



# MX553BNS156M250

## Ultra-Low Jitter 156.25MHz LVDS XO

ClockWorks® FUSION

### General Description

The MX553BNS156M250 is an ultra-low phase jitter XO with LVDS output optimized for high line rate applications.

### Applications

- 10/40/400 Gigabit Ethernet
- Fibre Channel 10G/12G SERDES

### Absolute Maximum Ratings

Supply Voltage (VIN).....	+4.6V
Lead Temperature (soldering, 10s).....	260°C
Storage Temperature (T <sub>s</sub> ).....	125°C
ESD Rating (HBM).....	2kV

### Electrical Characteristics

VDD = 2.375 - 3.63V, TA = -40°C to +85°C, outputs terminated with 100 Ohms between Q and /Q.<sup>1</sup>

Symbol	Parameter	Condition	Min.	Typ.	Max.	Units
IDD	Supply Current				90	mA
F0	Center Frequency			156.25		MHz
	Frequency Stability	Note 2			±50	ppm
∅j	Phase Noise	Integration Range (12kHz to 20MHz) Integration Range (1.875MHz to 20MHz)		152 92		fsRMS
Tstart	Start-Up Time				20	ms
TR/TF	Rise/Fall time		100		400	ps
	Duty Cycle		45		55	%
VOH	Output High Voltage VOH max = VCM max + 1/2 VOD max	LVDS output levels	1.248	1.375	1.602	V
VOL	Output Low Voltage VOL min = VCM min - 1/2 VOD max	LVDS output levels	0.898	1.025	1.252	V
VOD	Output Differential Voltage		247	350	454	mV
VCM	Common Mode Output Voltage		1.125	1.2	1.375	V

#### Notes:

1. Guaranteed after thermal equilibrium.
2. Inclusive of initial accuracy, temperature drift, aging, shock, vibration.

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[tcghelp@microchip.com](mailto:tcghelp@microchip.com)

### Features

- 156.25MHz LVDS
- Typical phase noise:
  - 92fs (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

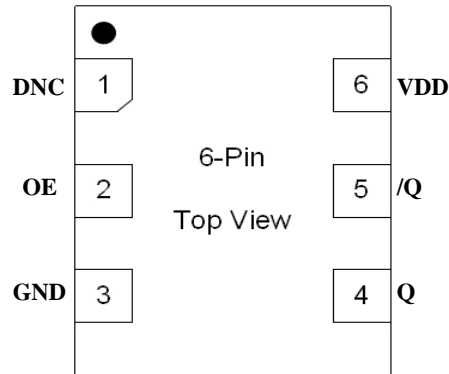
Supply Voltage (VIN).....	+2.375V to +3.63V
Ambient Temperature (TA).....	-40°C to +85°C

## Ordering Information

Ordering Part Number	Marking Line 1	Marking Line 3	Shipping	Package
MX553BNS156M250	MX553B	NS1562	Tube	6-Pin 5mm x 3.2mm LGA
MX553BNS156M250 TR	MX553B	NS1562	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	DNC			Make no connection, leave floating.
2	OE	I, SE	LVC MOS	Output Enable, disables output to tri-state, 0 = Disabled, 1 = Enabled, 50k Ohms Pull-Up
3	GND	PWR		Power Supply Ground
4, 5	Q, /Q	O, Diff	LVDS	Clock Output Frequency = 156.25MHz
6	VDD	PWR		Power Supply

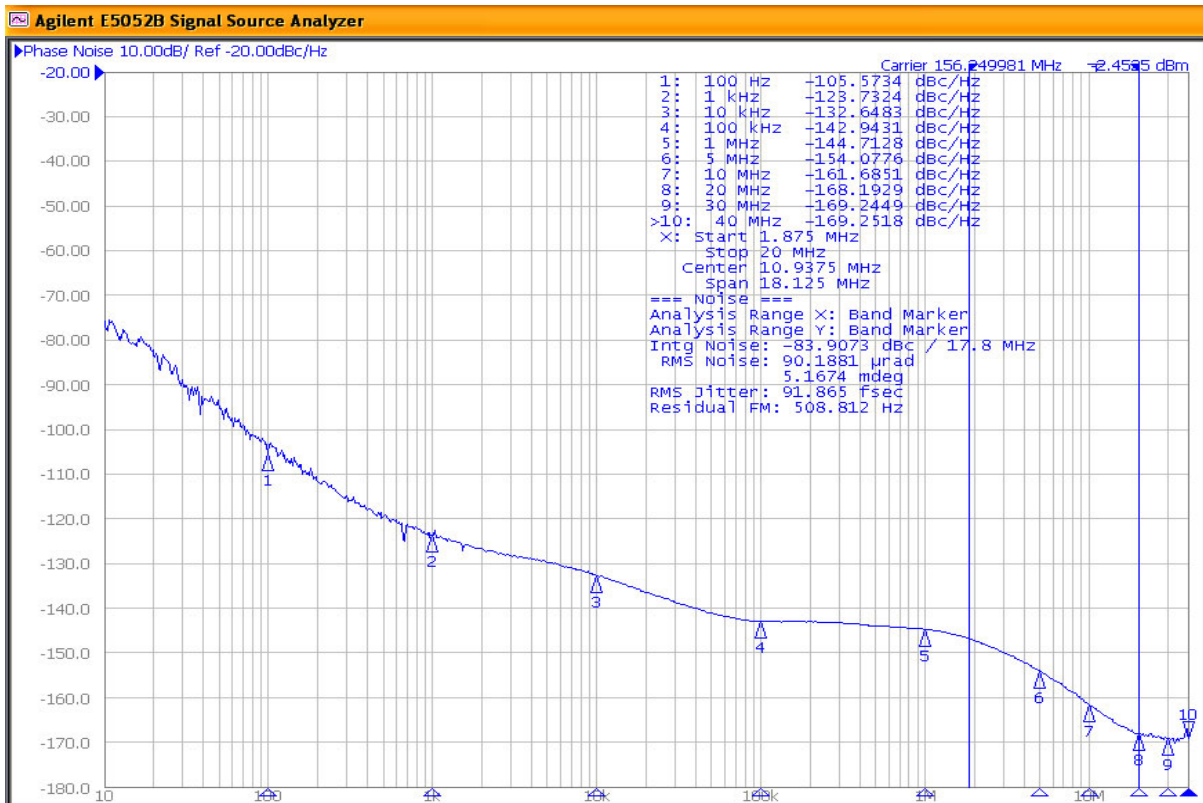


Figure 1. LVDS Output 156.25MHz 1.875MHz-20MHz 92fs

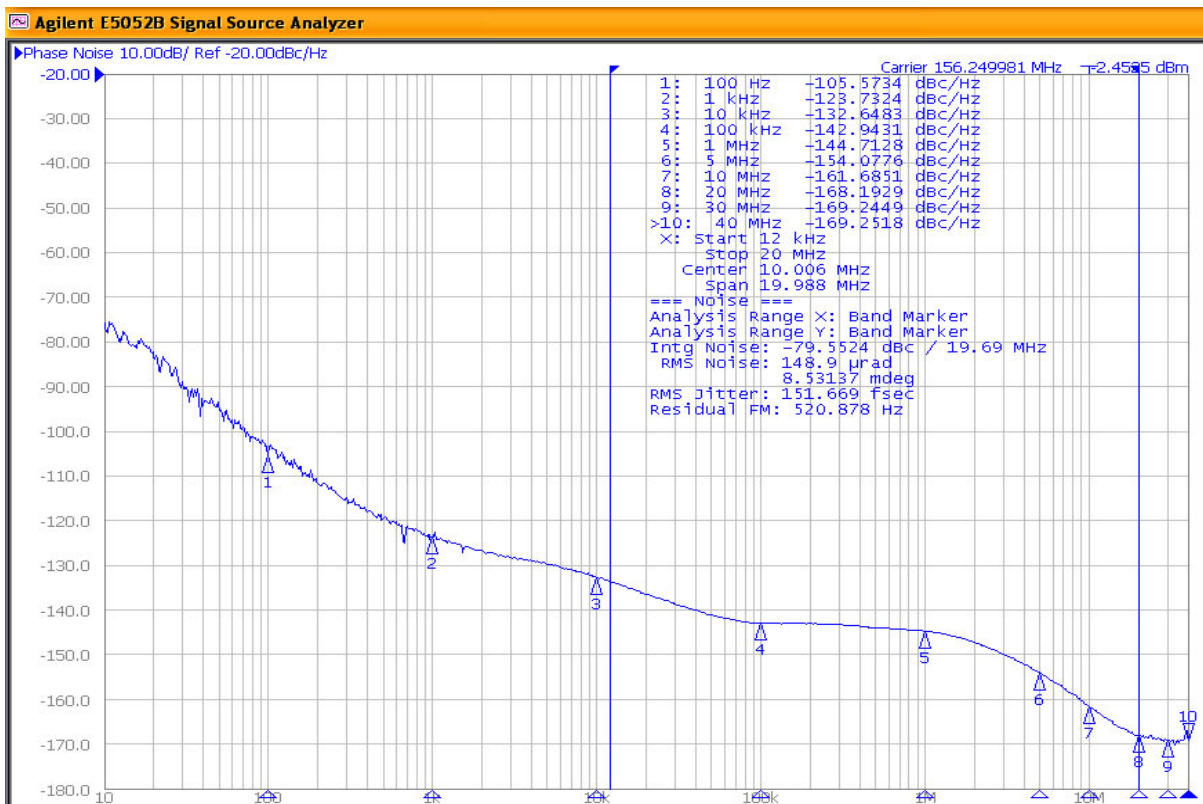
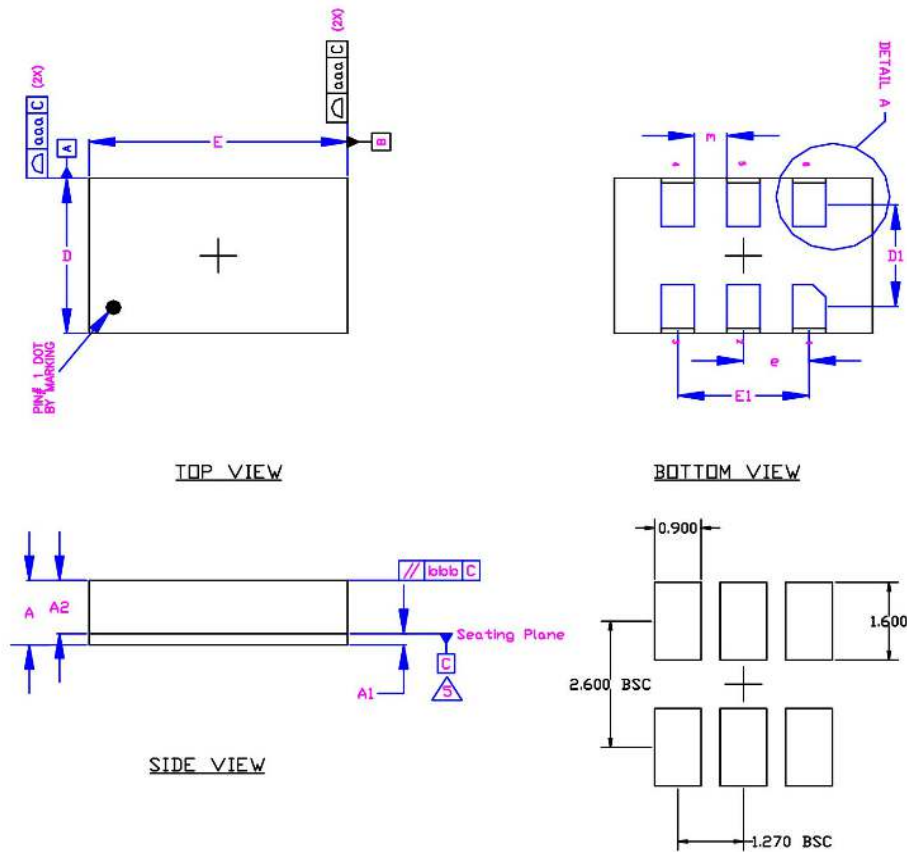


Figure 2. LVDS Output 156.25MHz 12kHz-20MHz 152fs

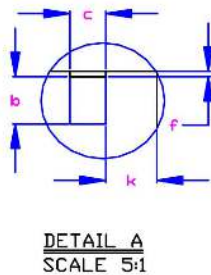
### Package Information and Recommended Land Pattern for 6-Pin LGA<sup>3</sup>



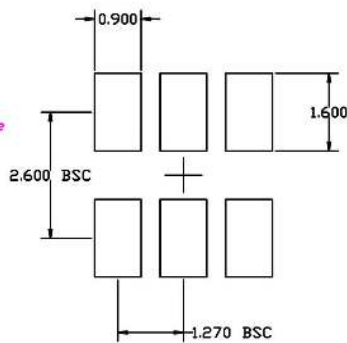
Dimensional Tol.	
aaa	0.100
bbb	0.170

Dimensional Ref.			
REF.	Min.	Nom.	Max.
A	1.260	1.330	1.400
A1	0.190	0.230	0.270
A2	1.070	1.100	1.130
D	3.100	3.200	3.300
D1	2.100 BSC		
E	4.900	5.100	5.100
E1	2.540 BSC		
b	0.850	0.900	0.950
c	0.850	0.900	0.950
e	1.270 BSC		
f	0.850	0.100	0.150
k	0.860	0.910	0.960
m	0.580	0.630	0.680
n	6		



**RECOMMENDED LAND PATTERN**



- Notes**
1. Dimensioning and Tolerancing per ASME Y14.5M-1994.
  2. Dimensions are in millimeters.
  3. 'e' represents the basic LGA pitch
  4. 'n' is the maximum no. of Land for a specified Package.
  5. Package warp shall be 0.050 max.
  6. Substrate base is BT Resin
  7. The Pin#1 corner must be identified on top side only.
  8. Reference Jeduc Spec M0-220

**Note:**

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

**6-Pin LGA (5x3.2mm)**

**Microchip Technology Inc.**

<http://www.microchip.com>

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