



STANFORD RESEARCH SYSTEMS

# SC10 10MHz Ovenized Quartz Oscillator

- **High Thermal Stability**  
( $5 \times 10^{-10}$ )
- **Extremely Low Aging Rate**  
( $2 \times 10^{-10}/\text{day}$ )
- **SC Cut Crystal for Low Phase Noise** (-130 dBc/Hz at 10 Hz)
- **Low 1 second Allan Variance** ( $2 \times 10^{-12}$ )
- **Surface Mount Technology for High Reliability**

The new SC10 High Stability Ovenized Oscillator from Stanford Research Systems delivers unmatched performance for virtually any precision frequency and timing application. It is ideal for instrumentation and communication systems which require a precise frequency reference.

Unlike competitive models that are often poorly constructed and unreliable, the SC10 is fabricated on a single PCB using surface mount technology and has just one PCB

mounted connector. The reduced parts count and the use of modern manufacturing techniques result in a robust, reliable unit.

The SC10 employs massive thermal blocks and an innovative "electronic double oven" temperature controller to eliminate temperature gradients producing an impressive  $2 \times 10^{-10}$  thermal stability. Low power dissipation in the crystal ensures an extremely low aging rate, and the SC cut crystal provides very low phase noise. Complete isolation of the oscillator from the load results in a frequency shift of less than  $1 \times 10^{-10}$  for load changes from  $50 \Omega$  to open circuit.

A number of options allow the SC10 to be customized to meet specific requirements. Aging, phase noise, thermal stability and operating temperature can all be separately specified, so you only pay for the performance you need. The SC10 operates from +15 to +24 VDC, and there is a choice of output connectors including SMA, SMB, SMC and single pin. Both electrical and mechanical frequency tuning are standard.

The SC10 delivers outstanding performance in OEM equipment and other critical applications. For more information on this product or to place an order, call SRS at (408)744-9040.



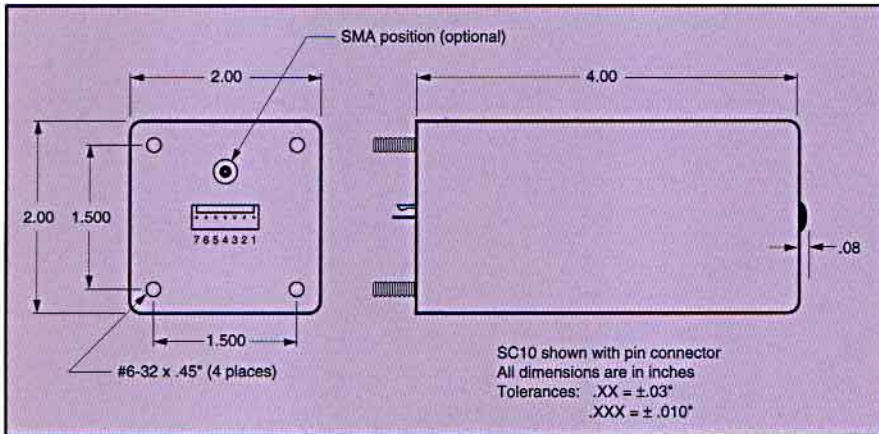


# Specifications

Grade	J	K	A
Frequency	10 MHz	10 MHz	10 MHz
Stability (0 to 50°C)	$< \pm 2 \times 10^{-9}$	$< \pm 1 \times 10^{-9}$	$< \pm 5 \times 10^{-10}$
Aging	$< 1 \times 10^{-9}/\text{day}$	$< 5 \times 10^{-10}/\text{day}$	$< 2 \times 10^{-10}/\text{day}$
Allan Variance (1s)	$< 1 \times 10^{-11}$	$< 5 \times 10^{-12}$	$< 2 \times 10^{-12}$
Phase Noise	10 Hz	$< -120 \text{ dBc/Hz}$	$< -125 \text{ dBc/Hz}$
	100 Hz	$< -150 \text{ dBc/Hz}$	$< -150 \text{ dBc/Hz}$
	1 kHz	$< -155 \text{ dBc/Hz}$	$< -155 \text{ dBc/Hz}$
Operating Range	0 to 50°C	-10 to +60°C	-20 to +70°C
EFC Range	Standard: 0 to 10 V, +5 V nom. Other ranges are available.		
EFC Slope	Standard: +0.5 Hz/V. A negative EFC slope is available.		
Mechanical Tuning	$\pm 3 \text{ Hz}$ (Nominal)		
Output Level	$+13 \pm 0.5 \text{ dBm}$ into $50\Omega$ ( $\approx 1 \text{ Vrms}$ )		
Output Waveform	Sine. Harmonics: $2\omega < -45 \text{ dBc}$ . $3\omega$ and up $< -60 \text{ dBc}$		
Supply Voltage	+15 VDC or +24 VDC per P/N		
Power	8W warm-up, 3 W @ 25°C		
Weight	11 oz.		

The temperature stability specification is derated by 2x between -10°C and 0°C and between +50°C and +60°C. The temperature stability specification is derated by 4x between -20°C and -10°C and between +60°C and +70°C.

# Mechanical Information



# Ordering Information

The part number format is:

**SC10-VS-E-T-S-N-A-CON**

- VS** 15 for +15 VDC or 24 for +24 VDC operation
- E** specifies the EFC characteristic (range and slope)
  - 1 for 0 to +10 V, 5 V nominal, +0.5 Hz/V (standard)
  - 2 for 0 to +10 V, 5 V nominal, -0.5 Hz/V
  - 3 for -10 to +10 V, 0 V nominal, +0.25 Hz/V
  - 4 for -10 to +10 V, 0 V nominal, -0.25 Hz/V
  - 5 for -5 to +5 V, 0 V nominal, +0.5 Hz/V
  - 6 for -5 to +5 V, 0 V nominal, -0.5 Hz/V
  - 7 for 0 to +6 V, 3 V nominal, +0.75 Hz/V
  - 8 for 0 to +6 V, 3 V nominal, -0.75 Hz/V
- T** J, K, or A per the required operating temperature range
- S** J, K, or A per the required stability vs. ambient temperature
- N** J, K, or A per the required noise level (both Allan variance and phase noise)
- A** J, K, or A per the required daily aging rate
- CON** PIN, SMA, SMB or SMC for Pin, SMA, SMB, or SMC 10 MHz connector

Connector pin-out:

Pin number	Function
1	+15 or +24 V per P/N
2	Power ground
3	10 MHz output
4	10 MHz ground
5	+10.00 VDC reference output
6	EFC ground reference
7	EFC input



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