



MX553BBD156M250

Ultra-low Jitter 156.25MHz HCSL XO

ClockWorks™ FUSION

General Description

The MX553BBD156M250 is an ultra-low phase jitter XO with HCSL output optimized for high line rate applications.

Applications

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

Absolute Maximum Ratings

Supply Voltage (VIN).....	+3.6V
Lead Temperature (soldering, 10s).....	260°C
Storage Temperature (T _s).....	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.¹

Symbol	Parameter	Condition	Min.	Typ.	Max.	Units
IDD	Supply Current				95	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)		175 100		fsRMS
Tstart	Start-Up Time				20	ms
TR/TF	Rise/Fall time		300			ps
	Duty Cycle		45		55	%
VOH	Output High Voltage	HCSL output levels	640	700	850	mV
VOL	Output Low Voltage	HCSL output levels	-150	0		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	450	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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Revision 1.0
tcghelp@micrel.com or (408) 955-1690

Features

- 156.25MHz HCSL
- Typical phase noise:
 - 100fs (Integration range: 1.875MHz-20MHz)
 - 175fs (Integration range: 12kHz -20MHz)
- ±50ppm total frequency stability
- -40°C to +85°C temperature range
- Industry standard 6-Pin 5mm x 3.2mm LGA package

Operating Ratings

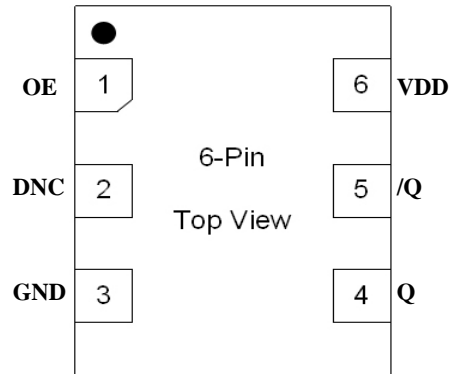
Supply Voltage (VIN).....	+2.375V to +3.63V
Ambient Temperature (TA).....	-40°C to +85°C

Ordering Information

Ordering Part Number	Marking Line 1	Marking Line 3	Shipping	Package
MX553BBD156M250	MX553B	BD1562	Tube	6-Pin 5mm x 3.2mm LGA
MX553BBD156M250 TR	MX553B	BD1562	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 = 156.25MHz
6	VDD	PWR		Power Supply

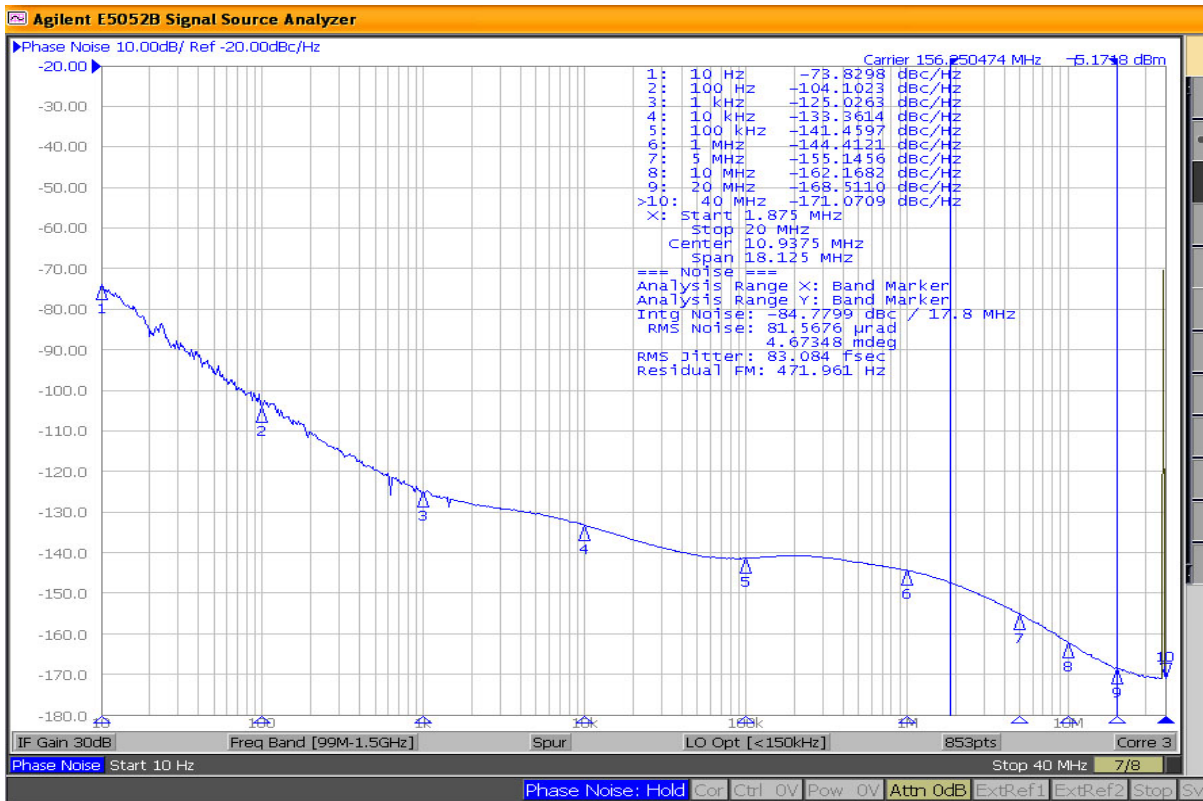


Figure 1. HCSL Output 156.25MHz 1.875MHz-20MHz 83fs

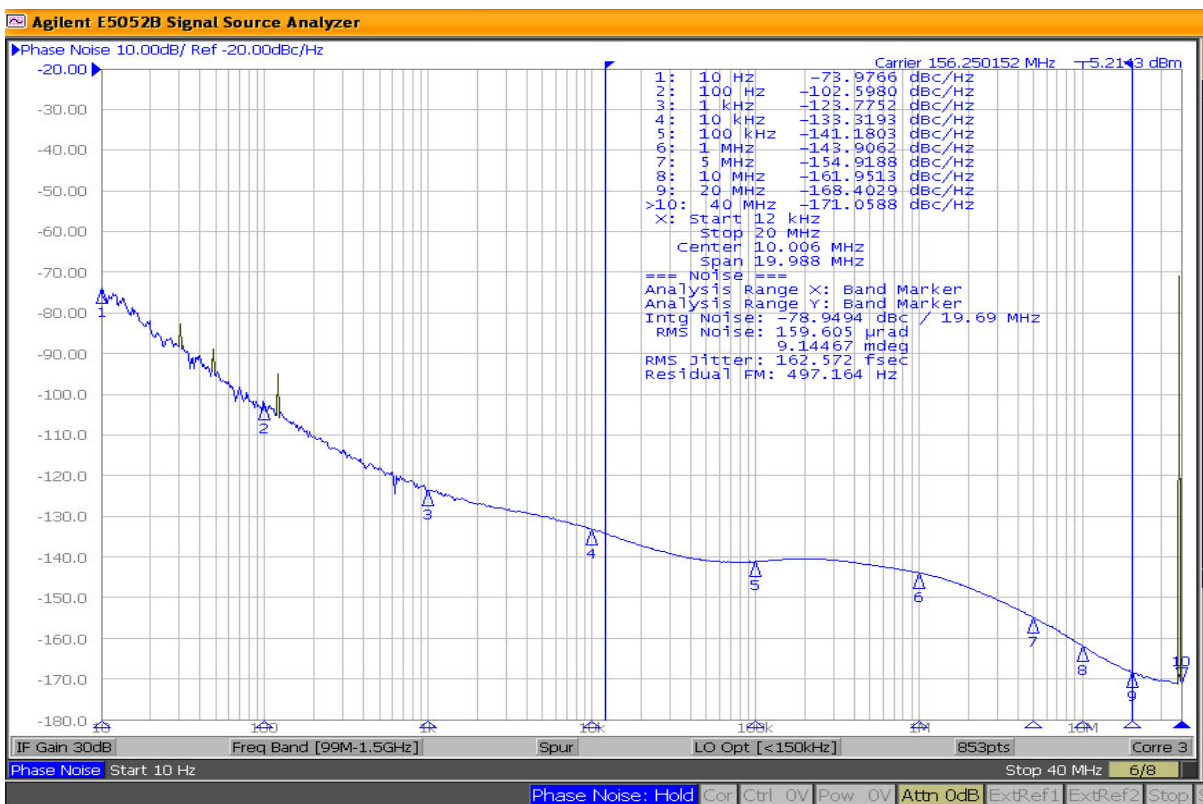
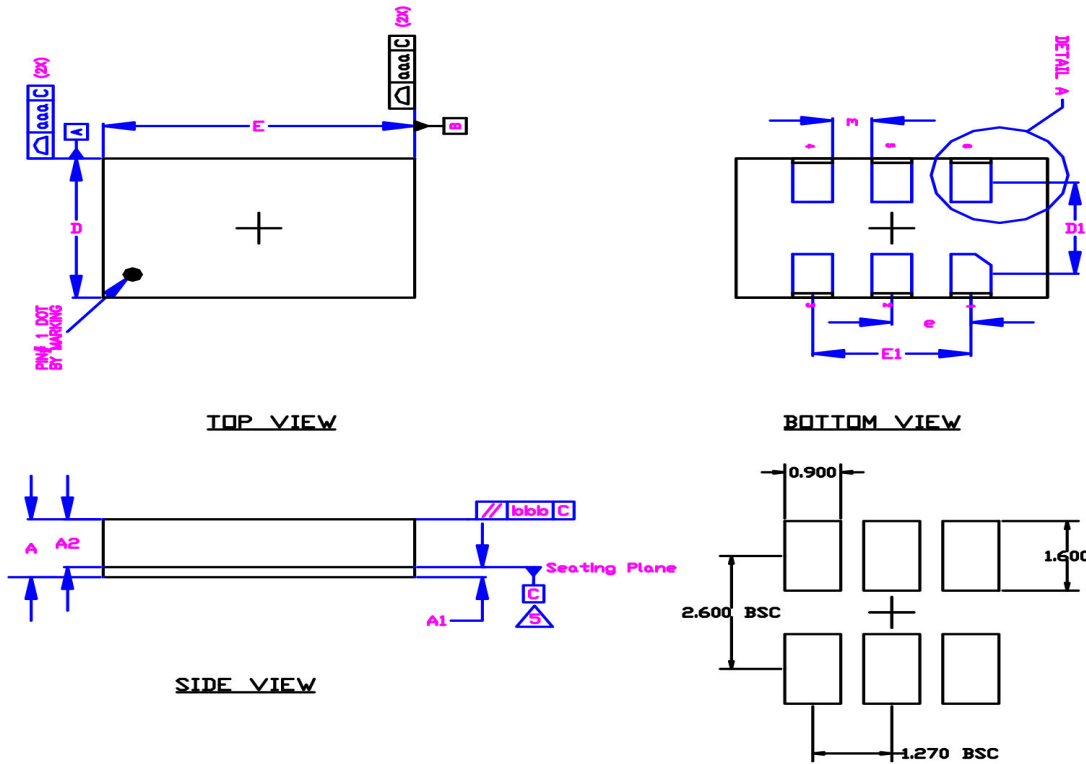


Figure 2. HCSL Output 156.25MHz 12kHz-20MHz 163fs

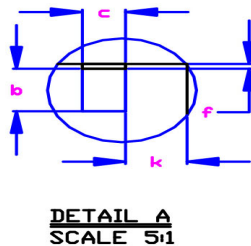
Package Information and Recommended Land Pattern for 6-Pin LGA³



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

Dimensional Tol.			
aaa	±0.10		
bbb	±0.17		
Dimensional Ref.			
REF.	Min.	Nom	Max.
A	1.26	1.33	1.41
A1	0.19	0.23	0.27
A2	1.07	1.10	1.13
D	3.10	3.28	3.38
D1	2.10 BSC		
E	4.90	5.00	5.10
E1	2.54 BSC		
b	0.85	0.90	0.95
c	0.85	0.90	0.95
e	1.27 BSC		
f	0.85	0.90	0.95
k	0.86	0.91	0.96
m	0.58	0.63	0.68
n	6		



6-Pin LGA (5x3.2mm)

Note:

3. Package information is correct as of the publication date. For updates and most current information, go to www.micrel.com.

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