



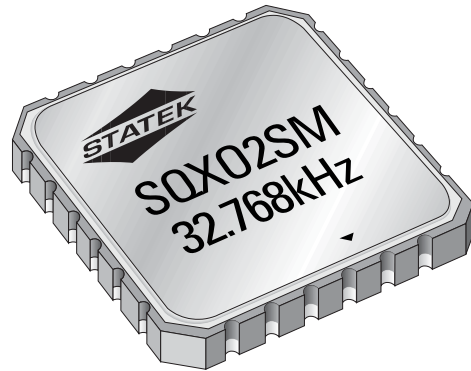
## SQXO2SM OSCILLATOR

10 kHz to 2 MHz\*

Surface Mount Low Power Crystal Oscillator

### DESCRIPTION

The SQXO2SM oscillator consists of a CMOS-compatible hybrid circuit, hermetically sealed in a standard 24-pin ceramic leadless chip carrier. Precision tuning of the oscillator allows for very tight calibration tolerance and eliminates the need for a trimming capacitor, a major source of long-term frequency drift. The specifications and characteristics of the SQXO2SM vary with frequency. The characteristics of the 32.768 kHz model are presented in this data sheet.



\*Consult factory for other frequencies.

### FEATURES

- Low power consumption
- Low aging
- TTL and CMOS compatible
- Full military testing available
- Various voltage options available
- High shock resistance
- Standard 24-pin ceramic LCC

### APPLICATIONS

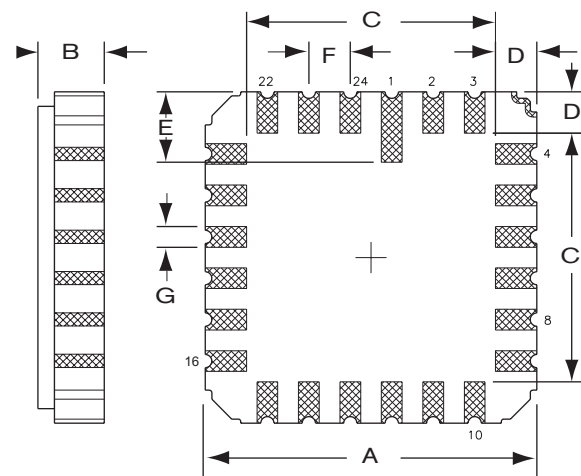
Industrial, Computer & Communications

- General purpose clock oscillator
- Data Logger
- Remote sensor
- Liquid level sensing
- Medical test and diagnostics

Military

- Portable field communication
- Military high speed modem
- Flight recorder

### PACKAGE DIMENSIONS



DIM	inches	mm
A	0.410 MAX.	10.16 MAX.
B	0.080 MAX.	2.03 MAX.
C	0.300 MAX.	7.62 MAX.
D	0.050 TYP.	1.27 TYP.
E	0.085 TYP.	2.16 TYP.
F	0.050 TYP.	1.27 TYP.
G	0.025 TYP.	0.64 TYP.

### PIN CONNECTIONS

Pin	Connection
23,24	Ground
5,6	V <sub>DD</sub>
13,14	Output
All Others	NC

10143 - Rev E



## SPECIFICATIONS: SQXO2SM-32.768KHz

Specifications are typical at 25°C unless otherwise noted. Specifications are subject to change without notice.

Supply Voltage (V <sub>DD</sub> )	5V ± 10%
Calibration Tolerance <sup>1</sup>	± 100 ppm (0.01%) ± 300 ppm (0.03%) ± 1000 ppm (0.10%)
Supply Current	Figure 1
Tuning Point (T <sub>0</sub> ) <sup>2</sup>	Figure 2
Temp. Coefficient (k)	-0.035 ppm/°C <sup>2</sup>
Duty Cycle <sup>1</sup>	40% Min., 60% MAX.
Rise/Fall Time	0.2 μsec. MAX.
Aging, first year	10 ppm MAX.
Shock, survival	
Above 600 kHz	750 g peak 0.3 ms, 1/2 sine
Below 600 kHz	1,000 g peak 0.3 ms, 1/2 sine
Vibration survival	10 g RMS 10-2000 Hz random
Operating Temperature <sup>3</sup>	-10°C to +70°C (Commercial) -40°C to +85°C (Industrial) -55°C to +125°C (Military)
Maximum Assembly Temperature	260°C for 20 sec

1. Tighter tolerances available
2. Does not include calibration tolerance.  
Positive variations small compared to negative variations.

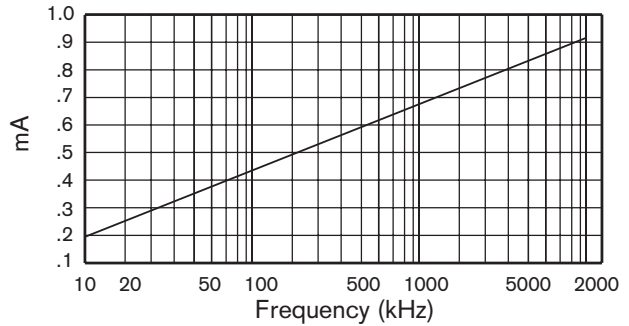
## PACKAGING

SQXO2SM -Tray Pack (Standard)

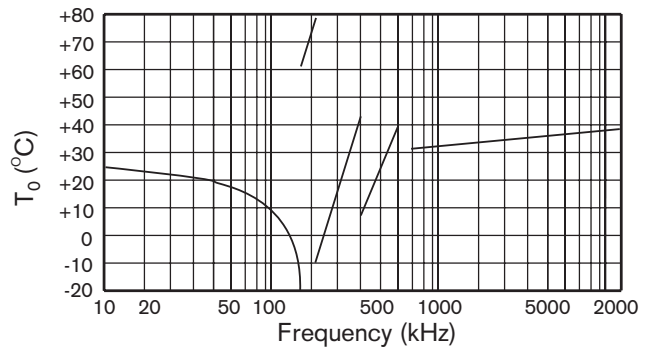
## ABSOLUTE MAXIMUM RATINGS

Supply Voltage V <sub>DD</sub>	-0.3V to 7V
Storage Temperature	-55°C to +125°C

**FIGURE 1.**  
TYPICAL SUPPLY CURRENT (mA) @ 5V



**FIGURE 2.**  
TYPICAL TURNING POINT TEMPERATURE (T<sub>0</sub>)



Note: Frequency (f) deviation from frequency (f<sub>0</sub>) @ turning point

$$\text{temperature } (T_0): \frac{f-f_0}{f_0} = k(T-T_0)^2$$

## HOW TO ORDER SQXO2SM CRYSTAL OSCILLATORS

