

ISSUE 1; March 2016

Description

- Low jitter high performance differential MEMS oscillator with LVPECL 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. Other supply voltage options are 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 1.0MHz to 220.0MHz
- Frequency Stability ±10.00ppm to ±50.00ppm
- Ageing (@ 25°C) ±2ppm max in 1st year, ±5ppm 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 ±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): 61mA typ, 69mA max
- Maximum Output Current (maximum average current drawn from OUT+ or OUT-): 30mA max

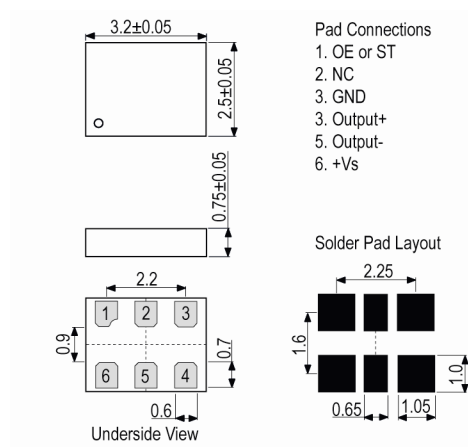
Operating Temperature Ranges

- -20 to 70°C
- -40 to 85°C

Output Details

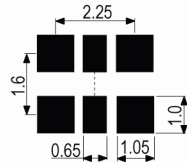
- Output Compatibility LVPECL
- Drive Capability 50Ω to Vs-2.0V
- Output Voltage Levels:
 - Output Low (VoL): Vs-1.9V to Vs-1.5V
 - Output High (VoH): Vs-1.1V to Vs-0.7V
- Output Differential Voltage Swing: 1.2V min, 1.6V typ, 2.0V max

Outline (mm)



- Pad Connections**
1. OE or ST
 2. NC
 3. GND
 3. Output+
 5. Output-
 6. +Vs

Solder Pad Layout



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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=212.5MHz): 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=100MHz: 1.7ps RMS max
F=156.25MHz: 1.7ps RMS max
F=212.5MHz: 1.7ps RMS max
- Phase Jitter (F=156.25MHz, 12kHz to 20MHz): 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	%
1.0MHz	220.0MHz	-20 to 70	\pm 10.0	69	0.7	45/55%
		-40 to 85	\pm 10.0	69	0.7	45/55%

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