SiT8003XT

Low Power Programmable Oscillator

0.25 mm Ultra Thin

SiTime™ It's About Time

Features

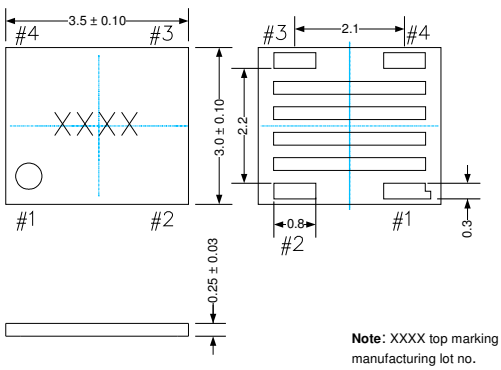
- World's thinnest, 0.25 mm (typical) height
- World's lowest power programmable oscillator, <3.5 mA typical current consumption
- 1-80 MHz frequency range. Contact SiTime for frequencies between 80 MHz - 110 MHz
- Extremely fast start-up time, <3 ms enabling power-cycling for lower system power
- Programmable 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, improves system MTBF
- Outstanding mechanical robustness for portable applications
- Ultra short lead time
- Ideal for portable applications: High Capacilty (HC) SIM cards, Smart cards, Near Field Communications (NFC), SD cards, multi-chip modules (MCM) and System-in-Package (SiP)

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	-100	–	+100	PPM	Inclusive of: Initial tolerance, operating temperature, rated power supply voltage change, load change, aging (1st yr@25 °C), shock and vibration.
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	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	DC	45	–	55	%	All Vdds. f < 70 MHz
		40	–	60	%	All Vdds. f > 70 MHz
Rise/Fall Time	Tr, Tf	–	1.0	2	ns	20% - 80% 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	IOH = 4 mA (Vdd = 3.3 V) IOH = 3 mA (Vdd = 2.8 V and Vdd = 2.5 V) IOH = 2 mA (Vdd = 1.8V)
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	
Output Load	Ld	–	–	15	pF	Maximum frequency and supply voltage. Contact SiTime for higher output load
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)

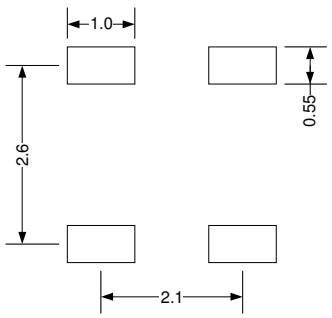


Note: XXXX top marking denotes manufacturing lot no.

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)



Note: A capacitor of value 0.1µF between Vdd and GND is recommended

Part No. Guide- How to Order

SiT8003AC-64-18E - 100.12345T

- Part Family: "SiT8003"
- Revision Letter: "A" is the revision
- Temperature Range: "C" Extended Commercial, -20 to 70°C; "I" Industrial, -40 to 85°C
- Package Size: "6" 3.5 x 3.0 mm
- Frequency Tolerance: "4" for ±100 PPM
- Packaging: "T" for Tape & Reel; Blank for Bulk
- Frequency: 1.00000 to 80.00000 MHz (Any); 80.00000 to 110.00000 MHz (Selected)
- Feature Pin: "E" for Output Enable; "S" for Standby
- Voltage Supply: "18" for 1.8 V ±5%; "25" for 2.5 V ±10%; "28" for 2.8 V ±10%; "33" for 3.3 V ±10%