SiT8003

Low Power Programmable Oscillator

SiTime™
It's About Time

Features

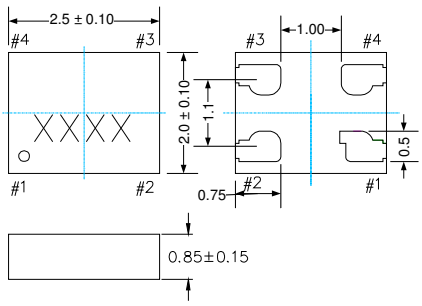
- World's lowest power programmable oscillator, <3.5 mA typical current consumption
- 1-80 MHz frequency range. Contact SiTime for frequencies between 80 MHz -110 MHz
- Extremely fast start-up time (<3 ms), enabling power-cycling for lower system power
- Available in four industry standard packages: 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 µA 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_tol	-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_use	-20	–	+70	°C	Extended Commercial
		-40	–	+85	°C	Industrial
Supply Voltage	Vdd	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	Idd		3.0	3.5	mA	No load condition, f = 20 MHz, Vdd = 1.8 V
			3.5	4.0	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, 2.8V or 3.3 V
Duty Cycle	DC	45	–	55	%	All Vdds. f <= 70 MHz
		40	–	60	%	All Vdds. f > 70 MHz
Rise/Fall Time	Tr, Tf	–	1	2	ns	20% - 80% Vdd level, 15pf load
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)
Output Load	Ld	–	–	15	pF	Maximum frequency and supply voltage. Contact SiTime for higher load
Input Voltage High	VIH	70	–	-	%Vdd	Pin 1, OE or $\overline{ST}$
Input Voltage Low	VIL	–	–	30	%Vdd	Pin 1, OE or $\overline{ST}$
Input Current	I_in	–	–	10	µA	
Start up Time	T_osc	–	–	3	ms	Measured from the time Vdd reaches its rated minimum value
RMS Period Jitter	T_jitt	–	–	6	ps	f = 48 MHz, Vdd = 1.8 V
		–	–	4	ps	f = 48 MHz, Vdd = 2.5 V, 2.8 V or 3.3 V
RMS Phase Jitter (random)	T_phj	-	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

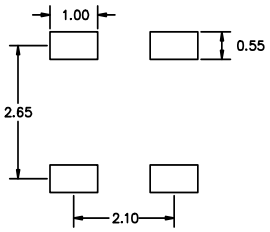
Dimensions (Unit: mm)[1]



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

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

Recommended Land Pattern (Unit: mm)[2]



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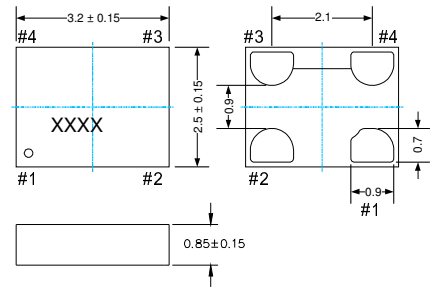

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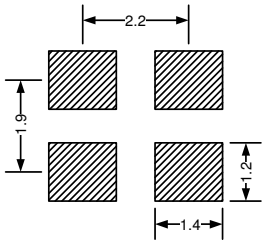

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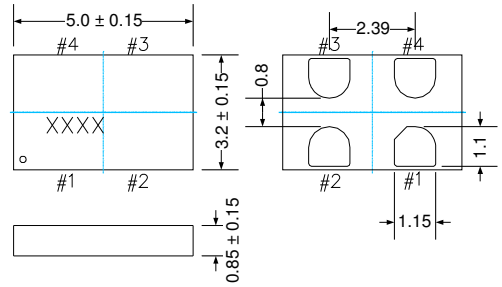

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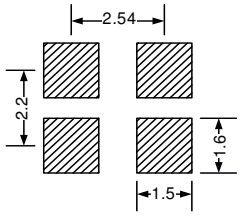

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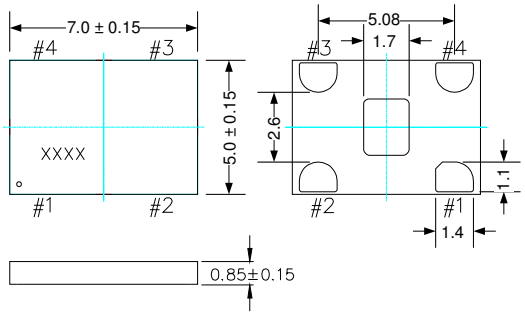

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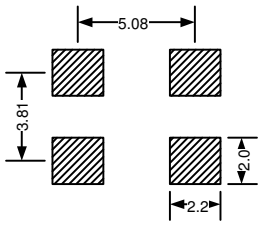
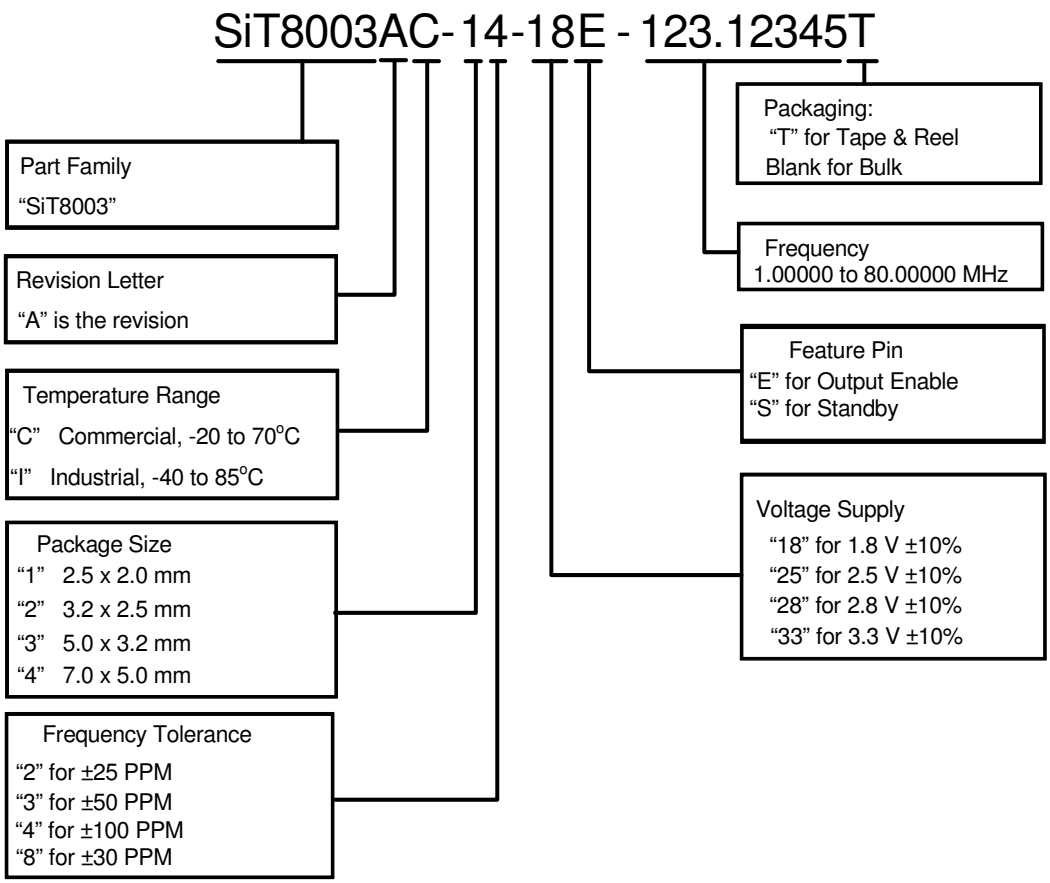


Notes:
1. XXXX top marking denotes manufacturing lot number.
2. A capacitor of value 0.1µF between Vdd and GND is recommended.

Part No. Guide- How to Order



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