

### Features

- World's lowest power programmable oscillator, <3.5 mA typical current consumption
- 1-80 MHz frequency range. Contact SiTime for frequencies between 80 MHz - 110 MHz
- Extremely fast start-up time (<3 ms), enabling power-cycling for lower system power
- 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
- Programmable standby or output enable modes
- <10  $\mu$ A current consumption in standby mode
- All-silicon device with outstanding reliability of 2 FIT, 10x improvement over quartz-based devices, enhancing system MTBF
- Outstanding mechanical robustness for portable applications
- Ultra short lead time
- Ideal for portable applications :portable media players, digital cameras, digital camcorders, portable navigation device, handheld gaming, cell phone and other handheld applications.
- Ideal for high-speed serial protocols such as: USB 1.1, USB 2.0, SATA, SAS, Fiber Channel, Firewire, Ethernet, PCI Express, etc

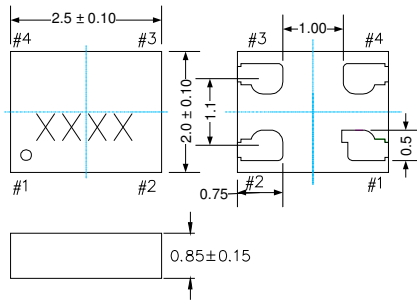


### Specifications

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
Output Frequency Range	f	1	-	80	MHz	Contact SiTime for frequencies between 80 MHz - 110 MHz
Frequency Tolerance	F <sub>tol</sub>	-25	-	+25	PPM	Inclusive of: Initial tolerance, operating temperature, rated power, supply voltage change, load change, aging (1st yr@25°C), shock and vibration.
		-30	-	+30	PPM	
		-50	-	+50	PPM	
		-100	-	+100	PPM	
Aging	Ag	-	-	1.0	PPM	1st year at 25°C
Storage Temperature Range		-55	-	+125	°C	
Operating Temperature Range	T <sub>use</sub>	-20	-	+70	°C	Extended Commercial
		-40	-	+85	°C	Industrial
Supply Voltage	V <sub>dd</sub>	1.62	1.8	1.98	V	
		2.25	2.5	2.75	V	
		2.52	2.8	3.08	V	
		2.97	3.3	3.63	V	
Current Consumption	I <sub>dd</sub>		3.0	3.5	mA	No load condition, f = 20 MHz, V <sub>dd</sub> = 1.8 V
			3.5	4.0	mA	No load condition, f = 20 MHz, V <sub>dd</sub> = 2.5 V, 2.8 V or 3.3 V
Standby Current	I <sub>std</sub>	-	3	10	$\mu$ A	Output is Weakly Pulled Down, $\overline{ST}$ = GND, V <sub>dd</sub> = 1.8 V
		-	7	10	$\mu$ A	Output is Weakly Pulled Down, $\overline{ST}$ = GND, V <sub>dd</sub> = 2.5 V, 2.8V or 3.3 V
Duty Cycle	DC	45	-	55	%	All V <sub>dds</sub> . f $\leq$ 70 MHz
		40	-	60	%	All V <sub>dds</sub> . f > 70 MHz
Rise/Fall Time	T <sub>r</sub> , T <sub>f</sub>	-	1	2	ns	20% - 80% V <sub>dd</sub> level, 15pf load
Output Voltage High	VOH	90	-	-	%V <sub>dd</sub>	I <sub>OH</sub> = -4 mA (V <sub>dd</sub> = 3.3 V) I <sub>OH</sub> = -3 mA (V <sub>dd</sub> = 2.8 V and V <sub>dd</sub> = 2.5 V) I <sub>OH</sub> = -2 mA (V <sub>dd</sub> = 1.8 V)
Output Voltage Low	VOL	-	-	10	%V <sub>dd</sub>	I <sub>OL</sub> = 4 mA (V <sub>dd</sub> = 3.3 V) I <sub>OL</sub> = 3 mA (V <sub>dd</sub> = 2.8 V and V <sub>dd</sub> = 2.5 V) I <sub>OL</sub> = 2 mA (V <sub>dd</sub> = 1.8 V)
Output Load	L <sub>d</sub>	-	-	15	pF	Maximum frequency and supply voltage. Contact SiTime for higher load
Input Voltage High	VIH	70	-	-	%V <sub>dd</sub>	Pin 1, OE or $\overline{ST}$
Input Voltage Low	VIL	-	-	30	%V <sub>dd</sub>	Pin 1, OE or $\overline{ST}$
Input Current	I <sub>in</sub>	-	-	10	$\mu$ A	
Start up Time	T <sub>osc</sub>	-	-	3	ms	Measured from the time V <sub>dd</sub> reaches its rated minimum value
RMS Period Jitter	T <sub>jitt</sub>	-	-	6	ps	f = 48 MHz, V <sub>dd</sub> = 1.8 V
		-	-	4	ps	f = 48 MHz, V <sub>dd</sub> = 2.5 V, 2.8 V or 3.3 V
RMS Phase Jitter (random)	T <sub>phj</sub>	-	1.60	-	ps	f = 62.5 MHz, Integration bandwidth = 1.875 MHz to 20 MHz
		-	1.00	-	ps	f = 75 MHz, Integration bandwidth = 900 kHz to 7.5 MHz

■ Dimensions, Pin Description and Land Pattern

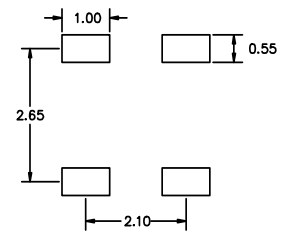
Dimensions (Unit: mm)<sup>[1]</sup>



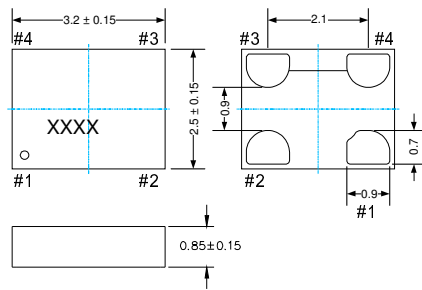
Pin #1 Functionality	
OE	
H or Open; specified frequency output	
L: output is high impedance	
ST	
H or Open; specified frequency output	
L: output is low level (weak pull down)	

Pin Map	
Pin	Connection
1	OE/ $\overline{\text{ST}}$
2	GND
3	CLK
4	VDD

Recommended Land Pattern (Unit: mm)<sup>[2]</sup>



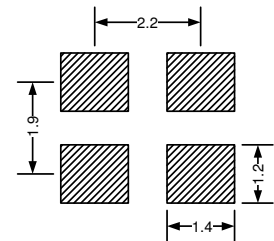
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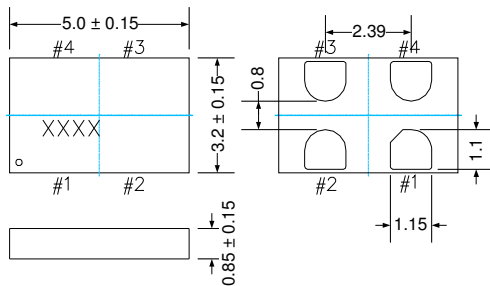
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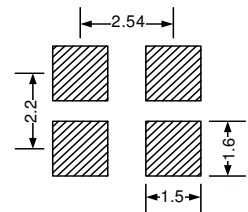
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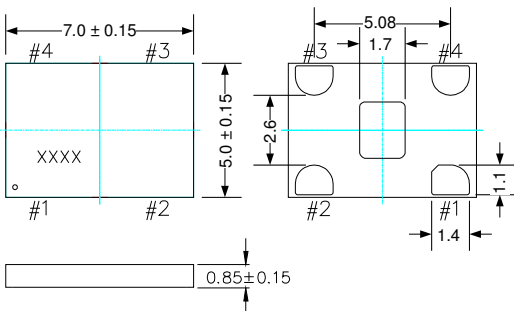
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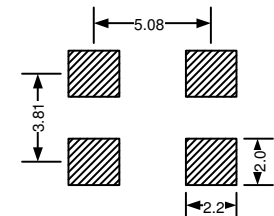
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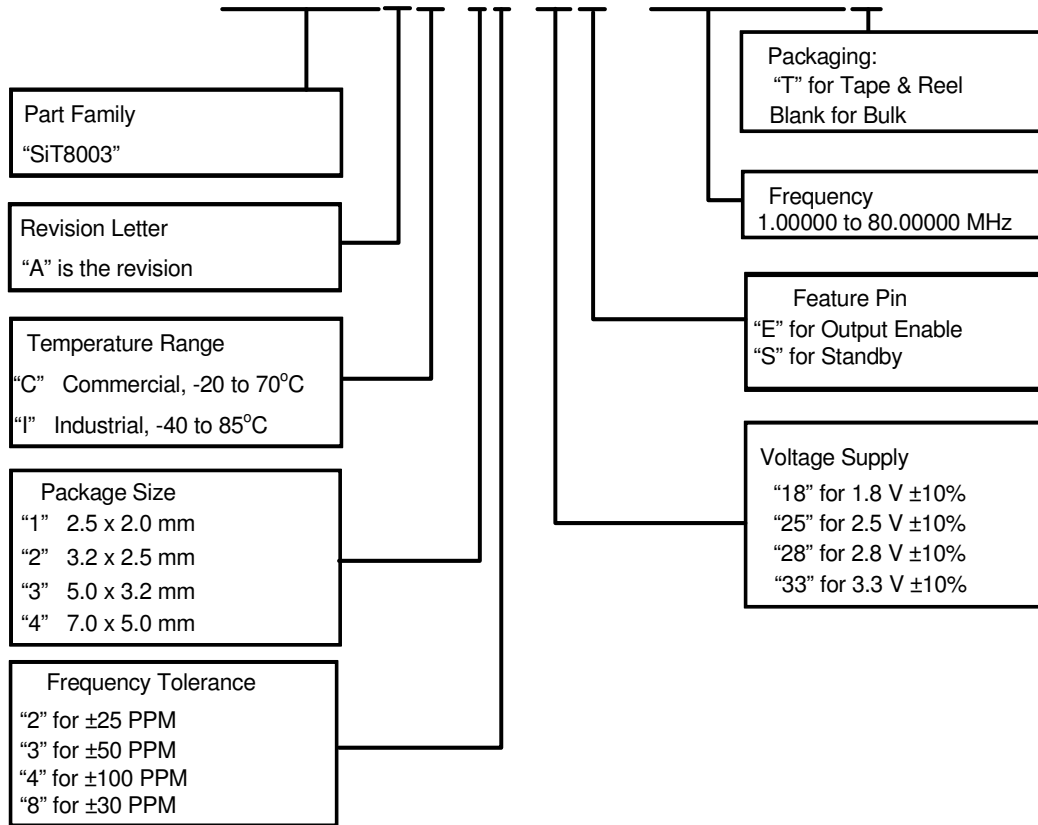
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Notes:

- XXXX top marking denotes manufacturing lot number.
- A capacitor of value 0.1  $\mu\text{F}$  between Vdd and GND is recommended.

# SiT8003AC-14-18E-123.12345T



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