

■ 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
- Selectable Output Frequency: F_0 or F_1 where $F_1 = F_0/2, F_0/3, F_0/4,$ or $F_0/8$
- 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
- 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 applications with common and related frequencies: 48/24/12 MHz for USB, 50/25 MHz for Ethernet, 24.576/12.288 MHz for audio, 54/27 MHz for video, 66/33/ MHz for CPU



■ 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	
Output Frequency	F ₀	2	-	80	MHz	The actual output frequency of the CLK pin is selected by the FS (frequency select pin) to be either F ₀ or F ₁ .
	F ₁	1	-	40	MHz	
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	V _{dd}	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 _{dd}		3.0	3.5	mA	No load condition, f = 20 MHz, V _{dd} = 1.8 V
			3.5	4	mA	No load condition, f = 20 MHz, V _{dd} = 2.5 V, 2.8 V or 3.3 V
Duty Cycle	SYM	45	-	55	%	All V _{dds} . f ≤ 70 MHz
		40	-	60	%	All V _{dds} . f > 70 MHz
Rise/Fall Time	T _r , T _f	-	1	2	ns	20% - 80% V _{dd} level, 15pF load
Output Voltage High	VOH	90	-	-	%V _{dd}	I _{OH} = -4 mA (V _{dd} = 3.3 V) I _{OH} = -3 mA (V _{dd} = 2.8 V and V _{dd} = 2.5 V) I _{OH} = -2 mA (V _{dd} = 1.8 V)
Output Voltage Low	VOL	-	-	10	%V _{dd}	I _{OL} = 4 mA (V _{dd} = 3.3 V) I _{OL} = 3 mA (V _{dd} = 2.8 V and V _{dd} = 2.5 V) I _{OL} = 2 mA (V _{dd} = 1.8 V)
Output Load	L _d	-	-	15	pF	Maximum frequency and supply voltage. Contact SiTime for higher load.
Input Voltage High	VIH	70	-	-	%V _{dd}	Output Frequency F ₀
Input Voltage Low	VIL	-	-	30	%V _{dd}	Output Frequency F ₁
Input Current	I _{in}	-	-	10	μA	
Start up Time	T _{osc}	-	-	3	ms	Measured from the time V _{dd} reaches its rated minimum value
RMS Period Jitter	T _{jitt}	-	-	6	ps	f = 48 MHz, V _{dd} = 1.8 V
		-	-	4	ps	f = 75 MHz, V _{dd} = 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^[2]

FS
H or Open: output frequency F_0
L: output frequency F_1

Pin Map

Pin	Connection
1	FS
2	GND
3	CLK
4	VDD

Recommended Land Pattern (Unit: mm)^[3]

Dimensions (Unit: mm)^[1]

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Pin #1 Functionality^[2]

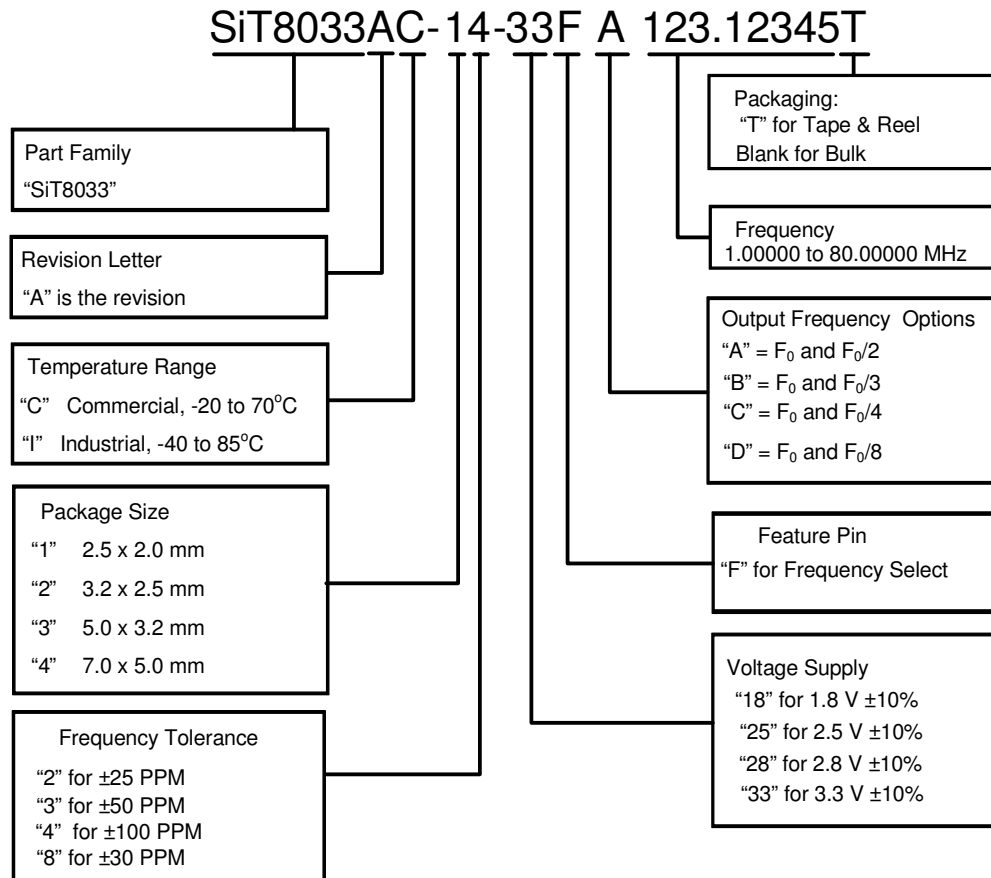
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Recommended Land Pattern (Unit: mm)^[3]

- Notes:**
- XXXX top marking denotes manufacturing lot number.
 - F_0 denotes the nominal output frequency whereas F_1 is the nominal frequency divided by factory programmed value of 2, 3, 4 or 8. The actual output frequency of the CLK pin is selected by the FS (frequency select pin) to be either F_0 or F_1 .
 - A capacitor of value $0.1\mu\text{F}$ between Vdd and GND is recommended.



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