

ISSUE 1; April 2016

Description

- Low jitter high frequency differential MEMS oscillator with LVDS output in a plastic package. Factory programmable for a short lead time. Uses SiTime's MEMS First™ technology.
- APPLICATIONS:
 - 10GB Ethernet
 - SONET
 - SATA
 - SAS
 - Fibre Channel
 - PCI-Express
 - Telecom
 - Networking
 - Instrumentation
 - Storage
 - Servers
- This specification provides guidance on the performance of 3.3V devices in a 3.2 x 2.5mm package. An alternative supply voltage option is available at 2.5V. Other package size options are available as 5.0 x 3.2mm or 7.0 x 5.0mm.

Frequency Parameters

- Frequency: 220.0MHz to 625.0MHz
- Frequency Stability: $\pm 10.00\text{ppm}$ to $\pm 50.00\text{ppm}$
- Ageing (@ 25°C): $\pm 2\text{ppm}$ max in 1st year, $\pm 5\text{ppm}$ max over 10yrs
- Frequency Stability: Inclusive of frequency tolerance @ 25°C, operating temperature range, supply voltage variation and load variation.

Electrical Parameters

- Supply Voltage: 3.3V $\pm 10\%$
- Absolute Maximum Supply Voltage Rating: -0.5 to 4.0V
Note: Operating beyond these limits may result in change or permanent damage to the oscillator.
- Supply Current (excluding Load Termination Current): 47mA typ, 55mA max

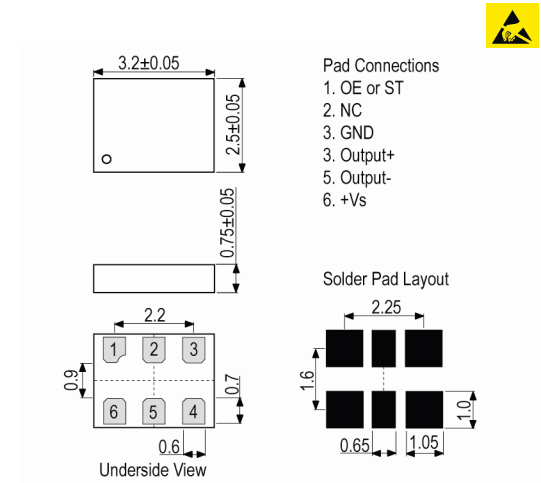
Operating Temperature Ranges

- 20 to 70°C
- 40 to 85°C

Output Details

- Output Compatibility: LVDS
- Drive Capability: 100Ω
- Differential Output Voltage Levels (Vod): 250mV min, 350mV typ, 450mV max
- Offset Voltage (Vos): 1.125V min, 1.2V typ, 1.375V max

Outline (mm)



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Output Control

- Enable/Disable Mode (OE):
Logic '1' (70%Vs min) or no connection to pad 1 enables the oscillator output.
Logic '0' (30%Vs max) to pad 1 disables the oscillator output, the output goes to a high impedance state.
OE Disable Supply Current (OE low): 35mA max
OE Disable Leakage Current (OE low): 1µA max
Output Enable/Disable Time (F=220MHz): 115ns max
(Note: For other frequencies time=100ns + 3 cycles.)
- Standby Mode (ST):
Logic '1' (70%Vs min) or no connection to pad 1 enables the oscillator output.
Logic '0' (30%Vs max) to pad 1 disables the oscillator output, the device goes to sleep mode.
ST Disable Supply Current (ST low): 100µA max
Resume Time (measured from the time pad 1 crosses 50% threshold): 10ms max
- Input Pull-Up Impedance:
Pad 1: OE logic '1' or logic '0', or ST logic '1': 250kΩ max
Pad 1: ST logic '0': 2MΩ min
- Start Up Time (measured from the time Vs reaches its rated minimum value): 10ms max

Noise Parameters

- Period Jitter:
F=266MHz: 1.7ps RMS max
F=312.5MHz: 1.7ps RMS max
F=622.08MHz: 1.7ps RMS max
- Phase Jitter (F=312.5MHz, 12kHz to 20MHz): 0.6ps RMS typ, 0.85ps RMS max

Environmental Parameters

- Storage Temperature Range: -65 to 150°C
- Electrostatic Discharge (HBM): 2000V max
- Mechanical Shock: MIL-STD-883F, Method 2002.
- Vibration: MIL-STD-883F, Method 2007.
- Thermal Cycling: JESD-22, Method A104.
- Solderability: MIL-STD-883F, Method 2003.

Manufacturing Details

- Maximum Process Temperature: 260°C
- Note: Connect a capacitor of 0.1µF min between Vs and GND.

Compliance

- | | |
|------------------------------|-----------|
| ■ RoHS Status (2011/65/EU) | Compliant |
| ■ REACh Status | Compliant |
| ■ MSL Rating (JDEC-STD-033): | 1 |

Packaging Details

- Pack Style: Reel Tape & reel in accordance with EIA-481-D
Pack Size: 1,000

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Electrical Specification - maximum limiting values 3.3V $\pm$ 10%

Frequency Min	Frequency Max	Temperature Range	Stability (Min)	Current	Rise and Fall Time (80/20%)	Duty Cycle
		°C	ppm	mA	ns	%
220.0MHz	625.0MHz	-20 to 70	$\pm$ 10.0	55	0.6	45/55%
		-40 to 85	$\pm$ 10.0	55	0.6	45/55%

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