

ISSUE 1; March 2016

Description

- High frequency, high performance and low jitter MEMS oscillator with CMOS output in a plastic package. Factory programmable for a short lead time. Uses SiTime's MEMS First™ technology.
- APPLICATIONS:
SATA
SAS
Ethernet
10-Gigabit Ethernet
SONET
PCI Express
Video
Wireless
Computing, Storage and Networking
Telecom
Industrial Control
- 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 1.8V, 2.5V, 2.8V or 3.0V. Other package size options are available as 2.5 x 2.0mm, 5.0 x 3.2mm or 7.0 x 5.0mm.
- Note: All electrical characteristics are specified with 15pF output load and at nominal supply voltage unless otherwise stated.

Frequency Parameters

- Frequency 80.000001MHz to 220.0MHz
- Frequency Stability ±10.00ppm to ±50.00ppm
- Ageing ±1.5ppm max 1st year, ±5ppm max over 10yrs, @ 25°C
- 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
- Supply Current (F=100MHz, @ Vs=3.3V and no load): 36mA max

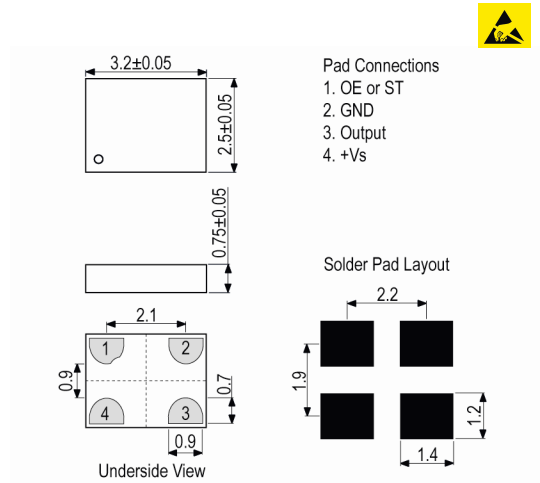
Operating Temperature Ranges

- -20 to 70°C
- -40 to 85°C

Output Details

- Output Compatibility CMOS
- Drive Capability 15pF
- Output Voltage Levels:
Output Low (VoL): 10%Vs max
Output High (VoH): 90%Vs min

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. Only the output driver is disabled. Supply current=31mA max. A pull-up resistor of 10kΩ max is recommended if pad 1 is not externally connected.
Output Enable/Disable Time (F=80MHz): 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 the oscillator output is low level (weak pull-down). Device goes to sleep mode. Supply current reduces to 70μA max. A pull-up resistor of 10kΩ max is recommended if pad 1 is not externally connected.
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=156.25MHz): 2ps RMS max
- Phase Jitter (F=156.25MHz, 12kHz to 20MHz): 1ps RMS max

Environmental Parameters

- Storage Temperature Range: -65 to 150°C
- Electrostatic Discharge: 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 (40secs max)
- 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 (NoLoad)	Rise and Fall Time (10/90%)	Duty Cycle
		°C	ppm	mA	ns	%
80.000001MHz	165.0MHz	-20 to 70	\pm 10.0	36	2	45/55%
		-40 to 85	\pm 10.0	36	2	45/55%
165.000001MHz	220.0MHz	-20 to 70	\pm 10.0	36	2	40/60%
		-40 to 85	\pm 10.0	36	2	40/60%

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