

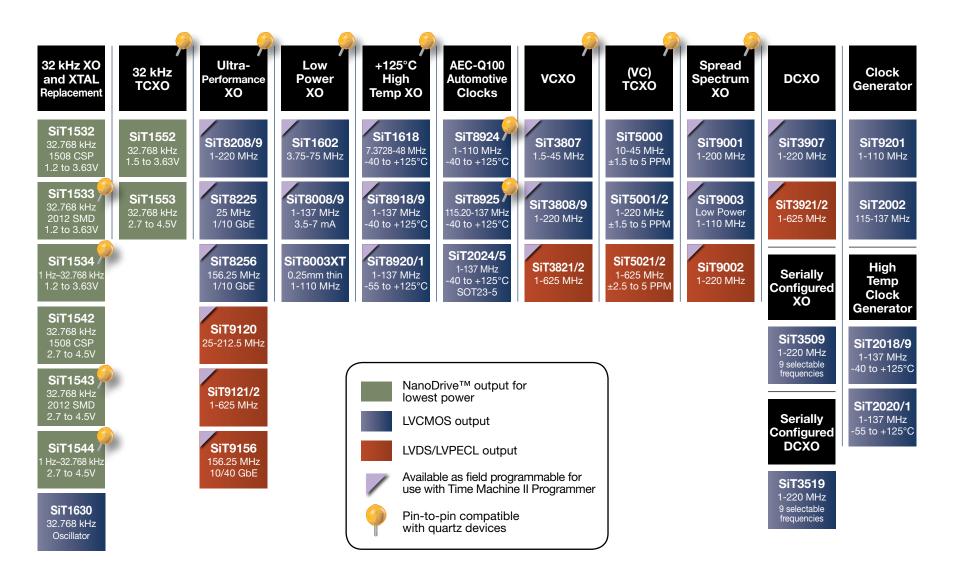
Silicon Timing Solutions

MEMS Oscillators and Clock Generators Product Selector



MEMS Oscillators and Clock Generators

Product Portfolio

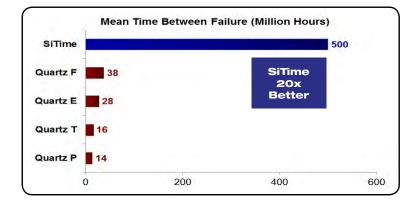


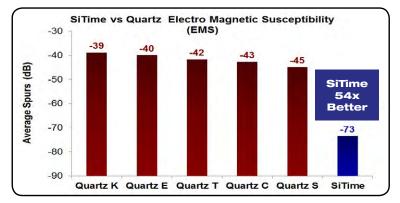


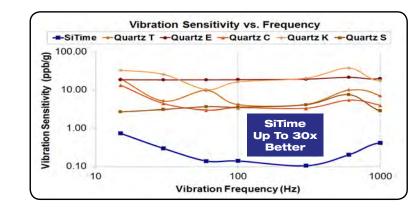


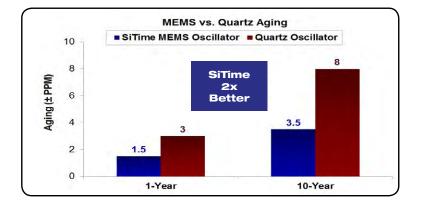
MEMS Oscillators Outperform Quartz

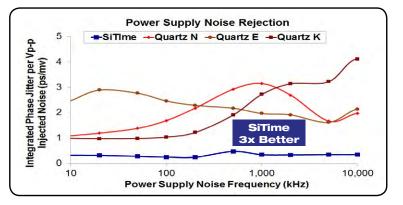
Learn about the resilience and reliability of SiTime oscillators at www.sitime.com/support/application-notes.

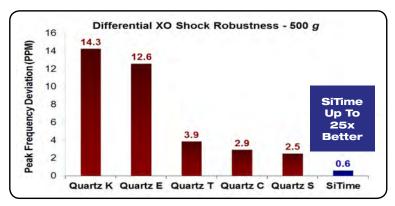
















Target			Output	Frequency Stability (PPM)	Output Logic	Supply Current (mA Typ)	Packages (mm x mm)	Additional Features and Options				
Markets	Devices ^{1, 2}	Key Features	Frequency ³ (MHz)					Rise/Fall Time Control	Output Enable	Standby	Field Programmable ⁴	
			Low-Jitte	r Oscillato	ors - XO							
	SiT8208	 Low phase jitter: 0.6 psrms 	1 to 80	±10, ±20,	LVCMOS	29	2.5 x 2.0 3.2 x 2.5	\checkmark	\checkmark	\checkmark	 ✓ 	
Networking, Telecom, Server and Storage	SiT8209	Best frequency stability	80 to 220	±25, ±50	LVTTL	10 µA (Stby)	5.0 x 3.2 7.0 x 5.0	\checkmark	\checkmark	~	~	
	SiT8225	 Lowest phase jitter: 0.3 ps_{rms} 	25 to 25.0012 (std. freq.)	.1000	LVCMOS	29	2.5 x 2.0	~	\checkmark	~	~	
	SiT8256	 Best frequency stability Positive frequency shift 	156.25 to 156.261718 (std. freq.)	156.261718	LVTTL	10 µA (Stby)	3.2 x 2.5 5.0 x 3.2 7.0 x 5.0	~	~	~	✓	
		Diff	erential Low	v Jitter Os	cillators -	хо						
	SiT9120	Low phase jitter: 0.6 ps _{rms} Best frequency stability	25 to 212.5 (std. freq.)	±10, ±25, ±50			3.2 x 2.5	~	\checkmark	~	~	
Networking, Telecom, Server, Storage,	SiT9121	 Fixed frequency options 	1 to 220	±10, ±20,			5.0 x 3.2	\checkmark	\checkmark	\checkmark	✓	
	SiT9122	for lowest cost (SiT9120) Continuous voltage option 	220 to 625	±25, ±50	LVPECL, LVDS	55 to 69	7.0 x 5.0	\checkmark	\checkmark	~	~	
10G, Fibre Channel, GigE, PCle	SiT9156	 Lowest phase jitter: 0.3 ps_{rms} Best frequency stability For 1/10 GbE applications Positive frequency shift 	156.25 to 161.1328 (std. freq.)	±10, ±25, ±50			5.0 x 3.2 7.0 x 5.0	~	~	-	-	
			Low Powe	er Oscillat	ors - XO							
Portable, Handheld Consumer and Computing	SiT1602	 Low power Most cost effective XO Continuous voltage option Ultra small footprint 	3.57 to 77.76 (std. freq.)	±20, ±25, ±50	LVCMOS LVTTL	3.4 0.6 µА (Stby)	2.0 x 1.6	~	V	V	~	
Computing, Consumer,	SiT8008	 General purpose low power Continuous voltage option Ultra small footprint 	1 to 110	±20, ±25, ±50	LVCMOS LVTTL	3.4 0.6 µА (Stby)	2.5 x 2.0 3.2 x 2.5 5.0 x 3.2 7.0 x 5.0	~	~	~	~	
Consumer, Industrial	SiT8009	 High frequency low power Continuous voltage option 	115 to 137	±20, ±25, ±50	LVCMOS LVTTL	5.5 1 μΑ (Stby)		~	√	~	~	

		Spread-Spectrum Oscillators - SSXO												
	Spread Spectrum for General Computing, Memory, μC, Portable and Handheld	SiT9001	Op to ±0.25 to ±1.0% center spread and -0.5 to -2.0% down	1 to 200	±50, ±100	LVCMOS LVTTL	20 30 µA (Stby)	2.5 x 2.0 3.2 x 2.5 5.0 x 3.2 7.0 x 5.0	\checkmark					
SOX		SiT9003		1 to 110			3.7 1.2 μA (Stby)			·	·	v		
SS	Differential Spread-Spectrum Oscillators - SSXO													
	Computing, Servers with Low EMI	SiT9002	 ±0.25 to ±1.0% center spread and -0.5 to -4.0% down spread modulation 	1 to 220	±25, ±50	LVPECL, LVDS, HCSL, CML	48 to 75	5.0 x 3.2 7.0 x 5.0	\checkmark	\checkmark	\checkmark	\checkmark		



Oscillators

Note 1: Available in Ext. Commercial (-20 to +70°C) or Industrial (-40 to +85°C) temp range.

Note 2: Single-ended devices available with supply voltages of 1.8%, programmable from 2.5 to 3.3V. Differential devices available with programmable supply voltages from 2.5 to 3.3V. Note 3: All devices have programmable frequency with 6 decimals of accuracy unless noted as "std. freq." (standard frequencies).

Note 4: Field Programmable devices are available for use with the SiTime Time Machine II MEMS Oscillator Programmer.



	Target			Output	Frequency	Output	Supply	Packages	Addit	ional Fea	tures and	Options			
Ś	Markets	Devices ¹	Key Features	Frequency ² (MHz)	Stability (PPM)	Logic	Current (mA Typ)	(mm x mm)	Rise/Fall Time Control	Output Enable	Standby	Field Programmable ³			
Ito	High Temperature Oscillators - XO														
Oscillators	WEW	SiT1618	 High temperature (-40 to +125°C) 	7.3728 to 48 (std. freq.)	±20, ±25, ±30, ±50	LVCMOS LVTTL	3.6 1 μΑ (Stby)	2.0 x 1.6							
	Industrial, Medical, Automotive	SiT8918	Widest frequency range Ultra small footprint 0.1 PPB/G vibration sensitivity	1 to 110			3.6 1 μΑ (Stby)	2.5 x 2.0 3.2 x 2.5 5.0 x 3.2 7.0 x 5.0	✓	✓ 	~	\checkmark			
lem		SiT8919		115.20 to 137			5.4 1 μΑ (Stby)								
High-Temp	Extreme Temperature,	 High temperature (-55 to +125°C) Widest frequency range 	1 to 110	±20, ±25,	LVCMOS	3.6 1 µA (Stby)	2.0 x 1.6 2.5 x 2.0 3.2 x 2.5	√	/		✓				
త	Ruggedized Equipment	SiT8921	 Ultra small footprint 0.1 PPB/G vibration sensitivity 	±30, ±50 115.20 to 137	LVTTL	5.4 1 µA (Stby)	5.0 x 3.2 7.0 x 5.0	Ý	, v	×	Ŷ				
loti				Automotiv	e Oscillat	ors - XO									
Automotive	Automotive -	SiT8924	 AEC-Q100 Grade 1 (-40 to +125°C) Widest frequency range 	1 to 110	±20, ±25,	LVCMOS	3.6	2.0 x 1.6 2.5 x 2.0	✓						
		SiT8925	 0.1 PPB/G vibration sensitivity Rise/fall time control for EMI reduction 	115.20 to 137	±30, ±50	LVTTL	5.4	- 3.2 x 2.5 5.0 x 3.2 7.0 x 5.0	v v	V	-	-			

	Target			Output	Frequency	Number	Supply	Packages	Addit	ional Fea	tures and	Options
Ц	Markets	Devices ¹	Key Features	Frequency ² (MHz)	Stability (PPM)	of Output Channels	Current (mA Typ)	(mm x mm)	Rise/Fall Time Control	Output Enable	Standby	Field Programmable ³
Gen			Higl	h Tempera	ture Clock	Generato	rs					
Clock	Industrial,	SiT2018	Wide temp. range (-40 to +125°C) Best board level reliability 0.1 PPB/G vibration sensitivity Continuous voltage option	1 to 110	±20, ±25, ±30, ±50	1 LVCMOS	3.6 1 µA (Stby)	2.9 x 2.8		✓	_	
Temp (Medical and High Temp Applications	SiT2019		115.20 to 137			5.4 1 μΑ (Stby)	SOT23-5		ľ	Ť	-
High-T	Extreme Temperature,	SI12020	Best board level reliability 0.1 PPB/G vibration sensitivity	1 to 110	±20, ±25,	1 LVCMOS	3.6 1 µA (Stby)	2.9 x 2.8 SOT23-5		√	✓	
త	Ruggedized Equipment	SiT2021		115.20 to 137	±30, ±50		5.4 1 µA (Stby)		, v	v	Ť	-
otiv			4	Automotive	e Clock Ge	enerators						
Automotive	Automotive	SiT2024	 AEC-Q100 Grade 1 (-40 to +125°C) Best board level reliability 	1 to 110	±20, ±25,	1.1.100000	3.6	2.9 x 2.8				
A		SiT2025	0.1 PPB/G vibration sensitivity	115.20 to 137	±30, ±50	1 LVCMOS	5.4	SOT23-5		~	-	-



Note 1: Available with supply voltages of 1.8V, programmable from 2.5 to 3.3V. Note 2: All devices have programmable frequency with 6 decimals of accuracy unless noted as "std. freq." (standard frequencies). Note 3: Field Programmable devices are available for use with the SiTime Time Machine II MEMS Oscillator Programmer.



	Target			Output	Room Temp	Over Temp	Supply	Supply	Packages	Out	put		
	Markets	Devices ¹	Key Features	Frequency	Frequency (PPM)	Frequency (PPM)	Current (µA Typ)	Voltage (V)	(mm x mm)	NanoDrive (V)	LVCMOS (V)		
			1 Hz to 32	kHz Oscil	lators for)	(TAL Repla	acement						
	N. C.	SiT1532		32.768 kHz		±75 (Comm)			1.5 x 0.8 CSP				
	Mouse Devices	SiT1533	 World's smallest 32kHz XO 1.2mm² smallest footprint <1µA ultra-low power 	32.768 kHz				1.2 to 3.63	2.0 x 1.2 SMD	0.2 to 1.2			
		SiT1534	 2x better stability than quartz XTAL compatible interface	1 Hz to 32.768 kHz			0.9		1.5 x 0.8 CSP 2.0 x 1.2		√		
		ot SiT1542	 Factory programmable NanoDrive output for lowest power Low voltage SiT153x for unregulated 	32.768 kHz	±20	±100 (Ind)	0.0		1.5 x 0.8 CSP		v		
kHz		ot A SiT1543	power supplies and high voltage SiT154x for unregulated battery supplies	32.768 kHz	-			2.7 to 4.5	2.0 x 1.2 SMD				
32		O ^{1 NA} SiT1544		1 Hz to 32.768 kHz					1.5 x 0.8 CSP				
z to				32 kł	Iz Oscillat	ors							
1 Hz	Portable Electronics, Laptops, Tablets, Industrial and High- Reliability Applications, Portable Medical	SiT1630	 Smallest XO package 1.1 μA (typ) ultra-low power 	32.768 kHz	±20	±75 (Comm) ±100 (Ind)	1.1	1.5 to 3.63	2.0 x 1.2 SMD	-	~		
	32 kHz Temperature-Compensated Oscillators - TCXO												
	Smart Meters, Health- Wellness Monitors, Wellness Monitors,	 2.5 PPM max 10-year agingWorld's 1st 32 kHz TCXO in CSP	32.768 kHz		±3, ±5,	0.9	1.5 to 3.63	1.5 x 0.8 CSP 2.0 x 1.2 SMD		✓			
	Precision RTC Reference Clock, Low Power Connectivity	ock, Low Power • XTAL compatible interface	Factory programmable NanoDrive	52.700 KHZ		±10, ±20	0.9	2.7 to 4.5	SOT23-5 ²	0.2 to 1.2	v		
				Output	Frequency	Number	Supply		Addition	al Features and (Ontions		

	Target			Output	Frequency Stability (PPM)	Number of Output Channels	Supply Current (mA Typ)	Packages (mm x mm)	Additional Features and Options			
en	Markets	Devices ^{3,4}	Key Features	Frequency⁵ (MHz)					Rise/Fall Time Control	Output Enable	Standby	
ບ	Clock Generator											
Clock	Consumer, Networking Industrial	SiT9201	Most cost effective Integrated resonator, no need	1 to 110	±20,	1 LVCMOS	3.6	SOT23-5 2.9 x 2.8	~	V		
		SiT2002	for external XTAL/CLKIN • Low power	115 to 137	±25, ±50		5.4				Ý	



Note 1: Available in Ext. Commercial (-10 to +70°C) or Industrial (-40 to +85°C) temperature range. Note 2: Contact factory for SOT23-5 availability. Note 3: Available in Ext. Commercial (-20 to +70°C) or Industrial (-40 to +85°C) temperature range.

Note 3: Available in Ext. Commercial (-20 to +70°C) or Industrial (-40 to +85°C) temperature range. Note 4: Available with supply voltages of 1.8V, programmable from 2.5 to 3.3V.

Note 5: Clock generators have programmable frequency with 6 decimals of accuracy.



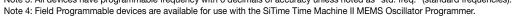
	Target			Output	Frequency		Supply	Packages	Addit	ional Fea	tures and	Options	
	Markets	Devices ^{1, 2}	Key Features	Frequency ³ (MHz)	Stability (PPM)	Output Logic	Current (mA Typ)	(mm x mm)	Rise/Fall Time Control	Output Enable	Standby	Field Programmable ⁴	
S			Temperatur	re-Comper	nsated Os	cillators - (VC)TCXO						
(VC)TCXO	Networking, Telecom, Server and Storage, Wireless, GPS,	SiT5000	 Fixed frequency for lowest price ±12.5 pull-range 	10 to 40 (std. freq.)	±1.5, ±2, ±2.5, ±5	LVCMOS	32	2.5 x 2.0 3.2 x 2.5	√	\checkmark	~		
/C)T	Satellite, ATE, Broadcast Video, Base Stations, Media Gateways, 3G/4G USB Cards	SiT5001 SiT5002	 Wide pull-range ±12.5 to ±50 PPM Low Phase Jitter: 0.6 ps_{rms} 	1 to 80 80 to 220	±1.5, ±2, ±2.5, ±5	LVTTL	10 µA (Stby)	5.0 x 3.2 7.0 x 5.0	Ŷ	v	¥	-	
2			Differential Temp	erature-Co	ompensate	ed Oscillat	ors - (VC)]	ГСХО					
	Networking, GPS, Telecom, Server, ATE, Satellite, Broadcast Video,	• Wide pull-range ±12.5 to ±50 PPM	1 to 220	±2.5, ±5	LVPECL LVDS	55 to 69	3.2 x 3.2 5.0 x 3.2	~	~	-	-		
	Wireless, Base Stations	SiT5022	Low Phase Jitter: 0.6 ps _{rms}	220 to 625		LVDS		7.0 x 5.0					
			Volta	ae-Contro	lled Oscill	ators - VC	XO						
(0	Networking, Telecom, Medical, ATE, Video, xDSL,	SiT3807	 Fixed frequency for lowest price Pull-range from ±50 to ±200 PPM 1% pull-range linearity 	1.544 to 49.152 (std. freq.)	±25, ±50	LVCMOS	32	2.5 x 2.0 3.2 x 2.5	✓	√	✓	√	
ğ	Embedded Systems	SiT3808	 Widest pull-range ±25 to ±1600 PPM 	1 to 80	±10, ±25,	LVTTL	10 µA (Stby)	5.0 x 3.2 7.0 x 5.0		·	·	·	
vcxos		SiT3809	 1% pull-range linearity 	80 to 220	±50								
^			Differentia	l Voltage-C	Controlled	Oscillators	s - VCXO						
	Networking, Telecom, Medical, ATE, Video, xDSL, Embedded Systems	SiT3821 SiT3822	 Best stability Widest pull-range ±25 to ±1600 PPM 1% pull-range linearity 	1 to 220 220 to 625	±10, ±25, ±50	LVPECL LVDS	55 to 69	5.0 x 3.2 7.0 x 5.0	~	\checkmark	-	\checkmark	
		0110022											
	Digitally-Controlled Oscillators - DCXO												
CXOs	Networking and Telecom	SiT3907	 Single-pin, serial programmable Widest pull-range ±25 to ±1600 PPM 0.1% pull-range linearity 	1 to 220	±10, ±25, ±50	LVCMOS LVTTL	32	3.2 x 2.5 5.0 x 3.2 7.0 x 5.0	~	\checkmark	-	-	
С ОС			Differential	Digitally-0	Controlled	Oscillator	s - DCXO						
	Networking and	SiT3921	 Single-pin, serial programmable Widest pull-range ±25 to ±1600 PPM 	1 to 220	±10, ±25, ±50	LVPECL LVDS	55 to 69	5.0 x 3.2 7.0 x 5.0	~	\checkmark	-	-	
	Telecom	SiT3922	0.1% pull-range linearity	220 to 625	100								
			Seria	llv-Config	ured Oscil	lators - SC	XO						
SCXOs	Kent Consumer	SiT3509	 9 user selectable output frequencies Serially programmable thru single pin 	1 to 220	±25, ±50	LVCMOS LVTTL	30	2.5 x 2.0 3.2 x 2.5 5.0 x 3.2 7.0 x 5.0	~	-	-	-	
ŷ			Serially-Configur	ed Digital	y-Control	ed Oscilla	tors - SCD	СХО					
0)	Kenn Consumer	SiT3519	 9 user selectable output frequencies Serially programmable thru single pin Digitally controlled pull range to ±1600 PPM 	1 to 220	±25, ±50	LVCMOS LVTTL	30	2.5 x 2.0 3.2 x 2.5 5.0 x 3.2 7.0 x 5.0	~	-	-	-	
	Note 1	· Available in Ext. (Commercial (-20 to +70°C) or Industrial (-40 to	+85°C) temperatu	re range.								



Note 1: Available in Ext. Commercial (-20 to +70°C) or Industrial (-40 to +85°C) temperature range.

Note 2: Single-ended devices available with supply voltages of 1.8V, programmable from 2.5 to 3.3V. Differential devices available with programmable supply voltages from 2.5 to 3.3V. Note 3: All devices have programmable frequency with 6 decimals of accuracy unless noted as "std. freq." (standard frequencies).

SiTime[®]





Silicon Timing Solutions

Field Programmable MEMS Oscillators and Time Machine II Programmer

Instant Oscillators

Complete easy-to-use programming kit for SiTime's field programmable oscillators

- Any Frequency
- Any Voltage
- Any Stability

Configure Devices to Your Exact Specification								
Customizable Frequency	1 to 625 MHz, 6 decimals of accuracy							
Frequency Stability	±20 to ±50 PPM							
Supply Voltage	1.8V, 2.5 to 3.3V							
Pull Range	± 25 to ± 1600 ppm in VCXO and DCXO							
Drive Strength Control	1 to 11 ns rise/fall time for low to high output drive							
Spread Spectrum	± 0.25 to $\pm 2.0\%$ center spread and -0.5 to -4.0% down spread							
Additional Options								
Packages	2016, 2520, 3225, 5032, 7050 plastic packages							
Temperature Range	-20 to +70°C, -40 to +85°C, -40 to +105°C, -40 to +125°C, or -55 to +125°C							
Output Signaling	Differential: LVPECL, LVDS or HCSL, Single-ended: LVCMOS							



Don't waste time searching and waiting for oscillators

- Create instant drop-in replacements for legacy quartz oscillators
- Develop prototypes fast with always-in-stock field programmable devices
- Optimize system performance with custom frequencies

Get more information

- Field Programmable Oscillators: www.sitime.com/fp-devices
- Programmer and Adapter Cards: www.sitime.com/time-machine