

■ Features

- The world's lowest power programmable oscillator with 3.0 mA typical active current
- 1-110 MHz frequency range. Contact SiTime for frequencies between 80 MHz - 110 MHz
- Extremely fast start-up time of 3 ms
- <30 ps cycle-cycle jitter
- High frequency stability of ± 50 PPM, ± 100 PPM (when spread is off)
- Center spread options: $\pm 0.75\%$, $\pm 0.5\%$, $\pm 0.25\%$
- Down spread options: -1.5% , -1% , -0.5%
- Up to 12 dB typical EMI reduction
- Outstanding mechanical robustness for portable applications
- Programmable standby, output enable, or spread off mode
- Available in four industry standard packages: 2.5 x 2.0, 3.2 x 2.5, 5.0 x 3.2, 7.0 x 5.0 mm
- All-silicon device with outstanding reliability of 2 FIT (10x improvement over quartz-based devices), enhancing system mean-time-to-failure (MTBF)
- Ultra short lead time
- Ideal for printers, flat panel drivers, PCI, USB, and microprocessors

■ Specifications

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
Output Frequency Range	f	1	–	110	MHz	Contact SiTime for frequencies between 80 MHz - 110 MHz
Frequency Tolerance	F_tol	-50	–	+50	PPM	Applicable only spread feature is off. Inclusive of: Initial tolerance, operating temperature, rated power, supply voltage change, load change, aging (1st yr@ 1 ppm), shock and vibration.
		-100	–	+100	PPM	
Aging	Ag	–	–	1.0	PPM	1st year at 25°C
Storage Temperature Range		-55	–	+125	°C	
Operating Temperature Range	T_use	-20	–	+70	°C	Extended Commercial
		-40	–	+85	°C	Industrial
Supply Voltage	Vdd	1.71	1.8	1.89	V	
		2.25	2.5	2.75	V	
		2.52	2.8	3.08	V	
		2.97	3.3	3.63	V	
Current Consumption	Idd		3.0	3.5	mA	No load condition, f = 20 MHz, Vdd = 1.8 V
			3.5	4	mA	No load condition, f = 20 MHz, Vdd = 2.5 V, 2.8 V or 3.3 V
Standby Current	I_std	–	3	10	μA	Output is Weakly Pulled Down, \overline{ST} = GND, Vdd = 1.8 V
		–	7	10	μA	Output is Weakly Pulled Down, \overline{ST} = GND, Vdd = 2.5 V, 2.8 V or 3.3 V
Duty Cycle	SYM	45	–	55	%	All Vdds. f \leq 70 MHz
		40	–	60	%	All Vdds. f >70 MHz
Rise/Fall Time	Tr, Tf	–	1.0	2	ns	10% - 90% Vdd level
Output Voltage High	VOH	90	–	–	%Vdd	IOH = -4 mA (Vdd = 3.3 V) IOH = -3 mA (Vdd = 2.8 V and Vdd = 2.5 V) IOH = -2 mA (Vdd = 1.8 V)
Output Voltage Low	VOL	–	–	10	%Vdd	IOL = 4 mA (Vdd = 3.3 V) IOL = 3 mA (Vdd = 2.8 V and Vdd = 2.5 V) IOL = 2 mA (Vdd = 1.8 V)
Input Voltage High	VIH	70	–	–	%Vdd	Pin 1, OE or \overline{ST} or SD
Input Voltage Low	VIL	–	–	30	%Vdd	Pin 1, OE or \overline{ST} or SD
Input Current	I_in	–	–	10	μA	
Output Load	Ld	–	–	15	pF	Maximum frequency and supply voltage. Contact SiTime for higher output load strength option
Start-up Time	T_osc	–	–	3	ms	Measured from the time Vdd reaches its rated minimum value
Cycle-cycle Jitter	T_cyc	–	–	26	ps	f = 50 MHz, Spread = ON
		–	–	26	ps	f = 50 MHz, Spread = OFF

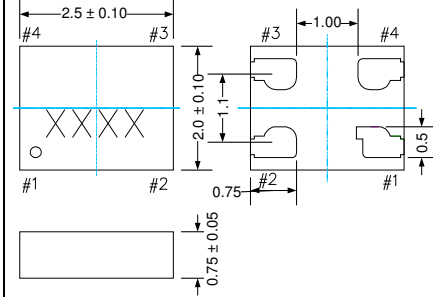
Spread Spectrum Modes

Center Spread	Code	F	D	B
	Percentage	$\pm 0.75\%$	$\pm 0.5\%$	$\pm 0.25\%$
Down Spread	Code	S	Q	O
	Percentage	-1.5%	-1.0%	-0.5%

Dimensions, Pin Description and Land Pattern

Dimensions (Unit: mm)^[1]

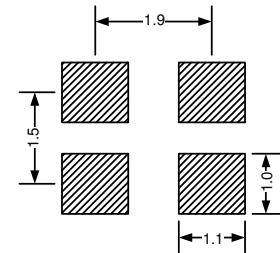
2.5 x 2.0 x 0.75 mm



Pin #1 Functionality	
OE	
H or Open; specified frequency output	
L: output is high impedance	
ST	
H or Open; specified frequency output	
L: output is low level (weak pull down)	
SD (Down Spread Mode Only)	
H or Open; Spread Spectrum = ON	
L: Spread Spectrum = OFF	

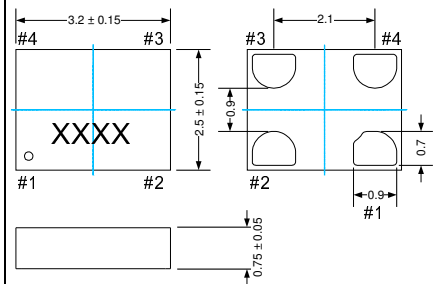
Pin Map	
Pin	Connection
1	OE/ST/SD
2	GND
3	CLK
4	Vdd

Recommended Land Pattern (Unit: mm)^[2]



Dimensions (Unit: mm)^[1]

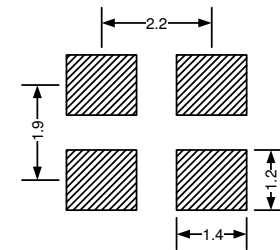
3.2 x 2.5 x 0.75 mm



Pin #1 Functionality	
OE	
H or Open; specified frequency output	
L: output is high impedance	
ST	
H or Open; specified frequency output	
L: output is low level (weak pull down)	
SD (Down Spread Mode Only)	
H or Open; Spread Spectrum = ON	
L: Spread Spectrum = OFF	

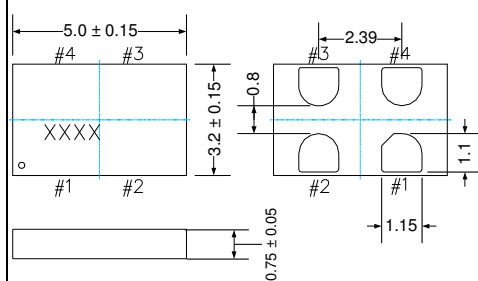
Pin Map	
Pin	Connection
1	OE/ST/SD
2	GND
3	CLK
4	Vdd

Recommended Land Pattern (Unit: mm)^[2]



Dimensions (Unit: mm)^[1]

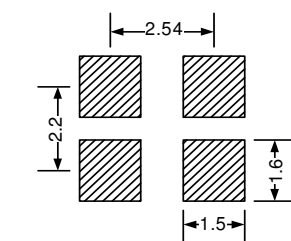
5.0 x 3.2 x 0.75 mm



Pin #1 Functionality	
OE	
H or Open; specified frequency output	
L: output is high impedance	
ST	
H or Open; specified frequency output	
L: output is low level (weak pull down)	
SD (Down Spread Mode Only)	
H or Open; Spread Spectrum = ON	
L: Spread Spectrum = OFF	

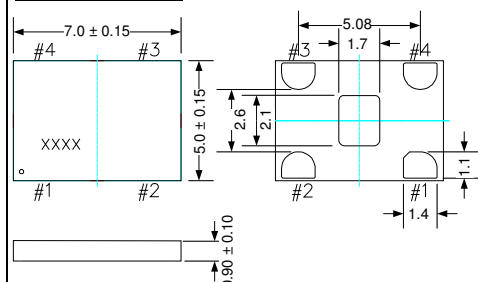
Pin Map	
Pin	Connection
1	OE/ST/SD
2	GND
3	CLK
4	Vdd

Recommended Land Pattern (Unit: mm)^[2]



Dimensions (Unit: mm)^[1]

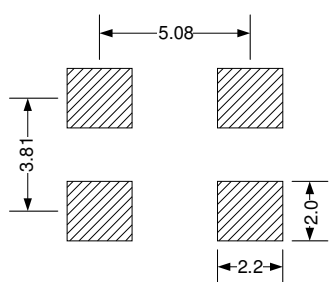
7.0 x 5.0 x 0.90 mm



Pin #1 Functionality	
OE	
H or Open; specified frequency output	
L: output is high impedance	
ST	
H or Open; specified frequency output	
L: output is low level (weak pull down)	
SD (Down Spread Mode Only)	
H or Open; Spread Spectrum = ON	
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Pin Map	
Pin	Connection
1	OE/ST/SD
2	GND
3	CLK
4	Vdd

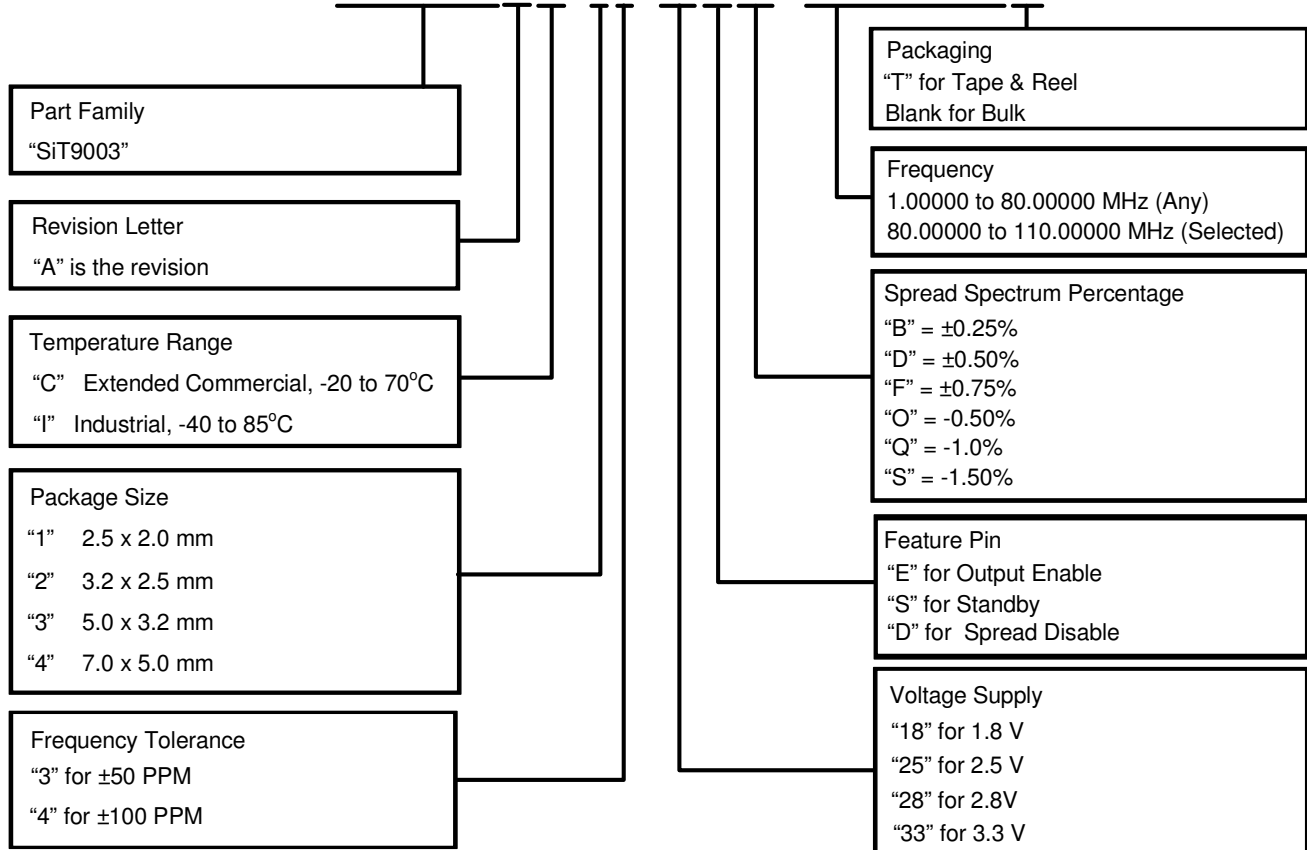
Recommended Land Pattern (Unit: mm)^[2]



Notes:

- XXXX top marking denotes manufacturing lot number.
- A capacitor of value 0.1μF between Vdd and GND is recommended.

SiT9003AC-14-18EA-100.12345T



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