



# MX554BBD322M265

Ultra-low Jitter 322.265625MHz HCSL XO

ClockWorks™ FUSION

## General Description

The MX554BBD322M265 is an ultra-low phase jitter XO with HCSL output optimized for high line rate applications.

## Applications

- Optical communications
- Forward error correction (FEC) rates
- FPGA SERDES reference clock

## Absolute Maximum Ratings

Supply Voltage (VIN).....+3.6V  
 Lead Temperature (soldering, 10s).....260°C  
 Storage Temperature (T<sub>s</sub>).....125°C  
 ESD Rating (HBM).....2kV

## Electrical Characteristics

VDD = 2.5V ±5% or 3.3V ±10%, -40°C to +85°C, outputs terminated with 50 Ohms to VSS.<sup>1</sup>

Symbol	Parameter	Condition	Min.	Typ.	Max.	Units
IDD	Supply Current				95	mA
F0	Center Frequency			322.265625		MHz
	Frequency Stability	Note 2			±50	ppm
∅j	Phase Noise	Integration Range (12kHz to 20MHz) Integration Range (1.875MHz to 20MHz)		154 100		fsRMS
Tstart	Start-Up Time				10	ms
TR/TF	Rise/Fall time	20%-80%	150	300	450	ps
	Duty Cycle		48	50	52	%
VOH	Output High Voltage	HCSL output levels	660	700	850	mV
VOL	Output Low Voltage	HCSL output levels	-150	0	27	mV
VOVS	Max Output Including Overshoot				VOH + 0.3	V
VUDS	Min Output Including Undershoot		VOL - 0.3			V
VRB	Ringback Voltage		0.2			V
VOX	Absolute Crossing Point		250	350	550	mV
Vswing	Peak to Peak Output Voltage Swing		640	700	950	mV

### Notes:

1. Guaranteed after thermal equilibrium.
2. Inclusive of initial accuracy, temperature drift, aging, shock, vibration from -40°C to +85°C.

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[tcghelp@micrel.com](mailto:tcghelp@micrel.com) or (408) 955-1690

## Features

- 322.265625MHz HCSL
- Supports FEC line rate
- Typical phase noise:
  - 100fs (Integration range: 1.875MHz-20MHz)
- ±50ppm total frequency stability
- -40°C to +85°C temperature range
- Industry standard 6-Pin 5mm x 3.2mm LGA package

## Operating Ratings

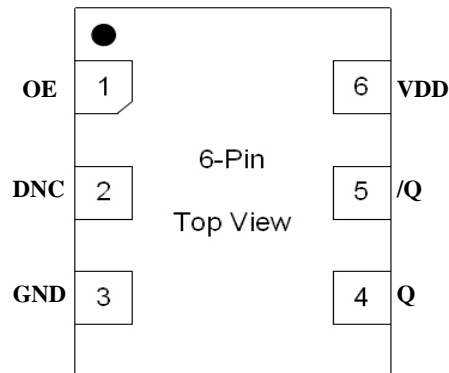
Supply Voltage (VIN).....+2.375V to +3.63V  
 Ambient Temperature (TA).....-40°C to +85°C

## Ordering Information

Ordering Part Number	Marking Line 1	Marking Line 3	Shipping	Package
MX554BBD322M265	MX554B	BD3222	Tube	6-Pin 5mm x 3.2mm LGA
MX554BBD322M265 TR	MX554B	BD3222	Tape and Reel	6-Pin 5mm x 3.2mm LGA

Devices are Green and RoHS compliant. Sample material may have only a partial top mark.

## Pin Configuration



## Pin Description

Pin Number	Pin Name	Pin Type	Pin Level	Pin Function
1	OE	I, SE	LVC MOS	Output Enable, disables output to tri-state, 0 = Disabled, 1 = Enabled, 50k Ohms Pull-Up
2	DNC			Make no connection, leave floating.
3	GND	PWR		Power Supply Ground
4, 5	Q, /Q	O, Diff	HCSL	Clock Output Frequency = 322.265625MHz
6	VDD	PWR		Power Supply

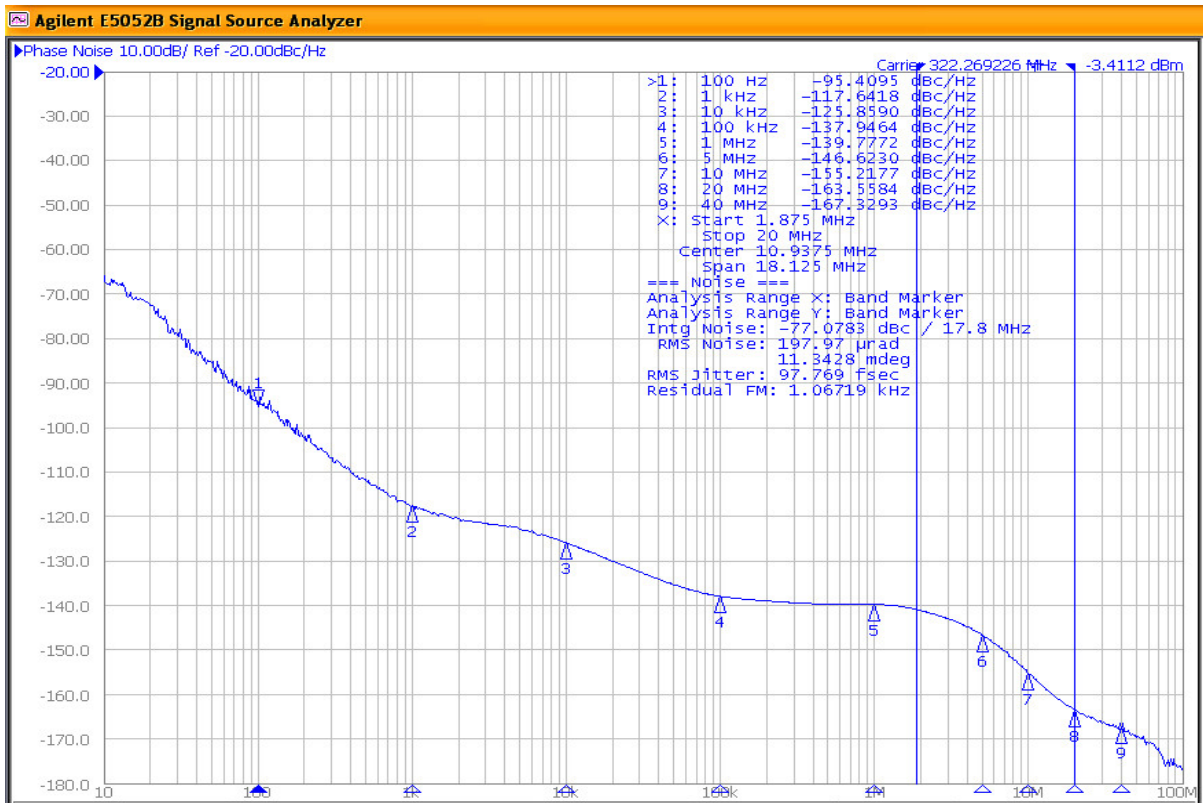


Figure 1. HCSL Output 322.265MHz 1.875MHz-20MHz 100fs

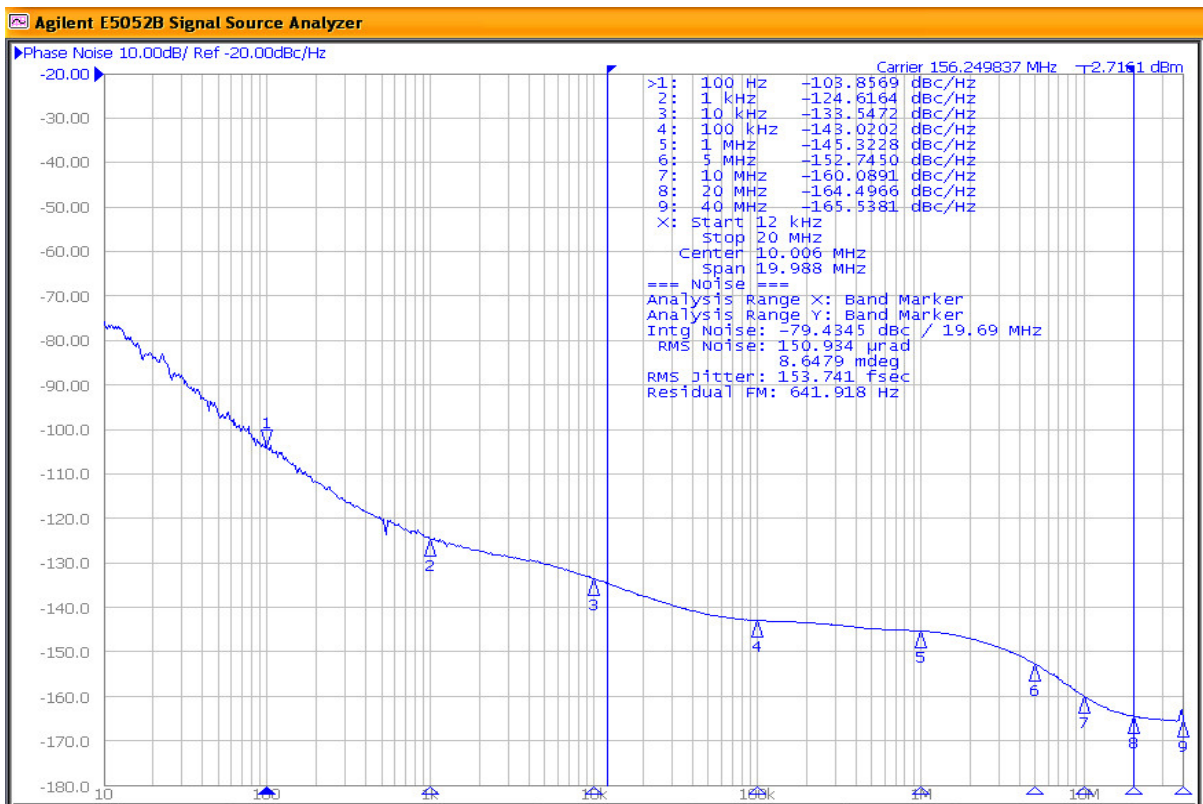
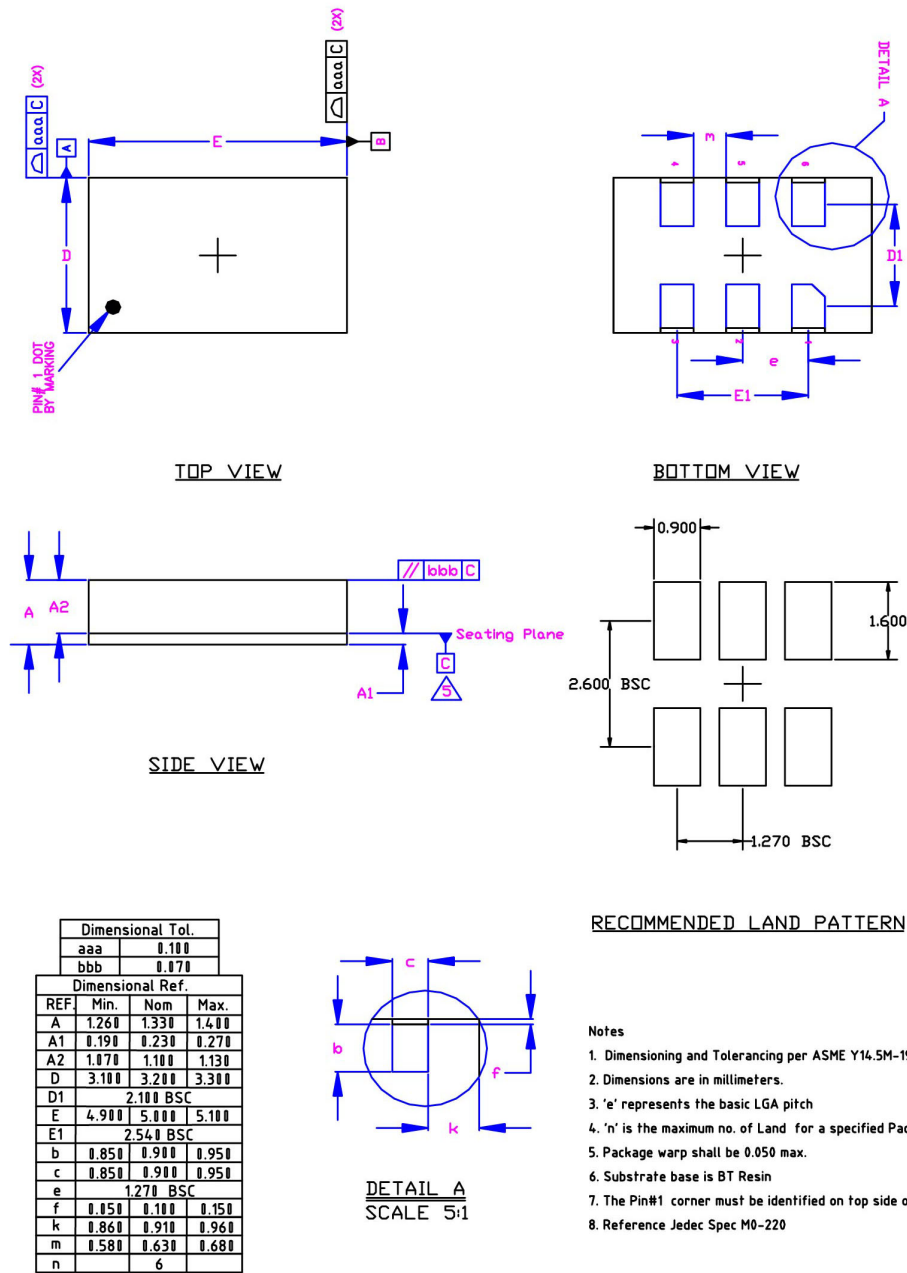


Figure 2. HCSL Output 322.265MHz 12kHz-20MHz 154fs

### Package Information and Recommended Land Pattern for 6-Pin LGA<sup>3</sup>



**Note:**

3. Package information is correct as of the publication date. For updates and most current information, go to [www.micrel.com](http://www.micrel.com).

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