

Technical Documents (4)

NEW

High Stability VC-TCXO

**Model : SX0-9000B
Series**

SMI

製品概要 FEATURES

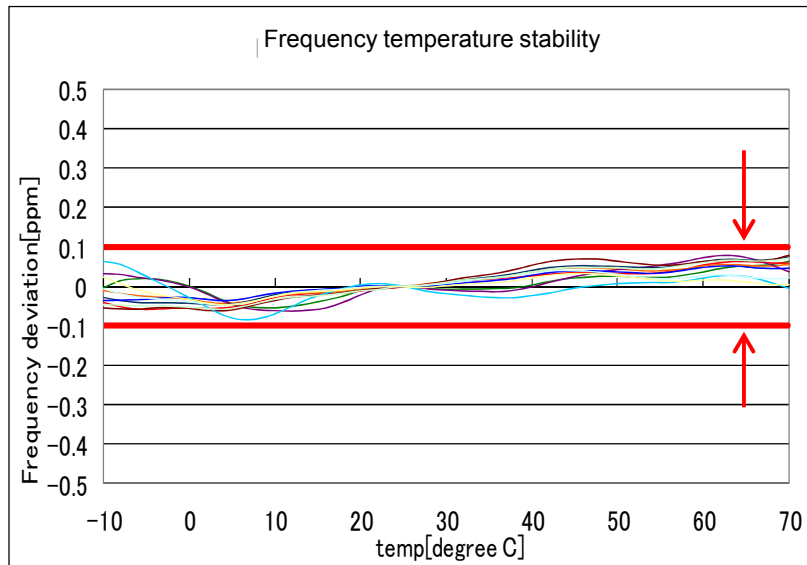
- 高精度な温度補償を実現⇒ $\pm 0.1\text{ppm}(-10^\circ\text{C to }+70^\circ\text{C})$
High stability: $\pm 0.1\text{ppm}(-10^\circ\text{C to }+70^\circ\text{C})$
- 広域温度範囲と細かな周波数安定度から機種選択可能。
Options are available for frequency stabilities and operating temperature ranges.
- 優れたエージング特性⇒ $\pm 0.5\text{ppm}/\text{year}$ 。ストラタム3対応。
Aging spec.: as low as $\pm 0.5\text{ppm}/\text{year}$ and STRATUM 3 application.
- 無線基地局及びFemtocell向けClockに最適。
Suitable for base station (Femtocell) and other applications where high stability is required.
- 出力波形は、Clipped sine とCMOSを準備。
Output of clipped sine or CMOS waveform is available.
- OCXOに近い性能で、コストパフォーマンスに優れた製品。
Provide cost performance for the high specs. close to OCXO characteristics.
- 外部にコンデンサを追加することで、優れたノイズ特性が得られる。
Additional external capacitor provides lower phase noise characteristics.
- OCXOに無い低い消費電流での動作。
Low power consumption: 4.0mA for CMOS output and 2.4mA max. for Clipped Sine output.
- 5x3.2mmの小型パッケージ。
Small package of 5x3.2mm.
- 優れたヒステシス特性が得られる。
Good hysteresis performance is available.

仕様 DATA SHEET

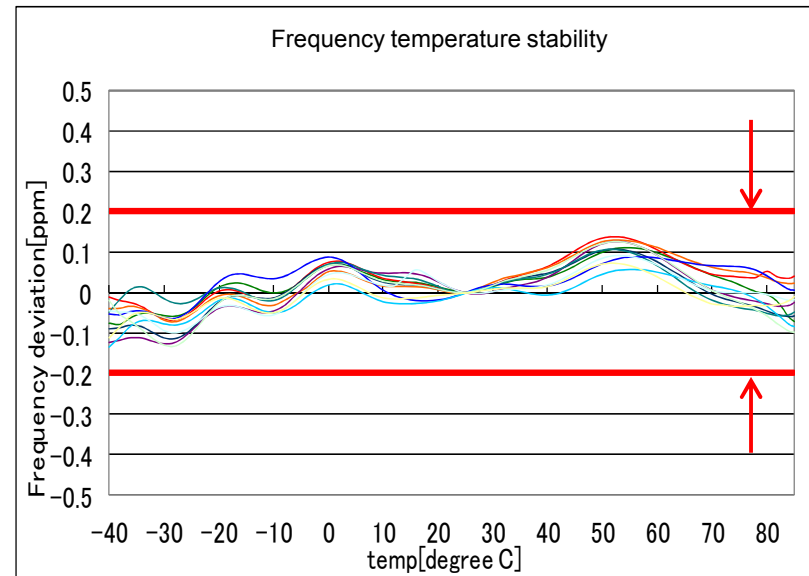
Item	Specification		Condition
Nominal Frequency	10.000MHz to 52.000MHz		
Operating Conditions			
Operating temperature	-40°C to +85°C		
Storage temperature	-40°C to +85°C		
Input voltage(VDD)	+2.7V to +5.5V		
Frequency tolerance	±1.5ppm max		After reflow at +25°C
Temperature Stability	±0.1ppm max to ±0.4ppm max		-10 to +50°C to -40 to +85°C
Voltage Coefficient	±0.05ppm max		at VDD ±5%
Load Coefficient			Load ±10%
Aging	±0.5ppm max at +25°C ±3°C for first year		f0=19.200MHz target value
Output load	15pF max	10kohm//10pF	
Output waveform	CMOS	Clipped Sine Wave	
Output Level		0.8Vp-p min	
"0" level	Vol: 10%VDD max		
"1" level	Voh: 90%VDD min		
Symmetry	45 to 55%		
Rise and fall times	5ns max		10% VDD to 90% VDD level
Input current	4.0mA max(No load)	2.4mA max	f0=19.200MHz VDD=3.3V
Frequency Controlled Range	±3ppm to ±15ppm		Vcon=+1.5V±1.0V, Positive polarity
Standard Frequencies	10.0000 MHz, 12.8000 MHz, 13.0000 MHz, 16.0000 MHz, 19.2000 MHz, 20.0000 MHz 24.5760 MHz, 25.0000 MHz, 26.0000 MHz, 27.0000 MHz, 40.0000 MHz, 50.0000 MHz		

温度特性比較 TEMPERATURE STABILITY

Frequency: 19.200000MHz

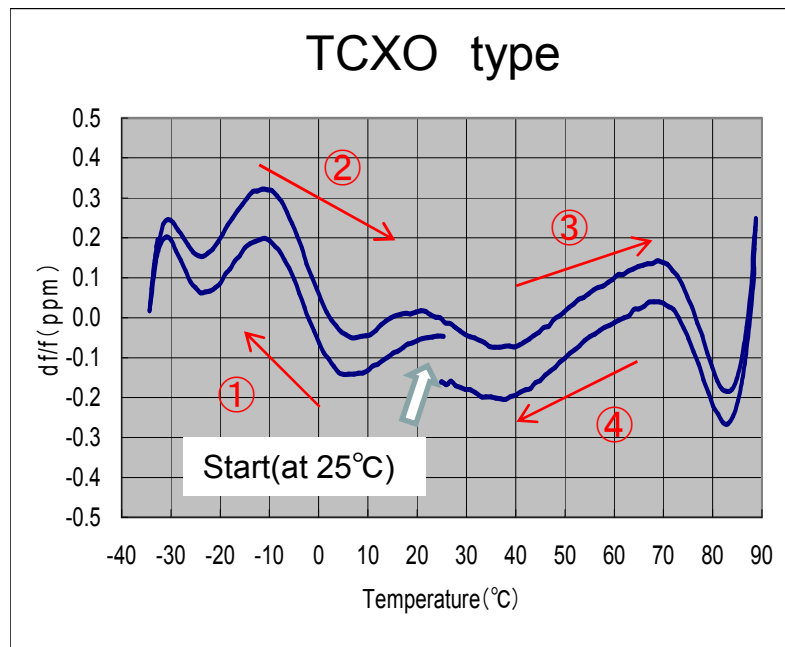


$\pm 0.1 \text{ ppm} (-10^{\circ}\text{C} \text{ to } +70^{\circ}\text{C})$



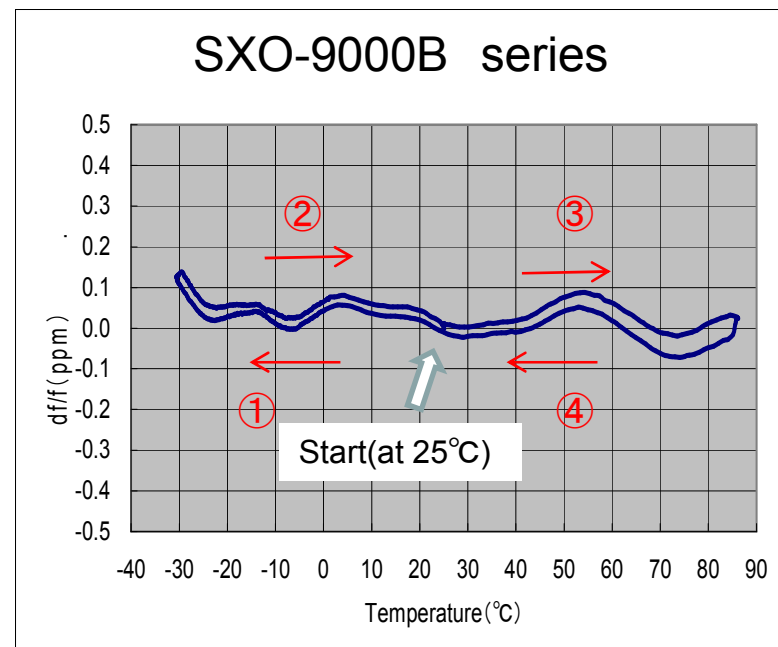
$\pm 0.2 \text{ ppm} (-40^{\circ}\text{C} \text{ to } +85^{\circ}\text{C})$

ヒステリシス特性 Hysteresis Characteristics

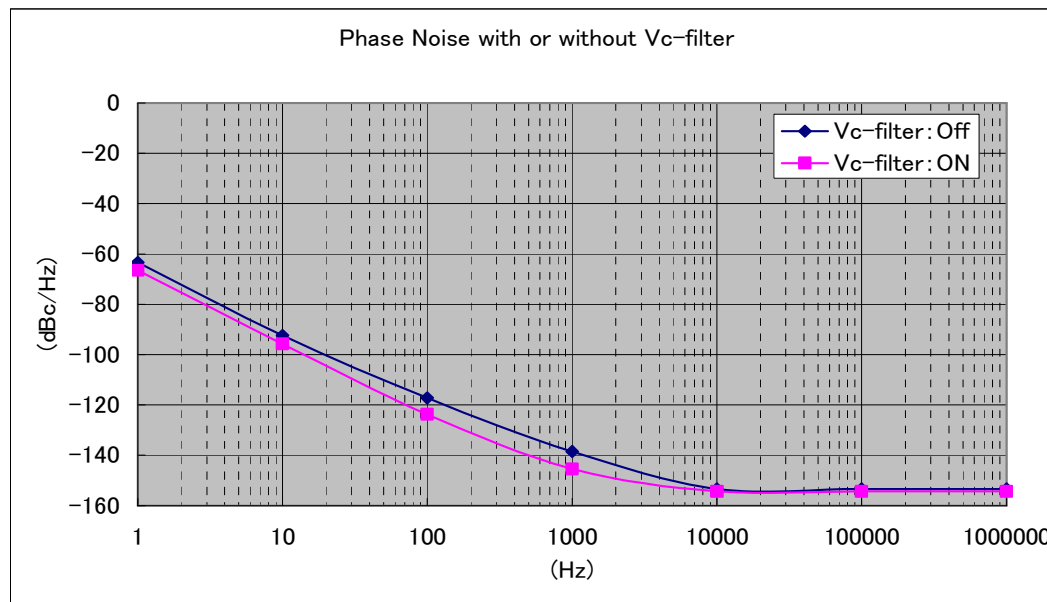


Crystalの特性改善により、優れた温度ヒステリシス特性が得られた。

Better hysteresis characteristics are available through a high spec crystal.



位相ノイズ特性 PHASE NOISE



An additional external capacitor provides lower phase noise characteristics. (See test circuit below.)

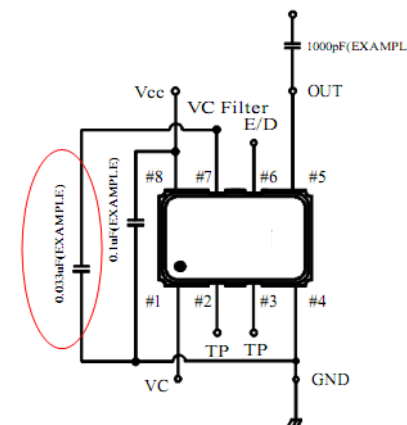
Off-set Frequency/Hz	1	10	100	1K	10K
Vc-filter : OFF dBc/Hz	-63.4	-92.4	-117.3	-138.5	-153.4
Vc-filter : ON dBc/Hz	-66.5	-95.8	-123.7	-145.4	-154.3
Difference	-3.1	-3.4	-6.4	-6.9	-0.9

単位: [dBc/Hz]

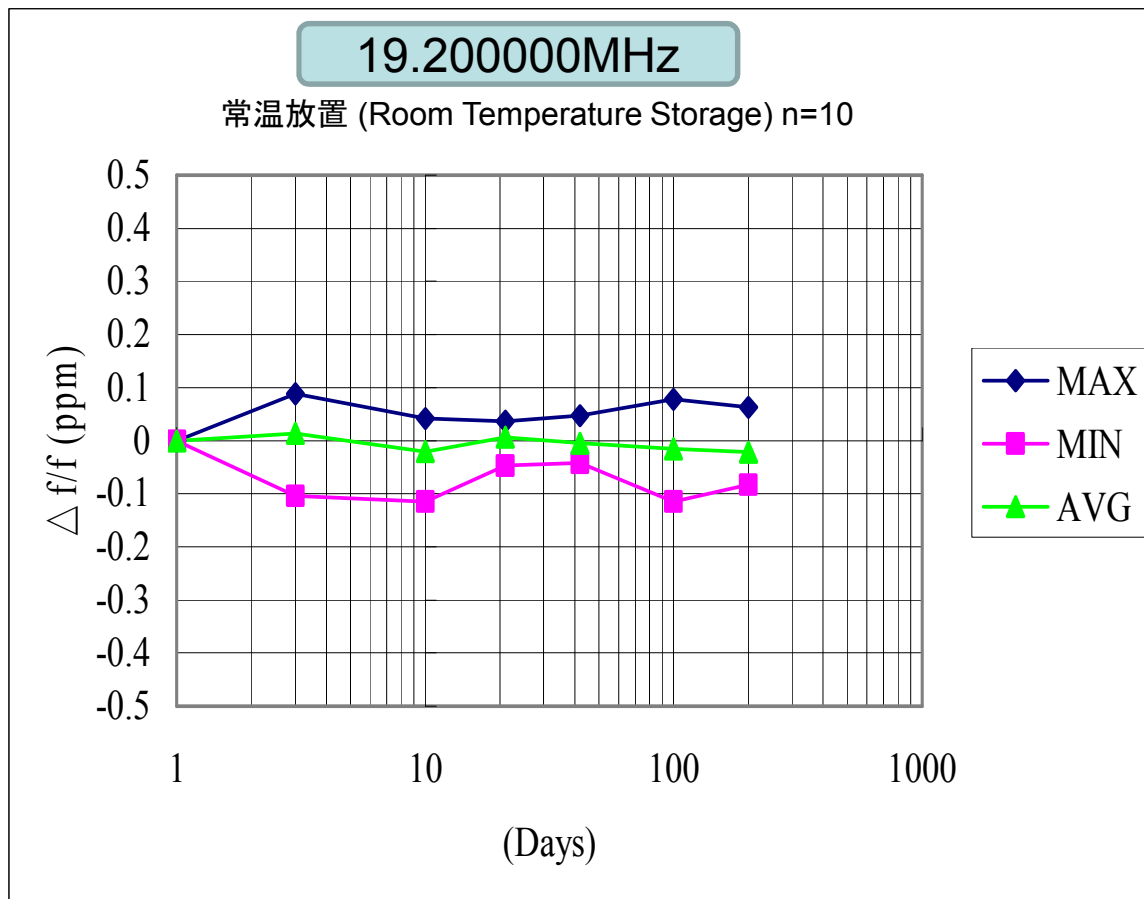
Off-set Frequency/Hz

19.200000MHz

Vc Filter ON=0.033μF connect

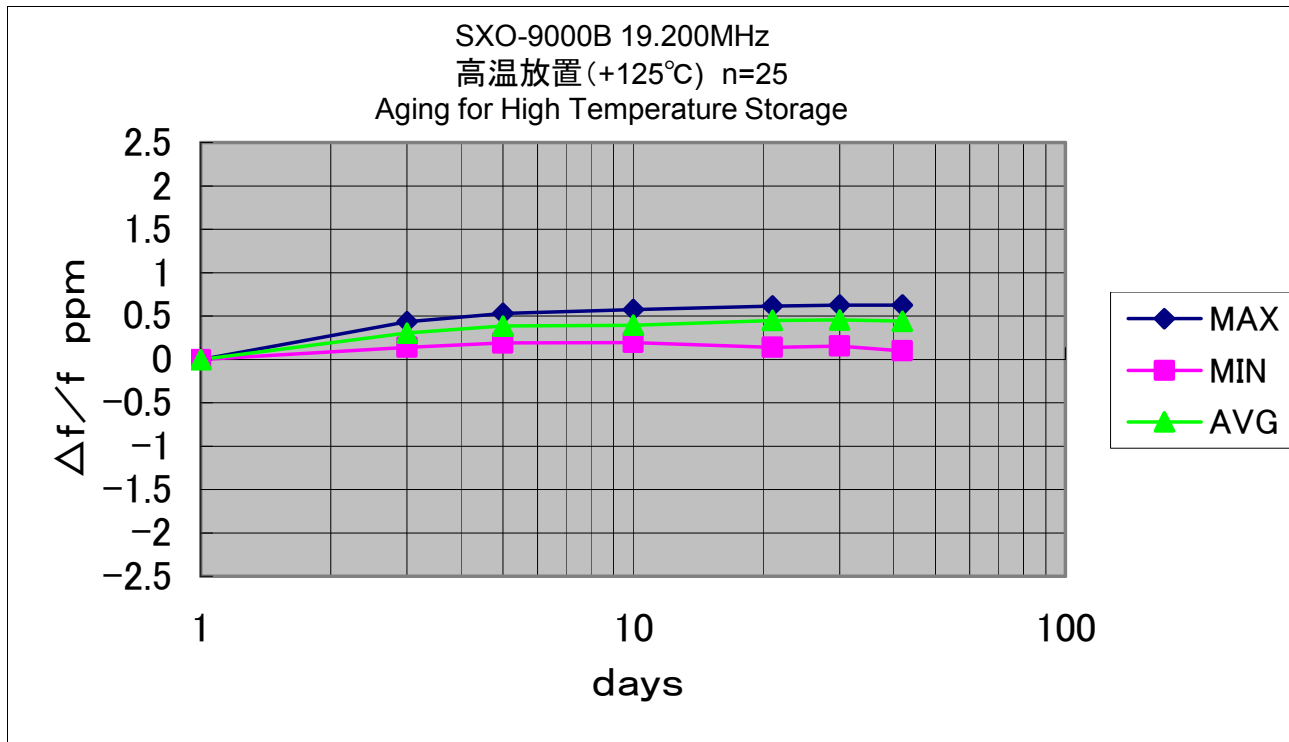


経年変化 AGING DATA



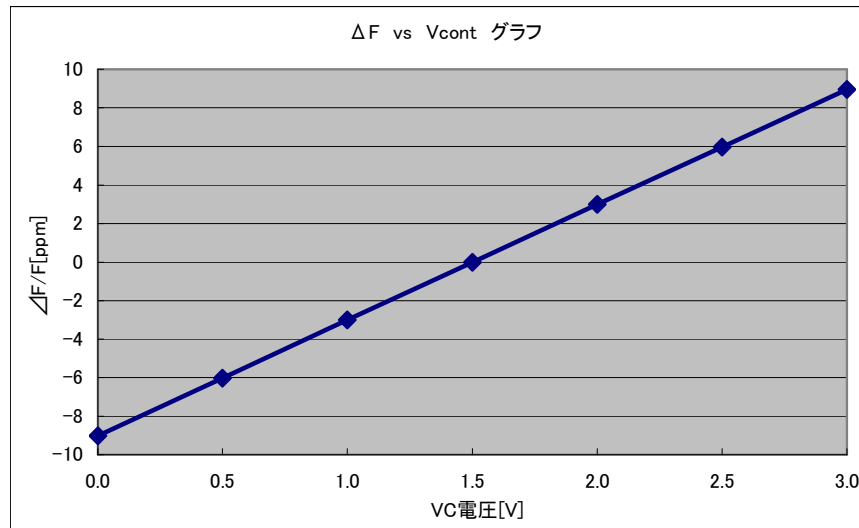
High spec. crystal provides stable and closed long term aging.

経年変化 AGING (125deg)



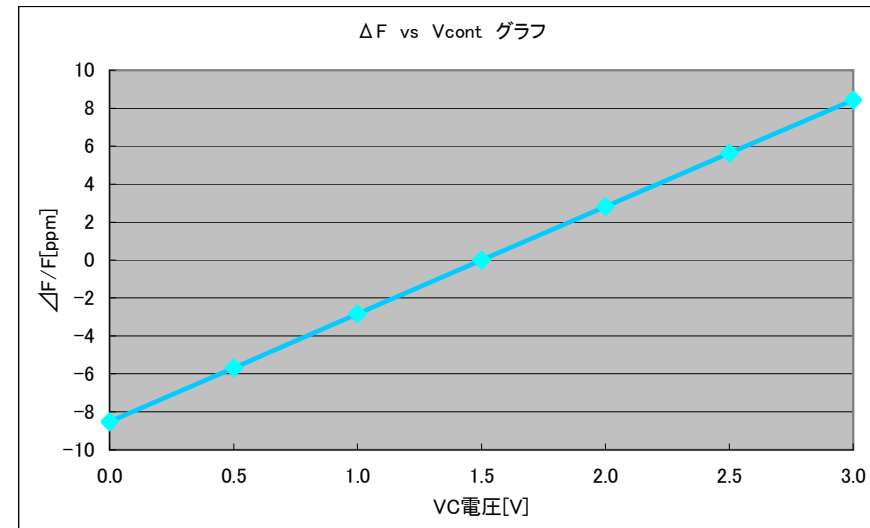
Temperature at +125°C
F0=19.200000MHz

周波数制御特性 FREQUENCY PULLING RANGE



CMOS-Type

Output Load: 15pF
Frequency: 19.2MHz
Vdd=3.3V
Vco=0V to 3.0V

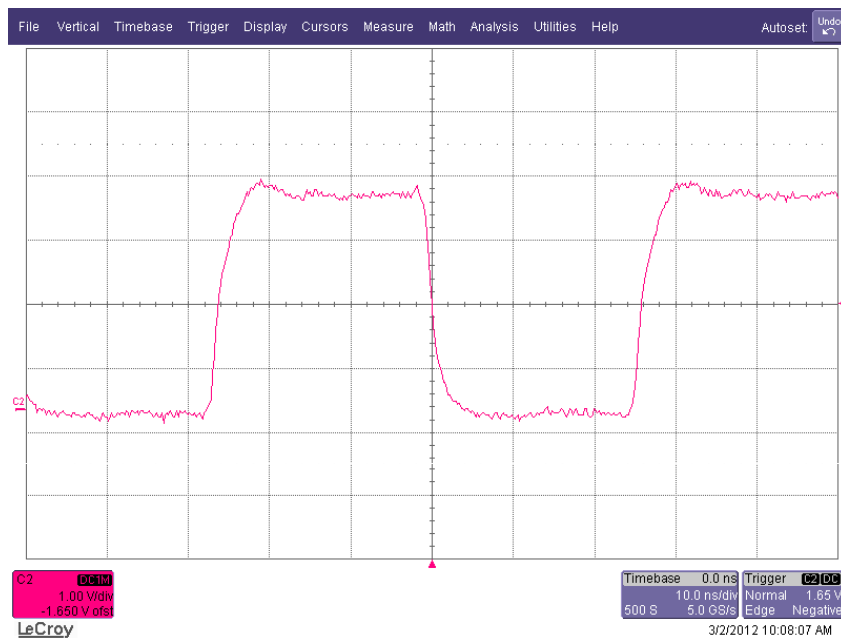


Clipped Sine-Type

Output Load: 10Kohm/10pF
Frequency: 19.2MHz
Vdd=3.3V
Vco=0V to 3.0V

その他特性 : CMOS OTHER DATA : CMOS

Output Waveform



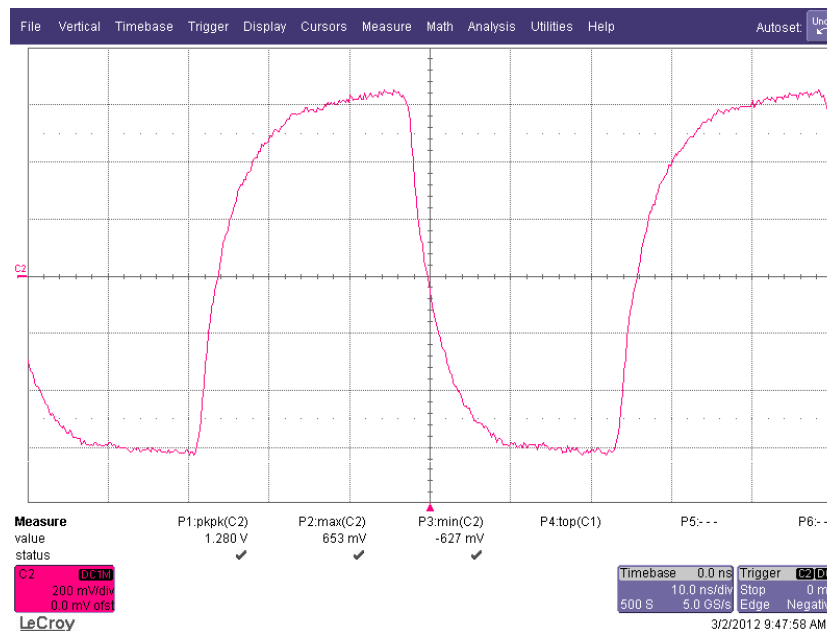
Vdd=3.3V

Vdd (V)	Voh (V)	Vol (V)	Tr (ns)	Tf (ns)	Duty (%)	Icc (mA)
3.3	3.39	0.09	3.2	3.4	50.6	2.5
5.0	4.85	0.06	4.5	4.4	51.0	3.3

Output Load: 15pF
Frequency: 19.2MHz

その他特性 : CLIPPED SINE OTHER DATA : CLIPPED SINE

Output Waveform

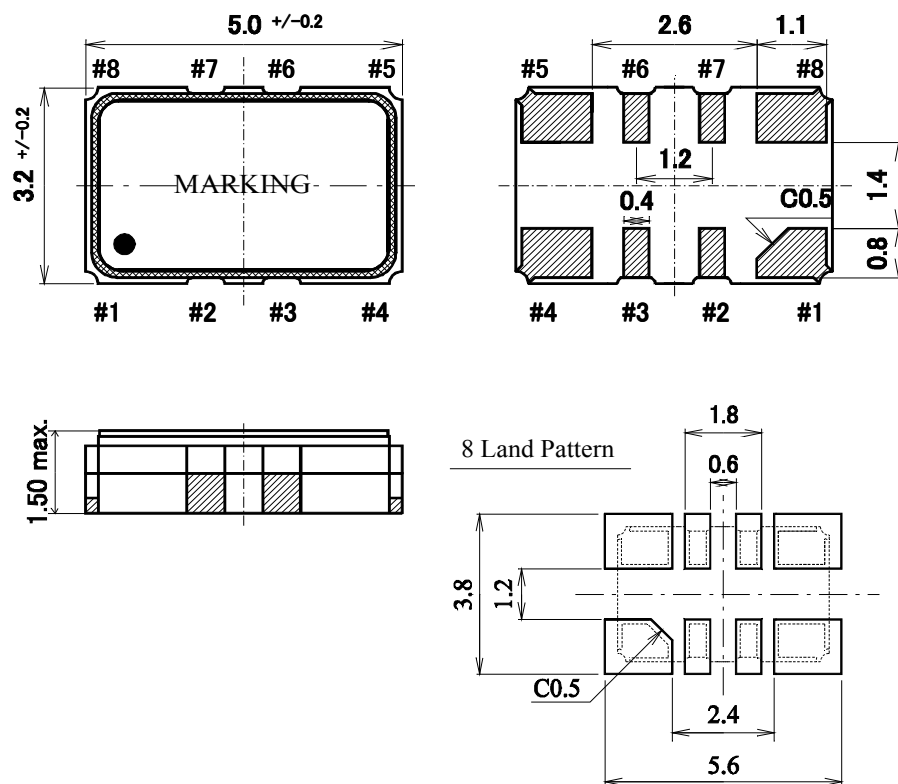


Vdd=3.3V

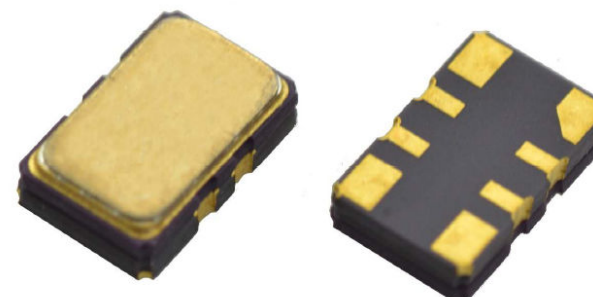
Vdd (V)	Voh (V)	Vol (V)	Vp-p (V)			Icc (mA)
3.3	0.65	-0.62	1.28			1.6
5.0	0.65	-0.62	1.28			1.6

Output Load:
10Kohm/10pF
Frequency: 19.2MHz
DC Cut: 1000pF

外形寸法 OUTLINE DIMENSIONS



Pin No,	Connection
#1	Vcont
#2	N.C.
#3	N.C.
#4	GND
#5	Output
#6	Enable/Disable
#7	Vc Filter option ($0.033\mu\text{F}$ connect)
#8	VDD



PART NUMBERING GUIDE

SXO – 9000B – CS – 3.3V – KK2 – gii – EF

