



## General Description

The MX574BNR322M265 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

## Absolute Maximum Ratings<sup>1</sup>

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

## Electrical Characteristics

VDD = 2.375 - 3.63V, TA = -40°C to +85°C, outputs terminated with 50 Ohms to VDD - 2V.<sup>3</sup>

| Symbol | Parameter                         | Condition   | Min.       | Typ.       | Max.      | Units |
|--------|-----------------------------------|---|------------|------------|-----------|-------|
| IDD    | Supply Current                    |   |            |            | 120       | mA    |
| F0     | Center Frequency                  |   |            | 322.265625 |           | MHz   |
|        | Frequency Stability               | Note 4  |            |            | ±50       | ppm   |
| ∅j     | Phase Noise                       | Integration Range (12kHz to 20MHz)<br>Integration Range (1.875MHz to 20MHz) |            | 137<br>85  |           | 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.

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## Features

- 322.265625MHz LVPECL
- Supports FEC line rate
- Typical phase noise:
  - 85fs (Integration range: 1.875MHz-20MHz)
- ±50ppm total frequency stability
- -40°C to +85°C temperature range
- Industry standard 6-Pin 7mm x 5mm LGA package

## Operating Ratings<sup>2</sup>

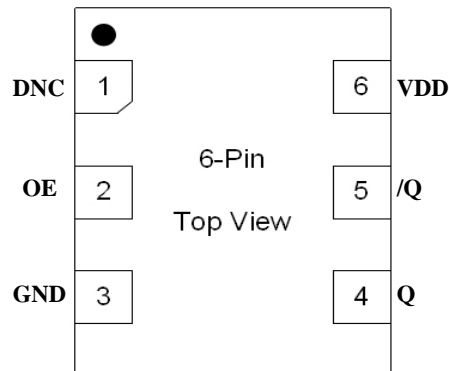
|                                       |                   |
|---------------------------------------|-------------------|
| Supply Voltage (VIN).....             | +2.375V to +3.63V |
| Ambient Temperature (TA).....         | -40°C to +85°C    |
| Junction Thermal Resistance           |                   |
| LGA (T <sub>JA</sub> ) Still Air..... | 53°C/W            |

## Ordering Information

| Ordering Part Number | Marking Line 1 | Marking Line 3 | Shipping      | Package             |
|----------------------|----------------|----------------|---------------|---------------------|
| MX574BNR322M265      | MX574BN        | R322M265       | Tube          | 6-Pin 7mm x 5mm LGA |
| MX574BNR322M265-TR   | MX574BN        | R322M265       | 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          | 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 (Internal) |
| 3          | GND      | PWR      |           | Power Supply Ground   |
| 4, 5       | Q, /Q    | O, Diff  | LVPECL    | Clock Output Frequency = 322.265625MHz  |
| 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 E                                  |
| Mechanical Vibration         | MIL-STD-883, Method 2007, Condition C                                  |
| 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 <sup>-8</sup> atm cc/s |
| Solvent Resistance           | MIL-STD-202, Method 215  |

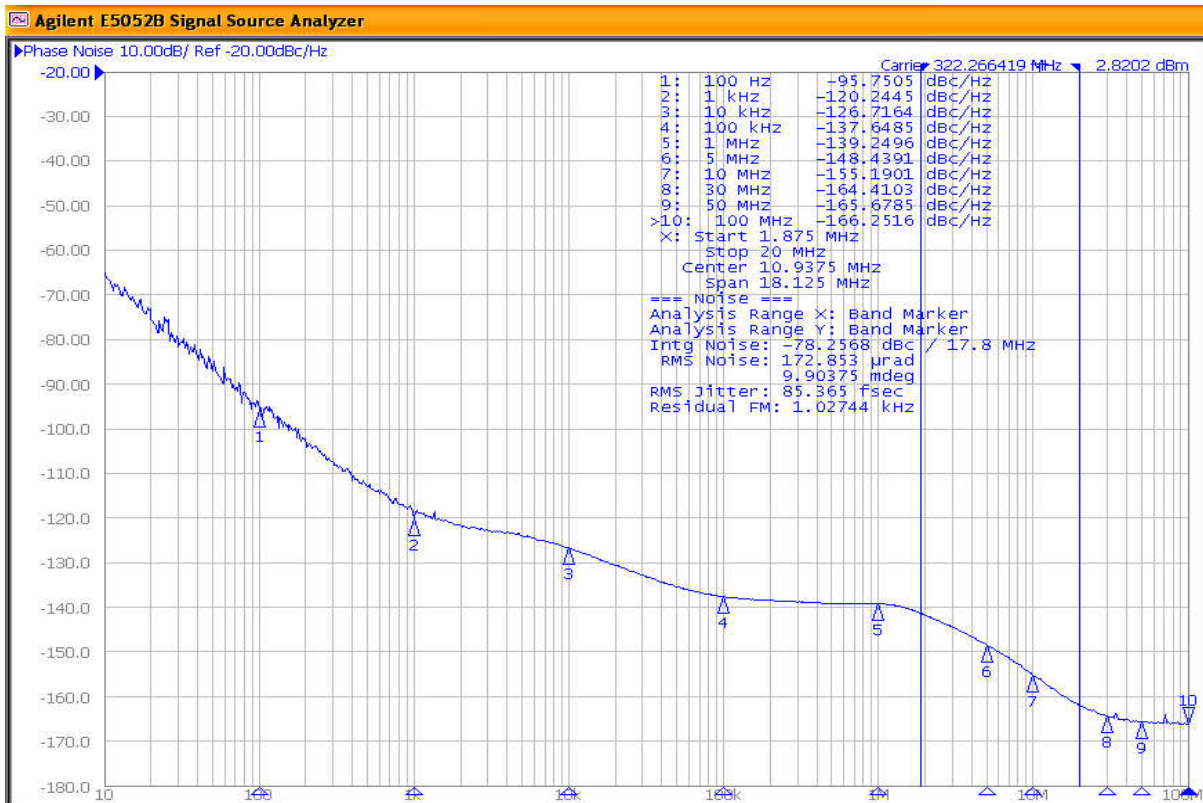


Figure 1. LVPECL Output 322.265625MHz 1.875MHz-20MHz 85fs

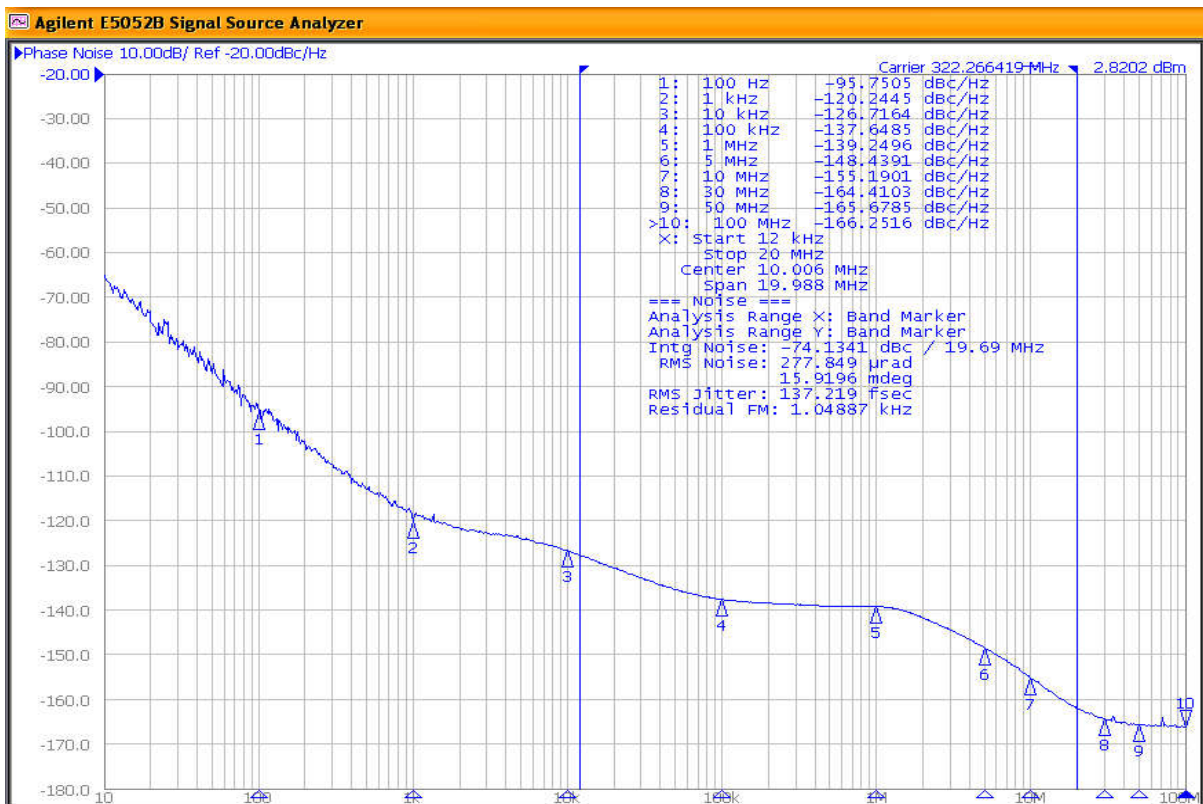
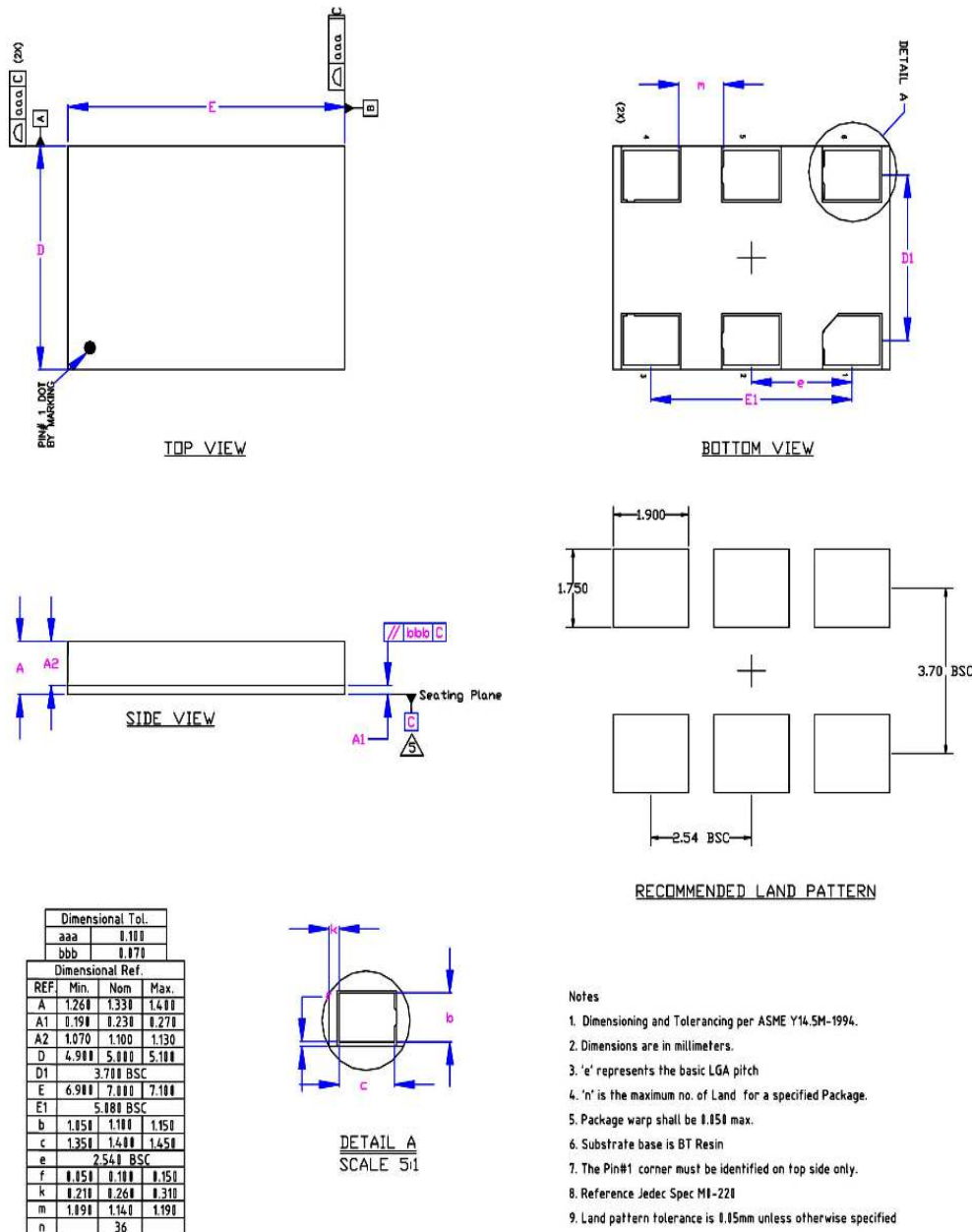


Figure 2. LVPECL Output 322.265625MHz 12kHz-20MHz 137fs

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



**6-Pin LGA (7x5mm)**

**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).

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