

PECL/LVPECL HF VCXO



ESD Sensitive

14.35 x 9.27 x 6.48 mm

Datasheet #0629J

Features

- Wide frequency range – 12.0MHz to 280.000MHz
- High Reliability- NEL HALT/HASS qualified for crystal oscillator start-up conditions
- Ultra Low Phase Noise and Jitter
- High Shock Resistance, to 1000g
- No Multiplication
- 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	
Enable/Disable Voltage	Ven/dis		0		Vcc	V	

Electrical (1*)

Parameters		Symbol	Condition		Min	Typ	Max	Unit	Notes
Nominal Frequency		Fo			12		280	MHz	
Supply Voltage		Vcc	Code 0 Code A		4.75 3.135	5.0 3.3	5.25 3.465	V	
Supply Current		Icc				60	80	mA	
Output Logic Type						LVPECL			
Load			Output to Vcc-2V, or Thevenin Equivalent			50		Ohm	
Output Levels		Voh Vol	Overall		Vcc-1.025		Vcc -1.620	V	
Duty Cycle (Symmetry)			At 50 % of output voltage swing		45/55	50/50	55/45	%	
Rise /Fall Time		Tr/Tf	20 to 80, 80 to 20%			0.5	0.7	ns	
Jitter	Integrated	J	Integrated from Phase Noise, 12KHz to 20MHz, RMS			0.1	0.2	ps	
			10Hz to 80KHz, RMS				1.0	ps	
			50KHz to 80MHz			0.3		ps	
	Random, period				2.5		ps		
	Accumul., pk-to-pk				17		ps		
	Deterministic				0		ps		
Phase Noise		£(Δf)	155.52MHz	@10Hz @100Hz @1KHz @10KHz @100KHz @>1MHz		-75 -105 -128 -142 -147 -147	-70 -100 -125 -140 -145 -145	dBc/Hz	

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Electrical (cont.)

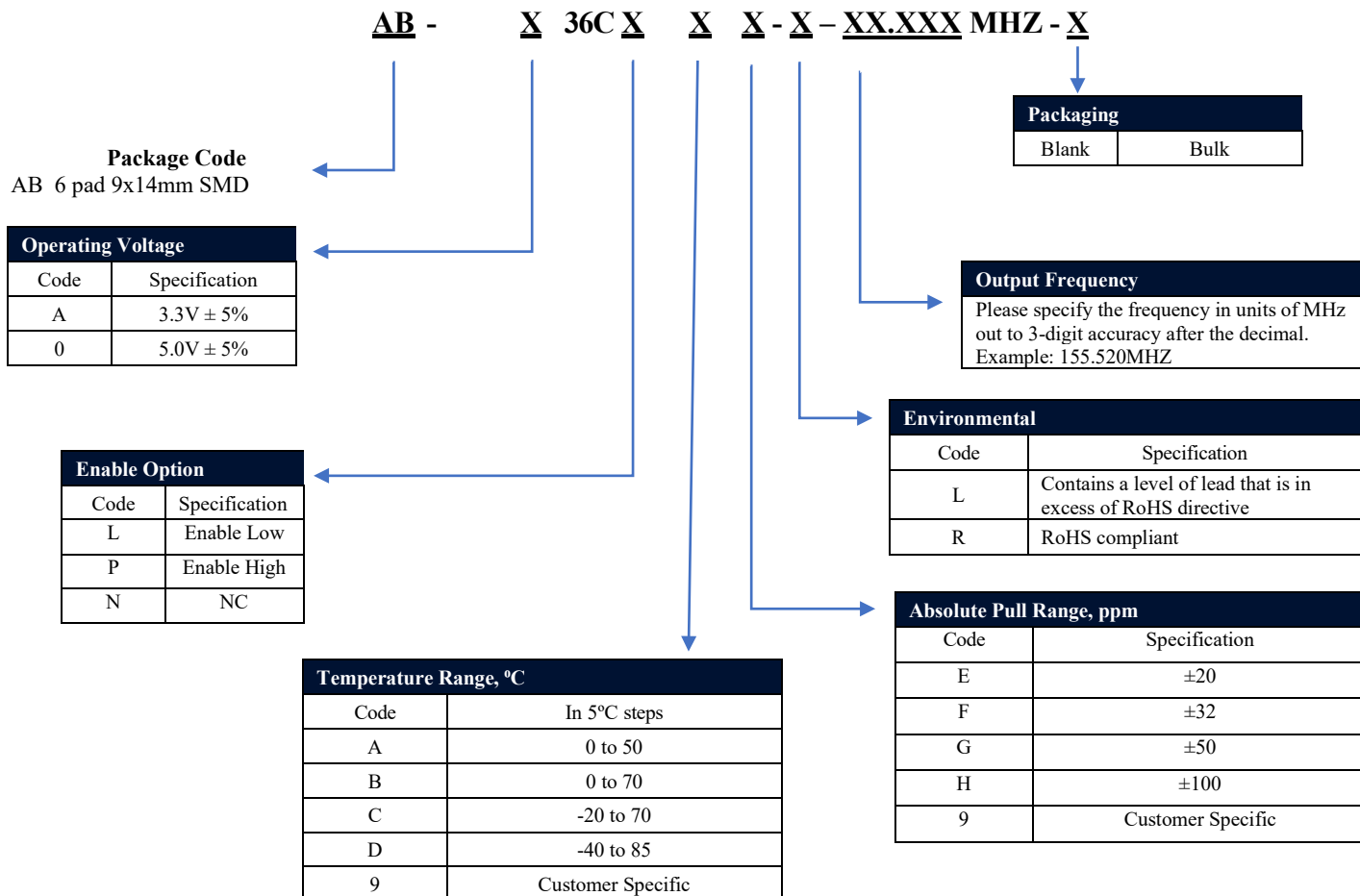
Parameters	Symbol	Condition	Min	Typ	Max	Unit	Notes
Sub-harmonics			None			dBc	
Frequency Stability usually not specified unless necessary. APR is specified to incorporate stability	$\Delta F/F$	Overall, including temperature, aging 10 years, shock and vibration @ $V_c = V_{cc}/2$; APR 50ppm or less	± 20	± 30		ppm	
Control Voltage Range	V_c		0		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}	@ $F_{mod} < 100\text{kHz}$	50			KOhm	
Modulation Bandwidth		At $V_c = V_{cc}/2$, -3dB	20			KHz	
Enable		Pin 2 = Low, 0 to $V_{cc}-2.6\text{V}$ or floating	Enabled			V	Option L
		Pin 2 = High, $V_{cc}-0.5\text{V}$ to V_{cc} or floating	Enabled			V	Option P
Disable		Pin 2 = High, $V_{cc}-0.5\text{V}$ to V_{cc}	Disabled			V	Option L
		Pin 2 = Low, 0 to $V_{cc}-2.6\text{V}$	Disabled			V	Option P

Environmental and Mechanical

Parameter	Description
Operating Temperature 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



Not all combinations are available. Consult Factory.

Temperature Code Table

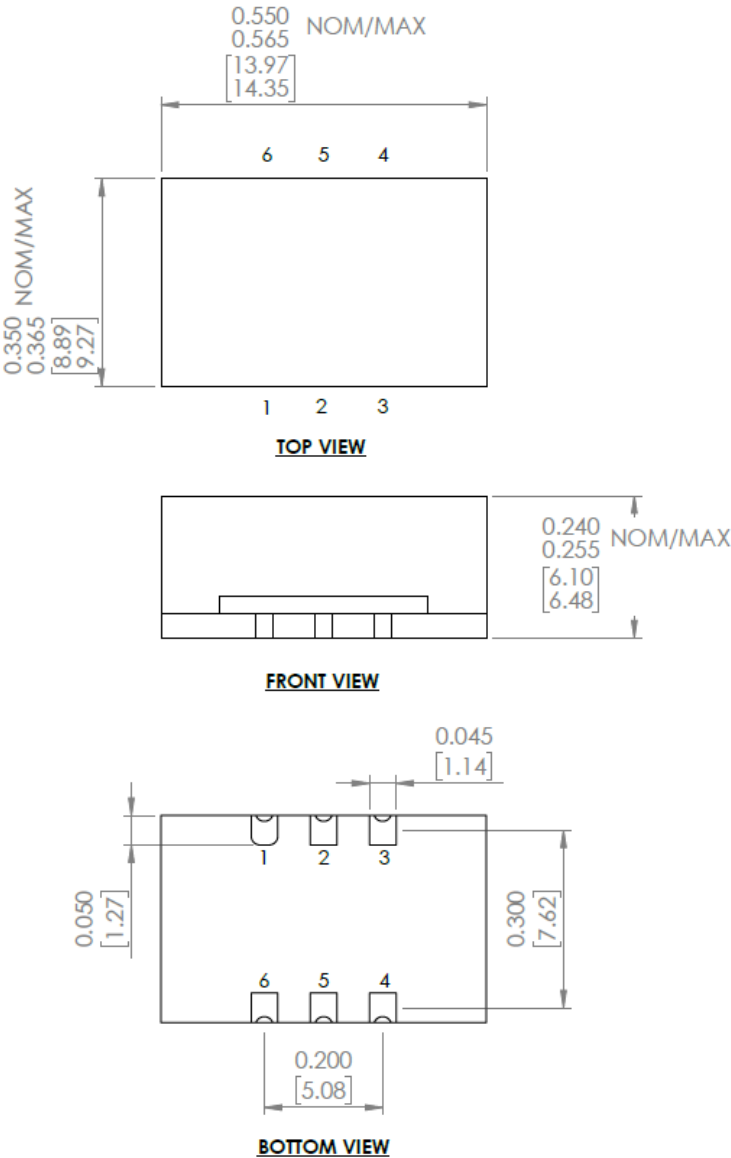
Letter	Temp °C	Letter	Temp °C	Letter	Temp °C	Letter	Temp °C	Letter	Temp °C	Letter	Temp °C
A	-40	F	-15	K	10	P	35	U	60	Z	85
B	-35	G	-10	L	15	Q	40	V	65		
C	-30	H	-5	M	20	R	45	W	70		
D	-25	I	0	N	25	S	50	X	75		
E	-20	J	5	O	30	T	55	Y	80		

Notes:

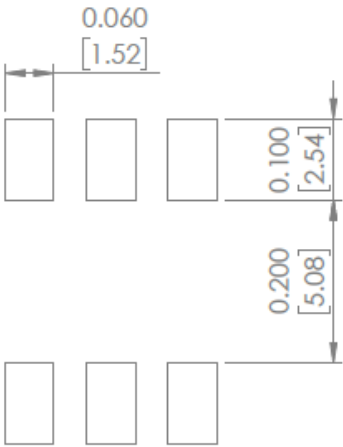
1* All parameters, unless otherwise specified, are at nominal conditions, ie: T=25°C, Nominal Vcc & Nominal Load.



Mechanical Dimensions



Recommended Land Pattern



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

Pin #	Function
1	Vco
2	ENABLE / DISABLE
3	GROUND
4	OUTPUT
5	OUTPUT COMPL.
6	Vcc

Dimensions: inches [mm]



Reflow Profile [JEDEC J-STD-020]

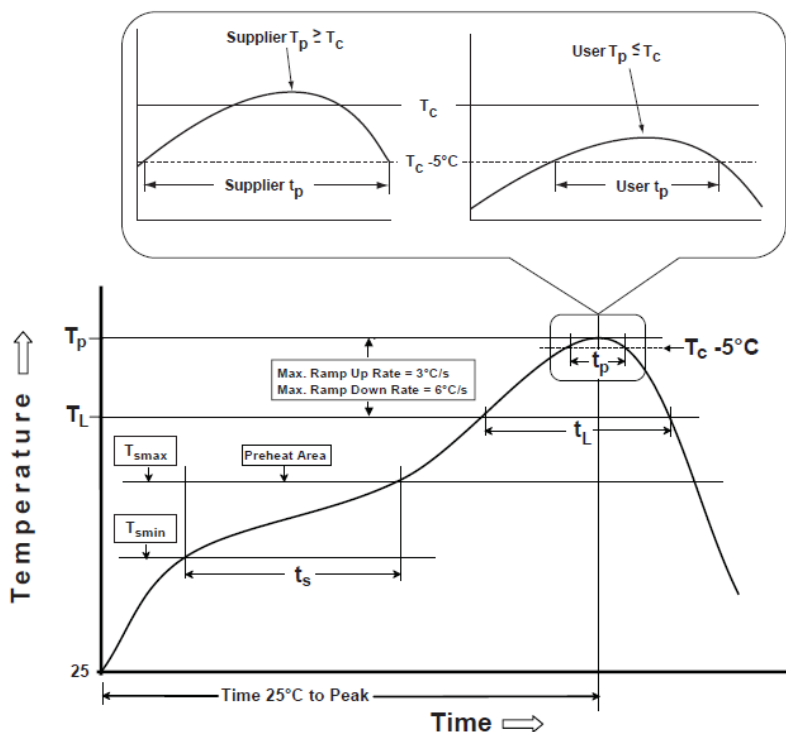


Table 1

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.

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