MX554BBF443M115

Ultra-Low Jitter 443.115234MHz LVPECL XO

ClockWorks® FUSION

General Description

The MX554BBF443M115 is an ultra-low phase jitter XO with LVPECL output optimized for high line rate applications.

Applications

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

Features

- 443.115234MHz LVPECL
- 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

Absolute Maximum Ratings[1]

Supply Voltage (VIN).....+4.6V
Lead Temperature (soldering, 10s).....260°C
Case Temperature.....115°C
Storage Temperature (T_S).....-65°C to +125°C
ESD Machine Model.....200V
ESD Rating (HBM).....2kV

Operating Ratings[2]

Supply Voltage (VIN).....+2.375V to +3.63V
Ambient Temperature (TA).....-40°C to +85°C
Junction Thermal Resistance
LGA (T_{JC}) Still Air.....58°C/W

Electrical Characteristics

VDD = 2.375 - 3.63V, TA = -40°C to +85°C, outputs terminated with 50 Ohms to VDD - 2V.[3]

Symbol	Parameter	Condition	Min.	Typ.	Max.	Units
IDD	Supply Current				120	mA
F0	Center Frequency			443.115234		MHz
	Frequency Stability	Note 4			±50	ppm
Øj	Phase Noise	Integration Range (12kHz to 20MHz) Integration Range (1.875MHz to 20MHz)		220 100		fsRMS
Tstart	Start-Up Time				20	ms
TR/TF	Rise/Fall time		85		350	ps
	Duty Cycle		45		55	%
VOH	Output High Voltage	LVPECL output levels	VDD - 1.35	VDD - 1.01	VDD - 0.8	V
VOL	Output Low Voltage	LVPECL output levels	VDD - 2.0	VDD - 1.78	VDD - 1.6	V
Vswing	Peak to Peak Output Voltage Swing		0.65	0.77	0.95	V

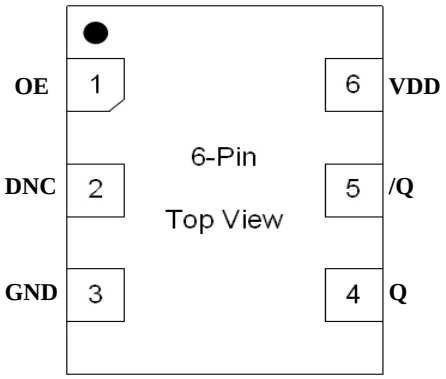
Notes:
1. Exceeding the absolute maximum ratings may damage the device.
2. The device is not guaranteed to function outside its operating ratings.
3. Guaranteed after thermal equilibrium.
4. Inclusive of initial accuracy, temperature drift, aging, shock, vibration.

Ordering Information

Ordering Part Number	Marking Line 1	Marking Line 3	Shipping	Package
MX554BBF443M115	MX554B	BF4431	Tube	6-Pin 5mm x 3.2mm LGA
MX554BBF443M115-TR	MX554B	BF4431	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



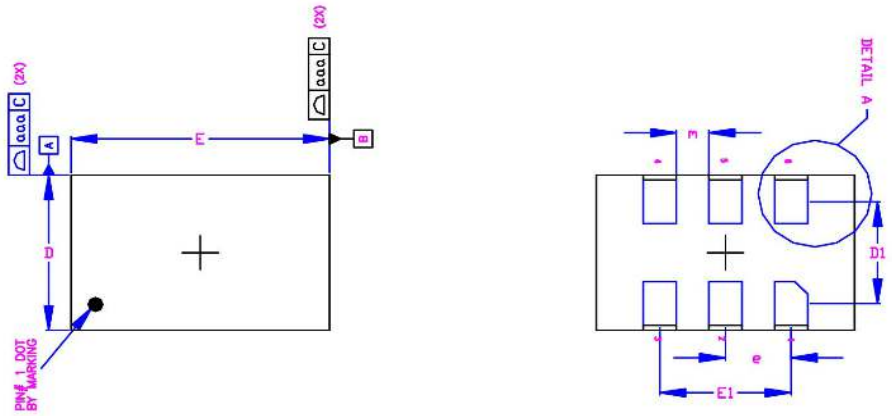
Pin Description

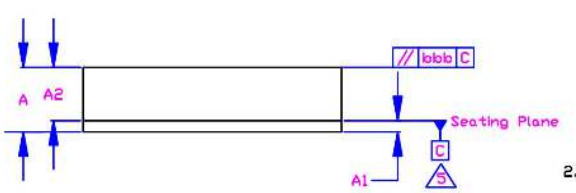
Pin Number	Pin Name	Pin Type	Pin Level	Pin Function
1	OE	I, SE	LVCMOS	Output Enable, disables output to tri-state, 1 = Disabled, 0 = Enabled, 50k Ohms Pull-Down (Internal)
2	DNC			Make no connection, leave floating.
3	GND	PWR		Power Supply Ground
4, 5	Q, /Q	O, Diff	LVPECL	Clock Output Frequency = 443.115234MHz
6	VDD	PWR		Power Supply

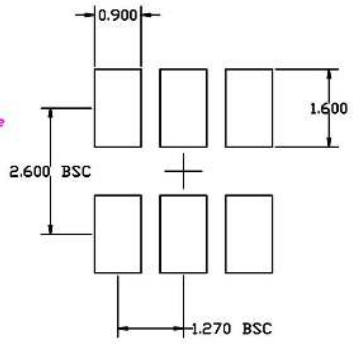
Environmental Specifications

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 A
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 - MSL-1, Package MSL-3
Solvent Resistance	MIL-STD-202, Method 215

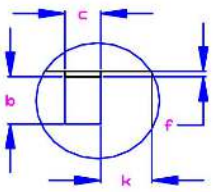
Package Information and Recommended Land Pattern for 6-Pin LGA[3]







Dimensional Tol.			
aaa		0.100	
bbb		0.070	
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	5.000	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	0.050	0.100	0.150
k	0.860	0.910	0.960
m	0.580	0.630	0.680
n		6	



DETAIL A
SCALE 5:1

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 Jedec Spec MO-220

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.microchip.com.