

ISSUE 1; March 2016

Description

- Low jitter and low current MEMS oscillator with CMOS output in a plastic package featuring a programmable drive strength feature to optimise specific clock applications. Factory programmable for a short lead time. Uses SiTime's MEMS First™ technology.
- APPLICATIONS:
 - Industrial & Commercial -
 - Digital cameras
 - Digital video recorders
 - IP cameras
 - Tablets
 - e-Books
 - Solid state devices
 - Optical networks
 - High-speed Serial Protocols -
 - USB
 - SATA
 - SAS
 - Firewire
 - 100M / 1G / 10G Ethernet
- 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 1.5V, 1.8V, 2.5V, 2.8V or 3.0V. Other package size options are available as 2.0 x 1.6mm, 2.5 x 2.0mm, 5.0 x 3.2mm or 7.0 x 5.0mm.
- Note: All Min and Max limits are specified over temperature and rated operating voltage with 15pF output load unless otherwise stated. Typical values are @ 25°C and nominal supply voltage.

Frequency Parameters

- Frequency 1.0MHz to 110.0MHz
- Frequency Stability ±20.00ppm to ±50.00ppm
- Frequency Stability: Inclusive of frequency tolerance @ 25°C, operating temperature range, supply voltage variation, load variation and 1st year ageing.

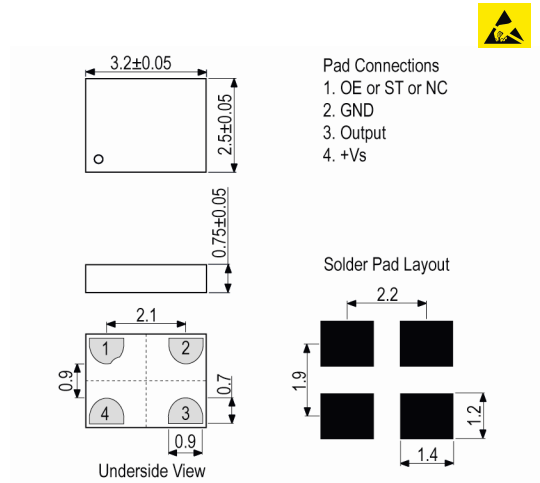
Electrical Parameters

- Supply Voltage 3.3V ±10%
- Absolute Maximum Supply Voltage Rating: -0.5 to 4.0V
- Supply Current (F=20MHz, @ Vs=3.3V and no load): 4.5mA max

Operating Temperature Ranges

- -20 to 70°C
- -40 to 85°C

Outline (mm)



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Output Details

- Output Compatibility CMOS
- Drive Capability 15pF
- Output Voltage Levels:
Output Low (VoL): 10%Vs max
Output High (VoH): 90%Vs min
- Programmable Drive Strength: The IQMS-133 includes a programmable drive strength feature to provide a flexible tool to optimise the clock rise/fall time for specific applications.
- Slower rise and fall time provides reduced EMI. Fast rise and fall time gives reduced jitter. Please contact an IQD Sales Office to discuss options.

Output Control

- Enable/Disable Mode (OE):
Logic '1' (70%Vs min) 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=4.2mA max. A pull-up resistor of 10kΩ max is recommended if pad 1 is not externally connected.
Output Enable/Disable Time (F=110MHz): 130ns max
(Note: For other frequencies time=100ns + 3 cycles.)
- Standby Mode (ST):
Logic '1' (70%Vs min) 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 4.3μA 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): 5ms max
- No Connect Mode (NC):
No connection to pad 1 enables the oscillator output.
- Input Pull-Up Impedance:
Pad 1: OE logic '1' or logic '0', or ST logic '1': 150kΩ max
Pad 1: ST logic '0': 2MΩ min
- Start Up Time (measured from the time Vs reaches its rated minimum value): 5ms max

Noise Parameters

- Period Jitter (F=75MHz): 3ps RMS max
- Phase Jitter (F=75MHz, 12kHz to 20MHz): 2ps RMS max
- Peak to Peak Jitter (F=75MHz): 25ps max

Environmental Parameters

- Storage Temperature Range: -65 to 150°C
- Junction Temperature: 150°C max
- 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.

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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

Electrical Specification - maximum limiting values 3.3V ±10%

Frequency Min	Frequency Max	Temperature Range	Stability (Min)	Current (NoLoad)	Rise and Fall Time (80/20%)	Duty Cycle
		°C	ppm	mA	ns	%
1.0MHz	110.0MHz	-20 to 70	±20.0	4.5	2	45/55%
		-40 to 85	±20.0	4.5	2	45/55%

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