



MX775ABB156M250
Ultra-Low Jitter 156.25MHz LVDS XO
with Integrated Quartz Crystal

General Description

The MX775ABB156M250 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 Ratings¹

Supply Voltage (VDD).....+4.6V
 Input Voltage (VIN).....-0.50V to VDD +4.6V
 ESD Protection (HBM).....2kV
 ESD Protection (MM).....200V

Features

- 156.25MHz LVDS
- Typical phase noise:
 - 85fs (Integration range: 12kHz-20MHz)
- ±50ppm total frequency stability
- -40°C to +85°C temperature range
- Standard 6-Pin 7mm x 5mm LGA package
- Both the package and the crystal are MSL-1

Operating Ratings²

Supply Voltage (VDD).....+2.375V to +3.465V
 Junction Thermal Resistance
 LGA (θ_{JA})52.8°C/W

Electrical Characteristics

VDD = 3.3V ±5% to 2.5V ±5%, TA = -40°C to +85°C, unless otherwise noted. RL = 100Ω between Q and /Q.

Parameter	Symbol	Min.	Typ.	Max.	Units	Condition
Supply Voltage	VDD	2.375 3.135	2.5 3.3	2.625 3.465	V	2.5V Operation 3.3V Operation
Current Consumption	IDD	-	135	180	mA	@3.3V
Frequency Stability				±50	ppm	Note 4
Differential Output Voltage	VOD	245	350	454	mV	
Common Mode Voltage	VCM	1.125	1.2	1.375	V	
Output High Voltage	VOH	1.248	1.375	1.602	V	
Output Low Voltage	VOL	0.898	1.025	1.252	V	
Output Rise/Fall Time	tR/tF	85	140	300	ps	
Output Duty Cycle	ODC	45 48	50 50	55 52	%	All output frequencies < 450MHz output frequencies
PLL Lock Time	TLOCK	-	5	20	ms	Time from 90% VDD
RMS Phase Jitter ³	tJIT(Ø)	-	85	-	fs	156.25MHz, Integration range (12kHz-20MHz)

Notes:

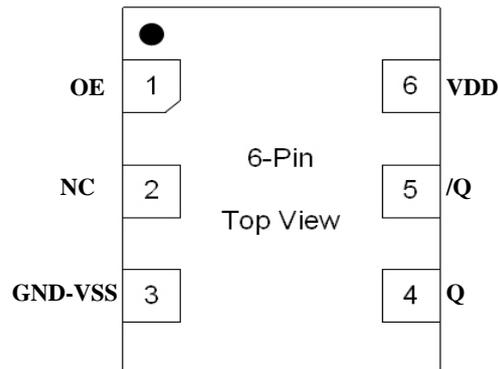
1. Exceeding the absolute maximum ratings may damage the device.
 2. The device is not guaranteed to function outside its operating ratings.
 3. All phase noise measurements were taken with an Agilent 5052B phase noise system.
 4. Inclusive of initial accuracy, temperature drift, aging, shock, vibration.
- ClockWorks is a registered trademark of Microchip Technology Inc.

Ordering Information

Ordering Part Number	Marking Line 1	Marking Line 3	Shipping	Package
MX775ABB156M250	MX775AB	B156M250	Tube	6-Pin 7mm x 5mm LGA
MX775ABB156M250-TR	MX775AB	B156M250	Tape and Reel	6-Pin 7mm x 5mm 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 to tri-state, 0 = Disabled, 1 = Enabled, 75kΩ Pull-Up (Internal)
2	NC			No connect No internal connections to the ASIC are made
3	GND-VSS	PWR		Power Supply Ground
4, 5	Q, /Q	O, Diff	LVDS	Clock Output Frequency = 156.25MHz
6	VDD	PWR		Power Supply

Environmental Specifications

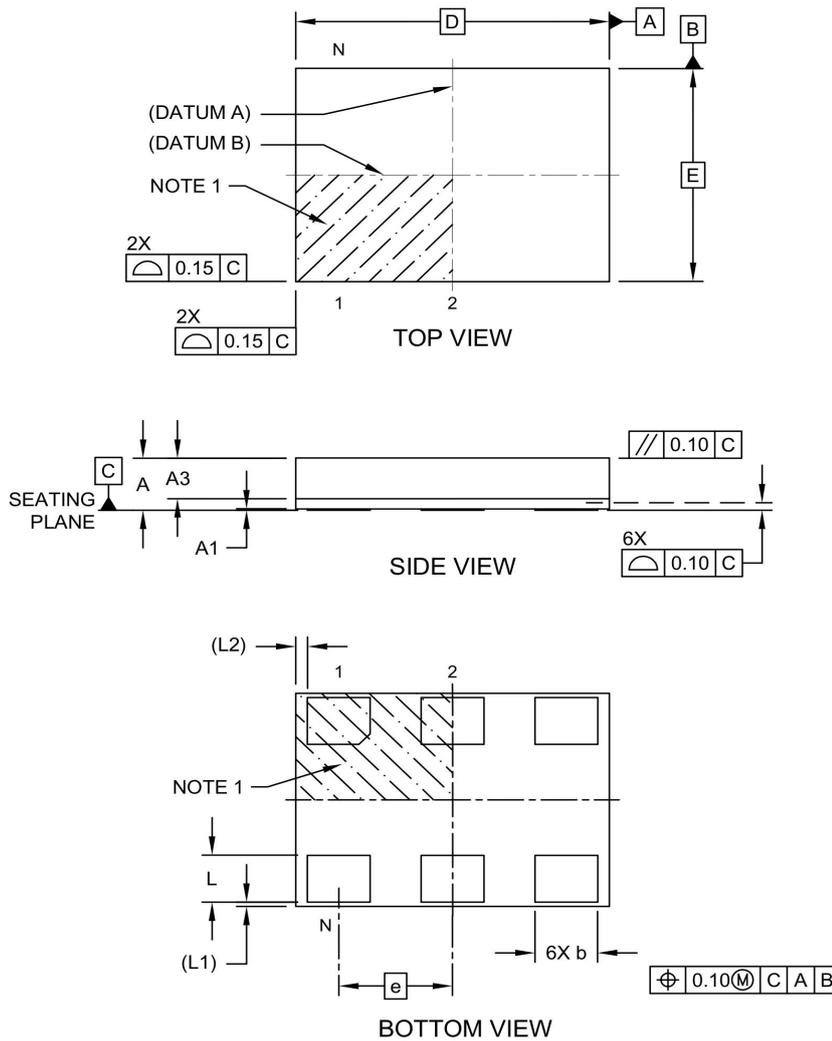
Thermal Shock	MIL-STD-883, Method 1011, Condition A
Moisture Resistance	MIL-STD-883, Method 1004
Mechanical Shock	MIL-STD-883, Method 2002, Condition C
Mechanical Vibration	MIL-STD-883, Method 2007, Condition B
Resistance to Soldering Heat	J-STD-020C, Table 5-2 Pb-free devices (except 2 cycles max)
Hazardous Substance	Pb-free / RoHS / Green Compliant
Solderability	JESD22-B102-D Method 2 (Preconditioning E)
Terminal Strength	MIL-STD-883, Method 2004, Test Condition D
Gross Leak	MIL-STD-883, Method 1014, Condition C
Fine Leak	MIL-STD-883, Method 1014, Condition A2, R1=2x10 ⁻⁸ atm cc/s
MSL Level	Crystal and Package MSL-1
Solvent Resistance	MIL-STD-202, Method 215

Package Information



6-Lead Low Profile Land Grid Array (LLX) - 5x7x1.22 mm Body [LLGA]

Note: For the most current package drawings, please see the Microchip Packaging Specification located at <http://www.microchip.com/packaging>



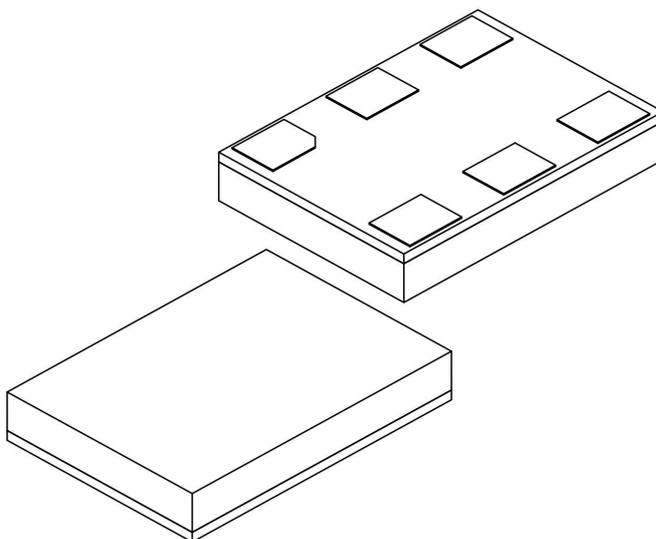
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6-Lead Low Profile Land Grid Array (LLX) - 5x7x1.22 mm Body [LLGA]

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Units		MILLIMETERS		
Dimension Limits		MIN	NOM	MAX
Number of Terminals	N	6		
Pitch	e	2.54 BSC		
Overall Height	A	1.08	1.15	1.22
Standoff	A1	–	–	0.03
Mold Cap Thickness	A3	0.85	0.90	0.95
Overall Length	D	7.00 BSC		
Overall Width	E	5.00 BSC		
Terminal Width	b	1.35	1.40	1.45
Terminal Length	L	1.05	1.10	1.15
Terminal Pullback	L1	0.10 REF		
Terminal Offset	L2	0.26 REF		

Notes:

- Pin 1 visual index feature may vary, but must be located within the hatched area.
- Dimensioning and tolerancing per ASME Y14.5M
 BSC: Basic Dimension. Theoretically exact value shown without tolerances.
 REF: Reference Dimension, usually without tolerance, for information purposes only.

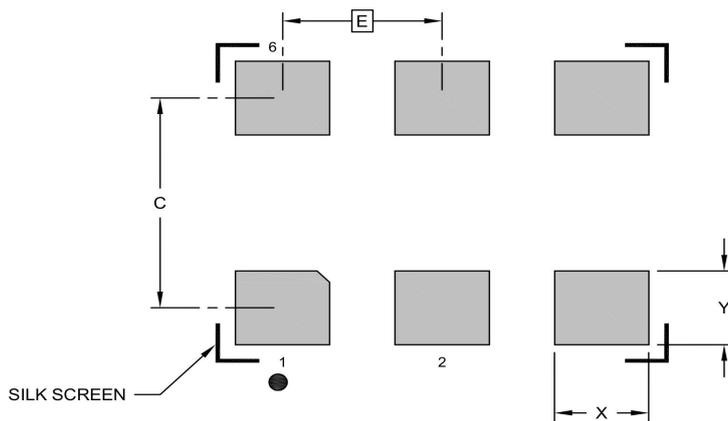
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RECOMMENDED LAND PATTERN

Dimension Limits	Units	MILLIMETERS		
		MIN	NOM	MAX
Contact Pitch	E		2.54 BSC	
Contact Pad Spacing	C		3.70	
Contact Pad Width (Xnn)	X			1.50
Contact Pad Length (Xnn)	Y			1.30

Notes:

1. Dimensioning and tolerancing per ASME Y14.5M
BSC: Basic Dimension. Theoretically exact value shown without tolerances.

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