Ultra-Low Noise 5.0mm x 7.0mm SMD Oscillator

ISM41 Series

Product Features:

- Frequency Range, 20.000MHz to 50.000MHz
- Supply Voltages, 1.8Vdc, 2.5Vdc, or 3.3Vdc
- Tri-State Function on Pin 1
- Ultra-Low Phase Jitter and Phase Noise
- Industry-standard 5.0mm x 7.0mm package
- LVCMOS Output
- RoHS and REACH compliant

Applications:

- SD/HD Video
- Wireless Base Stations
- Sonet/SDH
- Digital Audio

Electrical Specifications:

Frequency Range	20.000MHz to 50.000MHz	
Frequency Stability	See Part Number Guide	Inclusive of all conditions: Calibration Tolerance at 25°C, Frequency Stability over the Operating Temperature Range, Supply Voltage Change and Output Load Change
Operating Temperature Range	See Part Number Guide	
Aging at 25°C	±3ppm Maximum First Year	
Supply Voltage	See Part Number Guide	Tolerance ±10%
Input Current	No Load 3mA Typical, 5mA Maximum 4.7mA Typical, 7mA Maximum 7mA Typical, 10mA Maximum	 Vdd = 1.8Vdc Vdd = 2.5Vdc Vdd = 3.3Vdc
Output Voltage Logic High (Voh)	90% of Vdd Minimum	IOH = -4mA
Output Voltage Logic Low (Vol)	10% of Vdd Maximum	IOL = +4mA
Rise Time/Fall Time	Measured at 10% to 90% of waveform 5nSec Typical, 10nSec Maximum 2nSec Typical, 7nSec Maximum 1.5nSec Typical, 5nSec Maximum	 Vdd = 1.8Vdc Vdd = 2.5Vdc Vdd = 3.3Vdc
Duty Cycle	50 ±5(%)	Measured at 50% of waveform
Load Drive Capability	15pF Maximum	
Output Logic Type	LVCMOS	
Pin 1 Connection	Tri-State (High Impedance)	
Tri-State Input Voltage (Vih and Vil)	70% of Vdd Minimum or No Connect to Enable Output 30% of Vdd Maximum to Disable Output (High Impedance)	
Standby Current	20µA Maximum	Disabled Output: High Impedance
Tri-State Output Disable Time	200nSec Maximum	
RMS Phase Jitter (Random)	Fj = 49.152MHz, Fj = 12kHz to 20MHz 118fSec Typical 100fSec Typical 48fSec Typical	 Vdd = 1.8Vdc Vdd = 2.5Vdc Vdd = 3.3Vdc
Start Up Time	5mSec Maximum	
Phase Noise	See Table 1 and Table 2 (on Page 3)	
Storage Temperature Range	-55°C to +150°C	
Notes:		

Absolute Maximum Limits	
Storage Temperature	-55ºC to +150ºC
Supply Voltage (Vdd)	-0.5 VDC to 4.0 VDC
Electrostatic Discharge	2000 V max
Solder Temperature (follow standard Pb free soldering guidelines)	260ºC max
Junction Temperature	150ºC max

Ordering Information:

Part Number Guide				
Package	**Operating Temperature Range**	**Frequency Stability**	**Supply Voltage**	**Frequency**
ISM41-	1 = 0ºC to +70ºC 6 = -10ºC to +70ºC 3 = -20ºC to +70ºC 2 = -40ºC to +85ºC	A = ±25ppm B = ±50ppm C = ±100ppm	1 = 1.8Vdc 6 = 2.5Vdc 3 = 3.3Vdc	- Frequency

Sample Part Number: **ISM41-6A3-49.152000 MHz**

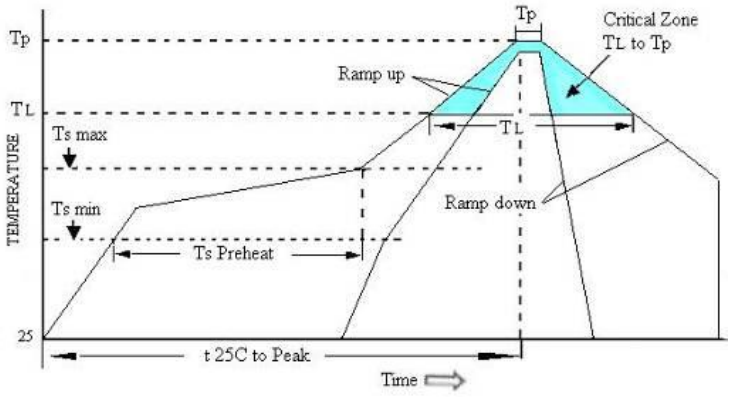
This is 5mm x 7mm SMD Oscillator with an Operating Temperature Range of -10ºC to +70ºC with a Frequency Stability of ±25ppm. Supply Voltage of +3.3Vdc and with an Operating Frequency of 49.152000 MHz.

Notes:
- Not all options are available at all frequencies and temperatures ranges.
- Please consult with sales department for any other parameters or options.
- Oscillator specification subject to change without notice.

Environmental Specifications:

Environmental Compliance	
Parameter	**Condition/Test Method**
ESD Susceptibility	MIL-STD-883, Method 3015, Class 1, HBM: 1500V
Flammability	MIL-STD-883, Method 1014, Condition A
Gross Leak Test	UL94-V0
Mechanical Shock	MIL-STD-883, Method 2002, Condition B
Moisture Resistance	MIL-STD-883, Method 1004
Moisture Sensitivity	J-STD-020, MSL 1
Resistance to Soldering Heat	MIL-STD-202, Method 210, Condition K
Resistance to Solvents	MIL-STD-202, Method 215
Solderability	MIL-STD-883, Method 2003
Temperature Cycling	MIL-STD-883, Method 1010, Condition B
Vibration	MIL-STD-883, Method 2007, Condition A

Pb Free Solder Reflow Profile



Ts max to T_L (Ramp-up Rate)	3ºC / second max
Preheat Temperature min (Ts min) Temperature typ (Ts typ) Temperature max (Ts max) Time (Ts)	 150ºC 175ºC 200ºC 60 to180 seconds
Ramp-up Tate (T_L to Tp	3ºC / second max
Time Maintained Above Temperature (T_L) Time (T_L)	 217ºC 60 to 150 seconds
Peak Temperature (Tp)	260ºC max for seconds
Time within 5ºC to Peak Temperature (Tp)	 20 to 40 seconds
Ramp-down Rate	6ºC / second max
Tune 25ºC to Peak Temperature	8 minute max
Moisture Sensitivity Level (MSL)	Level 1

Units are backward compatible with +240ºC reflow processes

Typical Phase Noise, Vdd = 3.3Vdc, 25°C

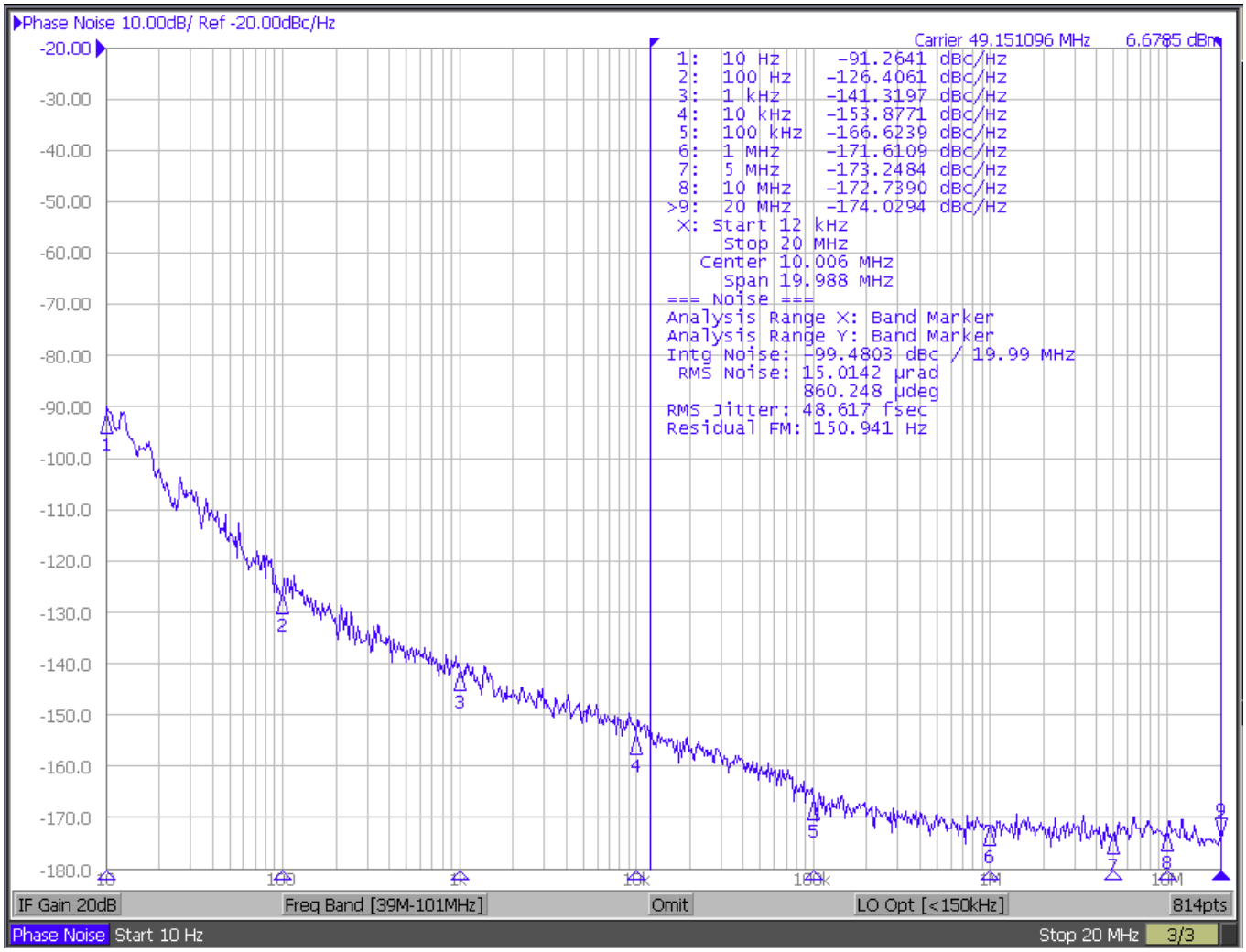


TABLE 1

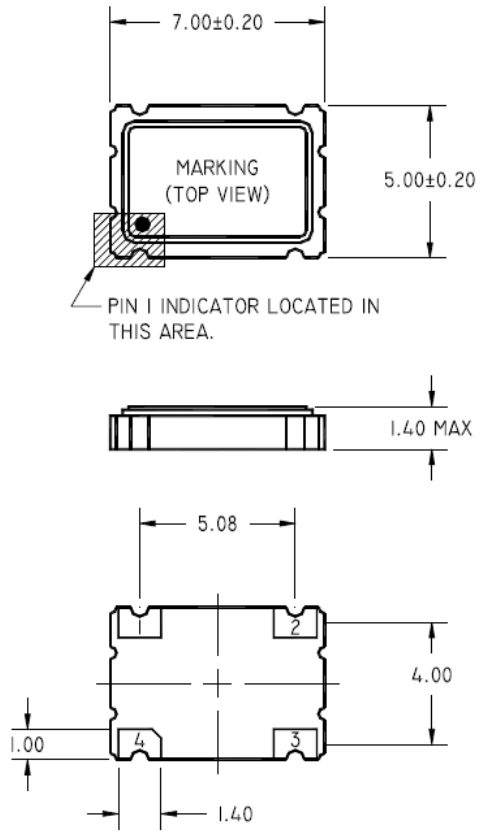
49.152MHz at 3.3Vdc	
Offset	**Phase Noise (Typical)**
10 Hz	-91 dBc/Hz
100 Hz	-126 dBc/Hz
1.0 kHz	-141 dBc/Hz
10 kHz	-153 dBc/Hz
100 kHz	-166 dBc/Hz
1.0 MHz	-171 dBc/Hz
10 MHz	-172 dBc/Hz
20 MHz	-174 dBc/Hz

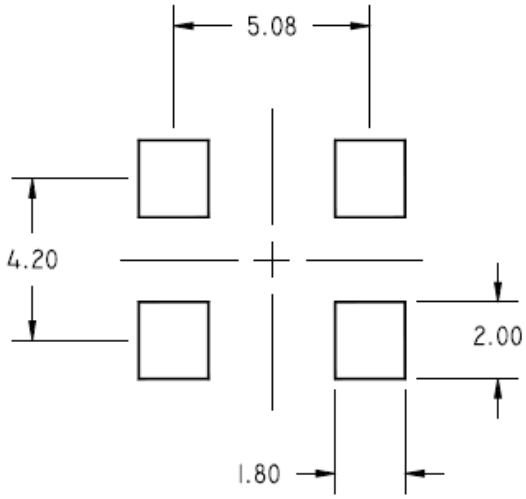
TABLE 2

49.152MHz at 1.8Vdc	
Offset	**Phase Noise (Typical)**
10 Hz	-97 dBc/Hz
100 Hz	-126 dBc/Hz
1.0 kHz	-132 dBc/Hz
10 kHz	-146 dBc/Hz
100 kHz	-159 dBc/Hz
1.0 MHz	-164 dBc/Hz
10 MHz	-164 dBc/Hz
20 MHz	-165 dBc/Hz

Mechanical Detail

Package Dimensions and Suggest Land Pattern





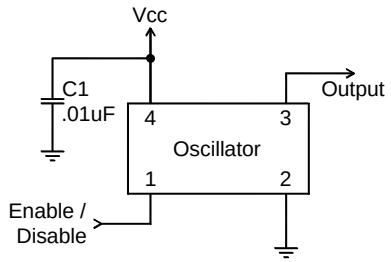
All dimension in millimeters (mm).

Pin Connections
Pin 1: Enable / Disable
Pin 2: Ground
Pin 3: Output
Pin 4: Supply Voltage (Vcc)

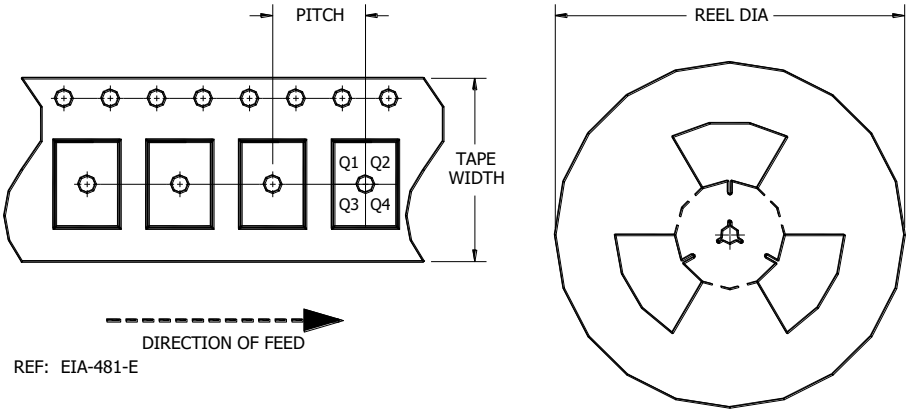
Marking
Line 1 = I-Date Code (YWW)
Line 2 = Frequency

Package Information
Termination = e4
Au over Ni over W base Metallization

Typical Application



Tape and Reel Dimensions



Part Number	Size	Pitch	Tape Width	Pin Orient.	Reel Dia.	Count
ISM41	5.0 x 7.0	8.0 ± 0.1	16.3 MAX	Q1	180	1000
					330	3000

Notes:
- All dimensions are in millimeters (mm).