SiT3701

Prelinimary Information

Smallest Programmable VCMO

Voltage Controlled MEMS Oscillator

SiTime™ It's About Time

Features

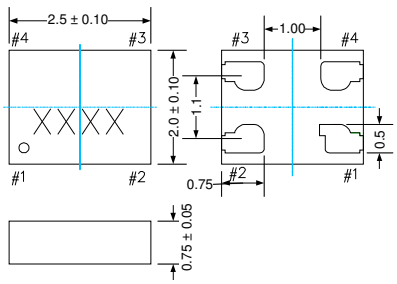
- The world's only VCMO with programmable linear pull range: ±30 PPM, ±60 PPM, ±120 PPM, ±240 PPM
- 1-110 MHz frequency range. Contact SiTime for frequencies between 80 MHz - 110 MHz
- Typical low power consumption of 7 mA in active mode
- VCMO tuning voltage: 0 V to 1.75 V for all Vdds.
- Fast start-up time of <6 ms
- Available in four 4-pin packages: 2.5 x 2.0, 3.2 x 2.5, 5.0 x 3.2, 7.0 x 5.0 mm
- All-silicon timing device with outstanding reliability of 2 FIT (10x improvement over quartz-based devices), enhancing system MTBF
- Ultra short lead time
- Ideal for Set-top Box, DTV, DVD-R, instrumentation, low bandwidth analog PLL, networking and communications

Specifications

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
Output Frequency Range	f	1	–	110	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 ℃), shock and vibration. **Contact SiTime for ±25 PPM support in 1.8 V.**
		-30	–	+30	PPM	
		-50	–	+50	PPM	
		-100	–	+100	PPM	
Aging	Ag	–	–	1.0	PPM	1st year at 25 ℃
Pull Range	PR	30	–	30	PPM	
		60	–	60	PPM	
		120	–	120	PPM	
		240	–	240	PPM	
Storage Temperature Range		-55	–	+125	℃	
VCMO Tuning Voltage	VIN	0	–	1.75	V	Pin 1 (Maximum voltage rating = 20% above maximum VIN)
Operating Temperature Range	T_use	-20	–	+70	℃	Extended Commercial
		-40	–	+85	℃	Industrial
Supply Voltage	Vdd	1.71	1.8	1.89	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	–	7	9	mA	No load condition, f = 20 MHz, Vdd = 1.8 V
		–	8	10	mA	No load condition, f = 20 MHz, 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	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	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 output load.
Start-up Time	T_osc	–	–	6	ms	Time @ minimum supply voltage to be zero
RMS Period Jitter	T_jitt	–	–	6	ps	f = 75 MHz, Vdd = 1.8 V
		–	–	4	ps	f = 75 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

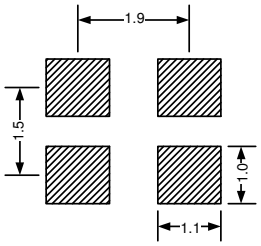
Dimensions (Unit: mm)[1]
2.5 x 2.0 x 0.75 mm



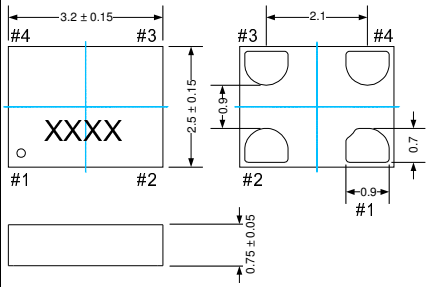
Pin #1 Functionality
VIN
0-1.75V; produces voltage dependent frequency change

Pin Map	
Pin	Connection
1	VIN
2	GND
3	CLK
4	VDD

Recommended Land Pattern (Unit: mm)[2]



Dimensions (Unit: mm)[1]
3.2 x 2.5 x 0.75 mm



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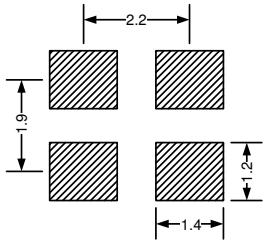
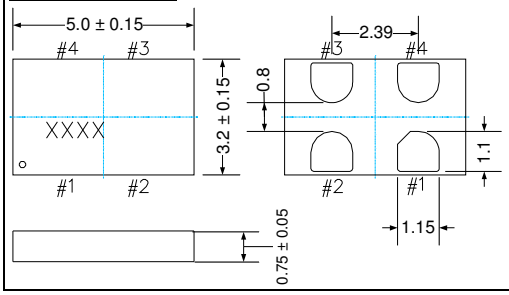


Dimensions (Unit: mm)[1]
5.0 x 3.2 x 0.75 mm



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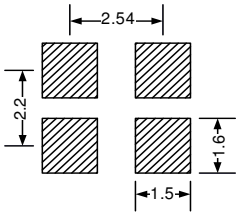
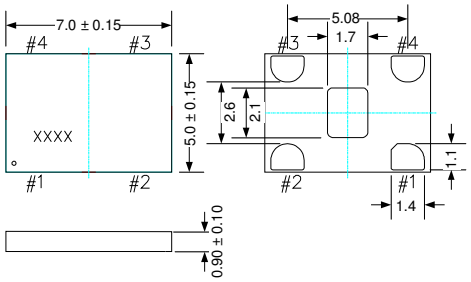


Dimensions (Unit: mm)[1]
7.0 x 5.0 x 0.90 mm



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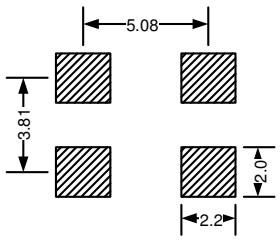

Notes:
1. XXXX top marking denotes manufacturing lot number
2. A capacitor of value 0.1µF between Vdd and GND is recommended.

Part No. Guide- How to Order