 -118 -145 -150 -155	-60 -85 -113 -140 -145 -150	dBc/Hz	

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Electrical (cont.) (1)

Parameters	Symbol	Condition	Min	Typ	Max	Unit	Notes
Sub-harmonics		@ 622.08MHz		-50	-46	dBc	
Frequency Stability	$\Delta F/F$	Overall, including temperature, aging 10 years, shock and vibration @ $V_c = V_{cc}/2$; APR 50ppm, or less	± 20	± 30		ppm	
Control Voltage Range	V_c		0V		V_{cc}	V	
Setability	V_{cs}	V_c to set F at F_0 ; T, V_{cc} , load - nominal as shipped	0.4 V_{cc}	0.5 V_{cc}	0.6 V_{cc}	V	
Absolute Pull Range	APR	Overall conditions, see part # creation	20,32, 50,100			ppm	
Input Impedance	Z_{in}	@ $F_{mod} < 100kHz$	50			KOhm	
Modulation Bandwidth		At $V_c = V_{cc}/2$, -3dB	20			KHz	

Environmental and Mechanical

Parameter	Description
Operating temp. range	see part # table
Mechanical Shock	Per MIL-STD-202, Method 213, Cond. A
Thermal Shock	Per MIL-STD-883, Method 1011, Cond. A
Vibration	Per MIL-STD-883, Method 2007, Cond. A
Hermetic Seal	Leak rate less than 1×10^{-8} atm.cc/s of helium
Soldering conditions	See MAX reflow profile below; The device may be reflowed once. Reflowing upside down is not allowed. NO CLEAN assembly is recommended



Creating a Part Number

AB - X 3A1 X X - X - XX.XXX MHZ - X

Package Code
AB → 6 pad 9x14mm SMD

Operating Voltage	
Code	Specification
0	5.0V ± 5%
A	3.3V ± 5%

Temperature Range, °C	
Code	Specification
A	0 to 50
B	0 to 70
C	-20 to 70
D	-40 to 85
9	Customer specific

Packaging	
Blank	Bulk

Output Frequency
Please specify the frequency in units of MHz out to 3-digit accuracy after the decimal.
Example: 200.000MHZ

Environmental	
Code	Specification
L	Contains a level of lead that is in excess of RoHS directive
R	RoHS compliant

Absolute Pull Range, ppm	
Code	Specification
E	±20
F	±32
G	±50
H	±100
9	Customer specific

Not all combinations are available. Consult Factory.

Temperature Code Table

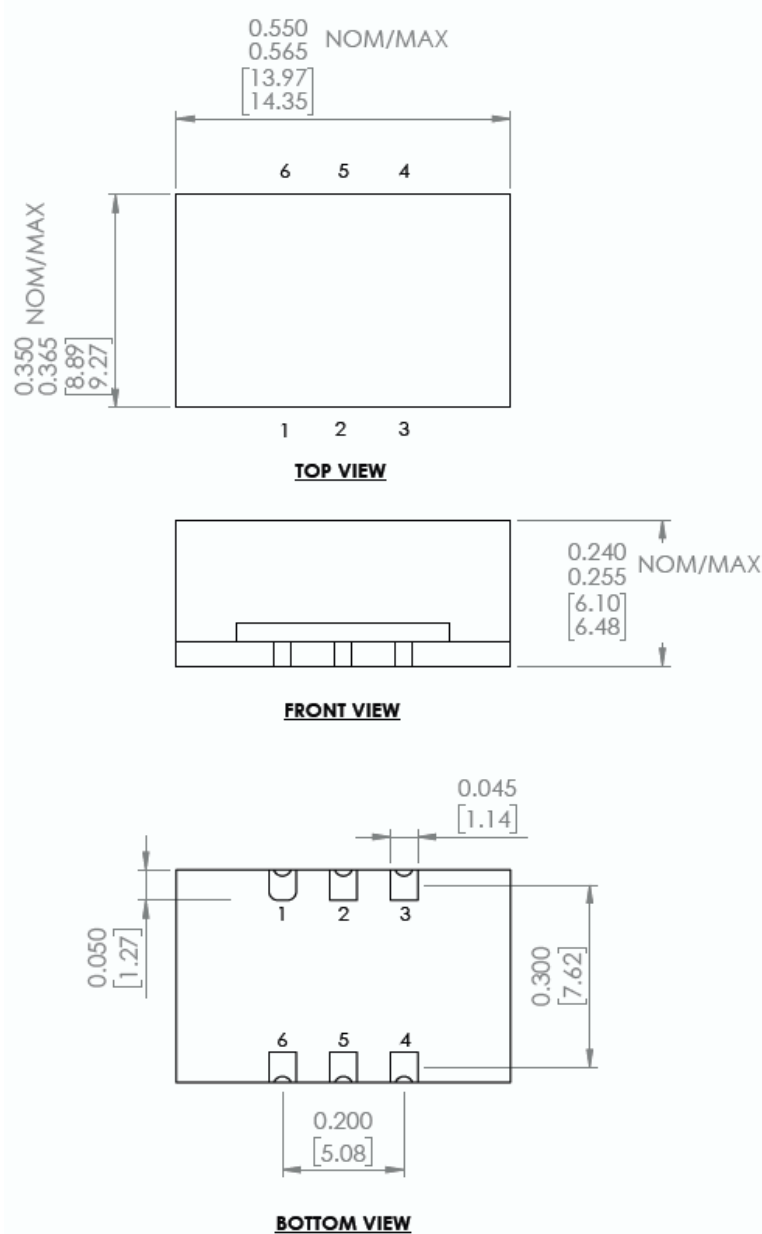
Letter	Temp °C	Letter	Temp °C	Letter	Temp °C	Letter	Temp °C	Letter	Temp °C	Letter	Temp °C
A	-40	F	-15	K	10	P	35	U	60	Z	85
B	-35	G	-10	L	15	Q	40	V	65		
C	-30	H	-5	M	20	R	45	W	70		
D	-25	I	0	N	25	S	50	X	75		
E	-20	J	5	O	30	T	55	Y	80		

Notes:

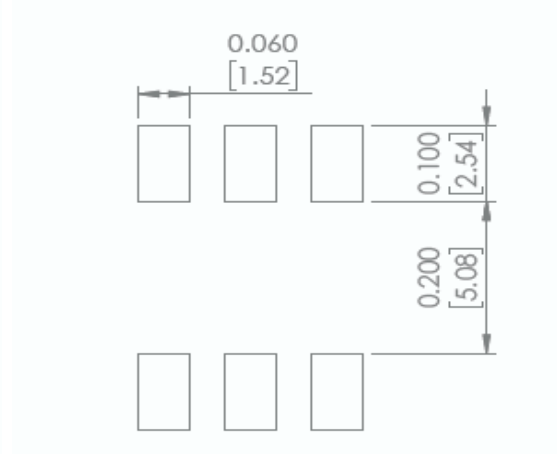
1) All parameters, unless otherwise specified, are at nominal conditions, ie: T=25°C, Nominal Vcc & Nominal Load.



Mechanical Dimensions



Recommended Land Pattern



OUTLINE TOLERANCE:
±0.015 [0.40] (UNLESS OTHERWISE SPECIFIED)

Pin #	Function
1	Vco
2	N/C
3	Gnd
4	OUTPUT
5	N/C
6	Vcc

Dimensions: inches [mm]



Reflow Profile [JEDEC J-STD-020]

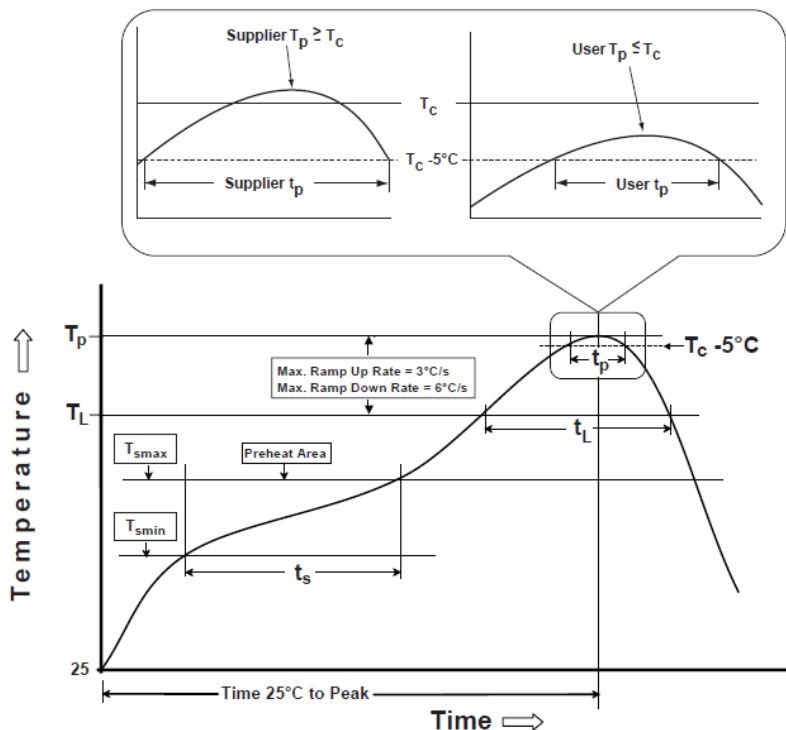


Table 1

SnPb Eutectic Process Classification Temperatures (T_c)		
Package Thickness	Volume mm ³ <350	Volume mm ³ ≥350
<2.5 mm	235°C	220°C
≥2.5 mm	220°C	220°C

Table 2

Pb-Free Process Classification Temperatures (T_c)			
Package Thickness	Volume mm ³ <350	Volume mm ³ 350-2000	Volume mm ³ >2000
<1.6 mm	260°C	260°C	260°C
1.6 mm - 2.5 mm	260°C	250°C	245°C
>2.5 mm	250°C	245°C	245°C

Profile Feature	Sn-Pb Eutectic Assembly	Pb-Free Assembly
Preheat / soak		
Temperature minimum (T_{smin})	100°C	150°C
Temperature maximum (T_{smax})	150°C	200°C
Time (T_{smin} to T_{smax}) (t_s)	60 - 120 sec.	60 - 120 sec.
Average ramp-up rate (T_{smax} to T_p)	3°C/sec. max	3°C/sec. max
Liquidous temperature (T_L)	183°C	217°C
Time at liquidous (t_L)	60 - 150 sec.	60 - 150 sec.
Peak package body temperature (T_p)*	see Table 1	see Table 2
Time (t_p)** within 5°C of the specified classification temperature (T_c)	20 sec.	30 sec.
Ramp-down rate (T_p to T_{smax})	6°C/sec. max	6°C/sec. max
Time 25°C to peak temperature	6 min. max	8 min. max
Reflow cycles	1 max	1 max

*Tolerance for peak profile temperature (T_p) is defined as a supplier minimum and a user maximum.

**Tolerance for time at peak profile temperature (t_p) is defined as supplier minimum and a user maximum.