

## Dynamic Engineers Inc.

2550 Gray Falls Dr., Suite#128, Houston, TX, 77077 USA TEL: 1-281-870-8822 EMAIL: Sales@DynamicEng.com

## **Features and Benefits**

Frequency: 122.88MHz Supply voltage: 3.3V Steady current: 55mA Max. Output waveform: PECEL Frequency stability vs. operating temperature: ±25PPM Pulling range: 50 PPM Phase noise@100KHz: -127dBc/Hz Operating temperature: -40°C to 85°C Size:5x7x1.8mm

## **Typical Applications**

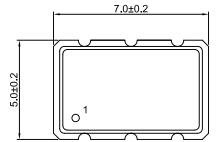
Set-Top Box HDTV XDSL/Voip ADC

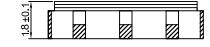
#### **Description**

VCXO7500BL-122.88MHz-A-V is the high frequency and low jitter differential VCXO. The current consumption can be less than 55mA. It can be widely used in digital circuit.

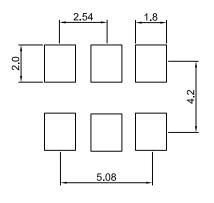
## **Mechanical Drawing & Pin Connections**

Drawing No: MD160041-3





t	
~	
1.2	5.08



Land Pattern

Pin Connection

Pad 1	Control Voltage			
Pad 2	OE			
Pad 3	Ground			
Pad 4	Differential			
Pad 5	Complementary			
Pad 6	Supply Voltage			

Unit in mm 1mm = 0.0394 inches

Dynamic Engineers, Inc.

Dynamic Engineers reserves the right to make changes to the company datasheet(s) along with other information contained inside, such as data tables and araphs without notification to potential customers who may have earlier revisions in their possession.



# Dynamic Engineers Inc.

2550 Gray Falls Dr., Suite#128, Houston, TX, 77077 USA TEL: 1-281-870-8822 EMAIL: Sales@DynamicEng.com

## **Specifications**

Specification     Sym     Conduitor     Min.     Typ.     Max.       Operational Frequency     fo     122.88     MHz     MHz       Output waveform     Image: Conduction of the symplect	Oscillator	Sym	Condition	Value			Unit	Note
RF Output     PECL     PECL       Output Waveform     RL=50 Ohm to(Vop-2.0V)	Specification			Min.		Max.		
Output waveform     PECL     PUD     PUD     PECL     PUD     PUD </td <td></td> <td>f<sub>0</sub></td> <td></td> <td></td> <td>122.88</td> <td></td> <td>MHz</td> <td></td>		f <sub>0</sub>			122.88		MHz	
Load     RL=50 Ohm to(Voc-2.0V)       Output High     Voc-1.03     Voc-2.0V       Output Low     Voc-1.03     Voc-0.6     V       Duty Cycle     ±5%     50     %       Start-up Time     10     ms       Rise Time/Fall Time     20% 80% waveform     0.5     ns       Output Enable Function     70% of Voc (max.) to enable output. (Open connection prohibit)     0     ns       OE Control on PAD2     70% of Voc (max.) to disable output. (Open connection prohibit)     30% of Voc (max.) to disable output.       Output Enable Time / Disable Time     200 ns. Max. / 50 ns. Max     200 ns. Max.       Power Supply     55     mA     Current with Output       Current with Output     16     mA       Frequency Control     255     mA       Current with Output     1     MOhm       Input Impedance     1     MOhm       Frequency Control     1     MOhm       Current with Output     1     MOhm       Input Impedance     1     MOhm       Frequency Stability     ±55     ±10								
Output High     VDD-1.03     VDD-0.6     V       Output Low     VDD-1.85     VDD-0.6     V       Duty Cycle     ±5%     50     %       Start-up Time     10     ms       Rise Time/Fall Time     20% 80% waveform     0.5     ns       Output Enable Function     70% of VDD (min.) to enable output. (Open connection prohibit)     0.5     ns       OE Control on PAD2     70% of VDD (max.) to disable output.     0.5     ns       Output Enable Time / Disable Time     200 ns. Max. / 50 ns. Max     Power Supply       Supply Voltage     VDD     ±5%     3.3     V       Current with Output Disable     16     mA     MA       Frequency Control Control Voltage Range     0.3     3.0     V       Pulling Range     ±50     ±10     %       Input Impedance     1     MOhm     MOhm       Frequency Stability     ±5     ±10     %       Versus Temperature     1     4±5.0     ppm       Aging     1st year; 25°C     ±5.0     ppm       Phase noise <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>								
Output Low     VDD+1.85     VDD+1.85     VDD+1.6     V       Duty Cycle     ±5%     50     %     50     %       Start-up Time     10     ms     10     ms     10     ms       Rise Time/Fall Time     20% 80% waveform     0.5     ns     10     ms       Output Enable Function     70% of VDD (min.) to enable output. (Open connection prohibit)     0.5     ns       OE Control on PAD2     200 ns. Max. / 50 ns. Max     200 ns. Max. / 50 ns. Max     9       Output Enable Time / Disable Time     200 ns. Max. / 50 ns. Max     9     9       Supply Voltage     VDD     ±5%     3.3     V     9       Current with Output     16     mA     16     mA       Current vith Output     16     mA     16     16     16       Input Impedance     1     MChm     16				RL=50 Ohm to(V <sub>DD</sub> -2.0V)				
Duty Cycle     ±5%     50     %       Start-up Time     10     ms       Rise Time/Fall Time     20% 80% waveform     0.5     ns       Output Enable Function     70% of V <sub>DD</sub> (min.) to enable output. (Open connection prohibit)     0.5     ns       OE Control on PAD2     30% of V <sub>DD</sub> (max.) to disable output.     00 (ns. Max. / 50 ns. Max     0.5       Output Enable Time / Disable Time     200 ns. Max. / 50 ns. Max     0.5     mA       Current     200 ns. Max. / 50 ns. Max     0.5     mA       Current with Output Disable     16     mA       Frequency Control Control Voltage Range     0.3     3.0     V       Pulling Range     ±50     PPPM     1       Linearity     ±5     ±10     %       Input Impedance     1     MOhm     Mohm       Frequency Stability     ±25     ppm       Versus Temperature     12KHz - 20MHz, RMS     0.6     ps       Qing     1% year; 25°C     ±25     ppm       Phase noise     @10 KHz     -1123     dBc/Hz       @10 KHz				V <sub>DD</sub> -1.03		V <sub>DD</sub> -0.6		
Start-up Time     10     ms       Rise Time/Fall Time     20%80% waveform     0.5     ns       Output Enable Function     70% of V <sub>DD</sub> (min.) to enable output. (Open connection prohibit)     0.5     ns       OE Control on PAD2     70% of V <sub>DD</sub> (min.) to enable output. (Open connection prohibit)     30% of V <sub>DD</sub> (max.) to disable output.       Output Enable Time / Disable Time     200 ns. Max. / 50 ns. Max     Power Supply       Supply Voltage     V <sub>DD</sub> ±5%     3.3     V       Current     16     mA       Power Supply     16     mA       Current with Output Disable     16     mA       Frequency Control     200 ns     90       Control Voltage Range     0.3     3.0     V       Pulling Range     ±50     1     PPM       Linearity     ±5     ±10     %       Input Impedance     1     MOhm     Mohm       Frequency Stability     200     ±25     ppm       Versus Temperature     425     ppm     ppm       Aging     1% KHz     -114     dBc/Hz	Output Low			V <sub>DD</sub> -1.85		V <sub>DD</sub> -1.6		
Rise Time/Fall Time     20% 80% waveform     0.5     ns       Output Enable Function     70% of V <sub>DD</sub> (min.) to enable output. (Open connection prohibit)     0.5     ns       OE Control on PAD2     30% of V <sub>DD</sub> (max.) to disable output.     30% of V <sub>DD</sub> (max.) to disable output.     00 ns. Max.       Output Enable Time / Disable Time     200 ns. Max. / 50 ns. Max     200 ns. Max.     55     mA       Output Enable Time     4.5%     3.3     V     0.4     0.4     0.5     0.6     0.5     0.5     0.5     0.6     0.5     0.5     0.6     0.5     0.6     0.5     0.6     0.5     0.6     0.5     0.6     0.5     0.6     0.6			±5%		50		%	
Output Enable Function     OE Control on PAD2   70% of V <sub>DD</sub> (min.) to enable output. (Open connection prohibit)     Output Enable Time / Disable Time   30% of V <sub>DD</sub> (max.) to disable output.     Power Supply   200 ns. Max. / 50 ns. Max     Power Supply   ±5%   3.3     V   16     Disable Time   16     Power Supply   16     Supply Voltage   0.3     Current with Output   16     Disable   16     Pulling Range   ±50     Linearity   ±5     Input Impedance   1     Prequency Stability   1     Versus Temperature   ±25     Aging   1st year; 25°C     Phase Jitter   12KHz - 20MHz,RMS     @10 KHz   -114     @10 KHz   -123     @100 KHz   -127						10	ms	
$ \begin{array}{ c c c c c c } OE \ Control on PAD2 & \hline & \hline & \hline & \hline & \hline & \hline & & & \hline & & & \hline & & \hline & & & \hline & & \hline & & & \hline & & & \hline & & & \hline & & \hline & & \hline & & \hline & & & & \hline & & & \hline & & & & & \hline & & & & \hline & & & & & & \hline & & & & & & & \hline & & & & & & & \hline & & & & & & \hline & & & & & \hline & & & &$	Rise Time/Fall Time		20% 80% waveform			0.5	ns	
OE Control on PAD2(Open connection prohibit)Output Enable Time / Disable Time $30\%$ of V_DD (max.) to disable output.Output Enable Time / Disable Time $200$ ns. Max. / 50 ns. MaxPower Supply $200$ ns. Max. / 50 ns. MaxSupply VoltageV_DDCurrent $55$ Current with Output $16$ Disable $16$ Prequency ControlControl Voltage Range $0.3$ Control Voltage Range $0.3$ Input Impedance $1$ MohmFrequency StabilityVersus Temperature $12$ Maging $1^{st}$ year; $25^{\circ}$ CPhase noise $\begin{pmatrix} @1 KHz \\ @100 KHz \\ @100 KHz \\ & 127 \\ \hline \end{pmatrix}$ Environmental Conditions	Output Enable Function							
Output Enable Time / Disable Time     30% of V <sub>DD</sub> (max.) to disable output.       Output Enable Time / Disable Time     200 ns. Max. / 50 ns. Max       Power Supply     3.3     V       Supply Voltage     V <sub>DD</sub> ±5%     3.3     V       Current     16     mA     16     mA       Disable     16     mA     16     mA       Frequency Control     0.3     3.0     V     V       Control Voltage Range     0.3     3.0     V     V       Pulling Range     ±50     PPM     Input Impedance     1     MOhm       Input Impedance     1     MOhm     Mohm     Frequency Stability     V     V       Versus Temperature     12KHz - 20MHz,RMS     0.6     ps     Ps       Phase Jitter     12KHz - 20MHz,RMS     0.6     ps     Qi 10 KHz       Qi 10 KHz     -1123     dBc/Hz     Qi 100 KHz     -127     dBc/Hz	OF Control on PAD2							
Disable Time200 hs. Max / 50 hs. MaxPower SupplySupply Voltage $V_{DD}$ $\pm 5\%$ 3.3VCurrent55mACurrent with Output16mADisable16mAFrequency ControlControl Voltage RangeVControl Voltage Range0.33.0VPulling Range $\pm 50$ PPMLinearity $\pm 55$ $\pm 10$ %Input Impedance1MOhmFrequency Stability $\pm 25$ ppmVersus Temperature $12KHz - 20MHz,RMS$ 0.6psAging1*t year; 25°C $\pm 5.0$ ppmPhase noise $@1 KHz$ $-114$ dBc/HzEnvironmental Conditions $@100 KHz$ $-127$ dBc/Hz				30% of $V_{DD}$ (max.) to disable output.				
Supply Voltage     V <sub>DD</sub> ±5%     3.3     V       Current     55     mA       Current with Output Disable     16     mA       Frequency Control     16     mA       Control Voltage Range     0.3     3.0     V       Pulling Range     ±50     PPM       Linearity     ±50     PPM       Input Impedance     1     MOhm       Frequency Stability     ±5     ±10     %       Versus Temperature     ±25     ppm     Aging     1st year; 25°C     ±25     ppm       Phase Jitter     12KHz – 20MHz,RMS     0.6     ps     email     email     dBc/Hz       Phase noise     @10 KHz     -114     email     email     dBc/Hz     email     email     dBc/Hz				200 ns. Max. / 50 ns. Max				
CurrentImage: Current with Output DisableS5mACurrent with Output Disable16mAFrequency ControlImage: Control Voltage Range0.33.0VControl Voltage Range $\pm 50$ PPMLinearity $\pm 50$ PPMLinearity $\pm 5$ $\pm 10$ %Input Impedance1MOhmFrequency StabilityVersus Temperature $\pm 25$ ppmAging $1^{st}$ year; $25^{\circ}$ C $\pm 5.0$ ppmPhase Jitter12KHz - 20MHz,RMS0.6ps@10 KHz-114MBc/Hz@100 KHz-127dBc/Hz	Power Supply							
Current with Output DisableImageImageImageFrequency Control0.33.0VControl Voltage Range0.33.0VPulling Range±50PPMLinearity±5±10Input Impedance1MOhmFrequency Stability1±25Versus Temperature±50±5.0Aging1st year; 25°C±5.0Phase Jitter12KHz - 20MHz,RMS0.6Phase noise@10 KHz-114@100 KHz-123dBc/Hz	Supply Voltage	$V_{DD}$	±5%		3.3		V	
Disable     Image     Image     Image       Control Voltage Range     0.3     3.0     V       Pulling Range     ±50     PPM       Linearity     1     %       Input Impedance     1     MOhm       Frequency Stability     1     MOhm       Versus Temperature     1     ±25     ppm       Aging     1st year; 25°C     ±5.0     ppm       Phase Jitter     12KHz - 20MHz,RMS     0.6     ps       @10 KHz     -114     Mohm     Mohm       @100 KHz     -123     dBc/Hz       @100 KHz     -127     dBc/Hz						55	mA	
Frequency Control     0.3     3.0     V       Control Voltage Range     0.3     3.0     V       Pulling Range     ±50     PPM       Linearity     ±50     ±10     %       Input Impedance     1     MOhm       Frequency Stability       Versus Temperature     1     ±25     ppm       Aging     1st year; 25°C     ±5.0     ppm       Phase Jitter     12KHz – 20MHz,RMS     0.6     ps       @1 0 KHz     -114     4Bc/Hz       @100 KHz     -123     dBc/Hz       @100 KHz     -127					16		mA	
Control Voltage Range     0.3     3.0     V       Pulling Range     ±50     PPM       Linearity     1     %       Input Impedance     1     MOhm       Frequency Stability     MOhm       Versus Temperature     1     ±25       Aging     1st year; 25°C     ±5.0     ppm       Phase Jitter     12KHz - 20MHz,RMS     0.6     ps       Phase noise     @10 KHz     -114     MBc/Hz       @100 KHz     -127     MBc/Hz		I			l			
Pulling Range     ±50     PPM       Linearity     ±50     ±5     ±10     %       Input Impedance     1     MOhm     MOhm       Frequency Stability      ±25     ppm       Versus Temperature     1     ±25     ppm       Aging     1st year; 25°C     ±25     ppm       Phase Jitter     12KHz – 20MHz,RMS     0.6     ps       @10 KHz     -114         @100 KHz     -123     dBc/Hz       @100 KHz     -127				0.3		3.0	V	
Linearity     ±5     ±10     %       Input Impedance     1     MOhm       Frequency Stability          Versus Temperature     1     MOhm        Aging     1 <sup>st</sup> year; 25°C     ±25     ppm       Phase Jitter     12KHz - 20MHz,RMS     0.6     ps       Phase noise     @10 KHz     -114        @100 KHz     -123     dBc/Hz       @100 KHz     -127							PPM	
Input Impedance1MOhmFrequency StabilityVersus Temperature±25ppmAging1st year; 25°C±5.0ppmPhase Jitter12KHz - 20MHz,RMS0.6psPhase noise@1 KHz-114@100 KHz-123dBc/HzEnvironmental Conditions					±5	±10		
Frequency Stability       Versus Temperature     ±25     ppm       Aging     1st year; 25°C     ±5.0     ppm       Phase Jitter     12KHz – 20MHz,RMS     0.6     ps       Phase noise     @1 KHz     -114     Mage: 123     Mage: 123       Phase noise     @10 KHz     -123     Mage: 127     Mage: 127       Environmental Conditions     Use of the second	,						MOhm	
Versus Temperature     ±25     ppm       Aging     1st year; 25°C     ±5.0     ppm       Phase Jitter     12KHz – 20MHz,RMS     0.6     ps       Phase noise     @1 KHz     -114        @10 KHz     -123     dBc/Hz       @100 KHz     -127     dBc/Hz		1			1			
Aging     1st year; 25°C     ±5.0     ppm       Phase Jitter     12KHz – 20MHz,RMS     0.6     ps       Phase noise     @1 KHz     -114     dBc/Hz       @10 KHz     -123     dBc/Hz       Environmental Conditions						±25	ppm	
Phase Jitter     12KHz – 20MHz,RMS     0.6     ps       Phase noise     @1 KHz     -114			1 <sup>st</sup> year; 25°C			±5.0		
@1 KHz     -114       Phase noise     @10 KHz     -123     dBc/Hz       @100 KHz     -127     dBc/Hz       Environmental Conditions     Conditions     Conditions					0.6			
@100 KHz -127   Environmental Conditions -127					-114			
Environmental Conditions	Phase noise		@10 KHz		-123		dBc/Hz	
			@100 KHz		-127			
Operating temperature range -40°C to +85°C	Environmental Conditions	S		·				
	Operating temperature range	ge	-40°C to +85°C					