



LSM OSCILLATOR

30 kHz to 200 kHz

Low Power Surface Mount Crystal Oscillator

DESCRIPTION

The LSM oscillator has the highest accuracy, stability and lowest current of all STATEK surface mount oscillators. The design consists of a hermetically-sealed CX-4 STATEK crystal, and a CMOS-compatible integrated circuit. The hybrid design is hermetically-sealed with a kovar lid in a surface mount ceramic package. Permanent precision tuning of the oscillator is accomplished by laser trimming the crystal.

FEATURES

- Low power consumption
- Low aging
- CMOS compatible
- Double hermetically sealed package
- Full military testing available
- 3.3 Volt operation available
- Optional Tri-State
- Low harmonic noise

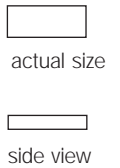
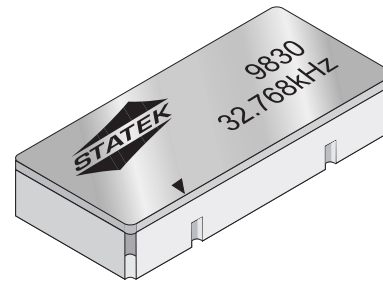
APPLICATIONS

Industrial, Computer & Communications

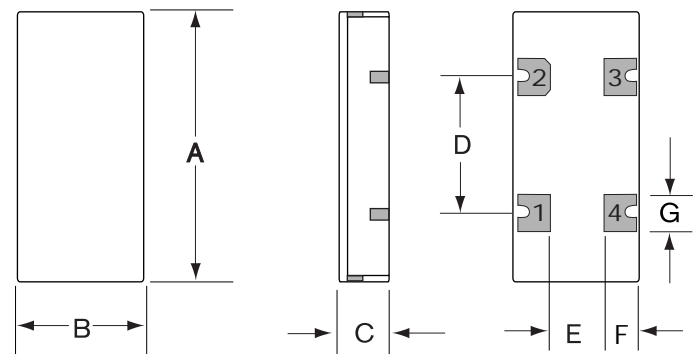
- General purpose clock oscillator
- Data logger
- Remote sensor
- Real Time Clock
- Medical test and diagnostics

Military

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



PACKAGE DIMENSIONS

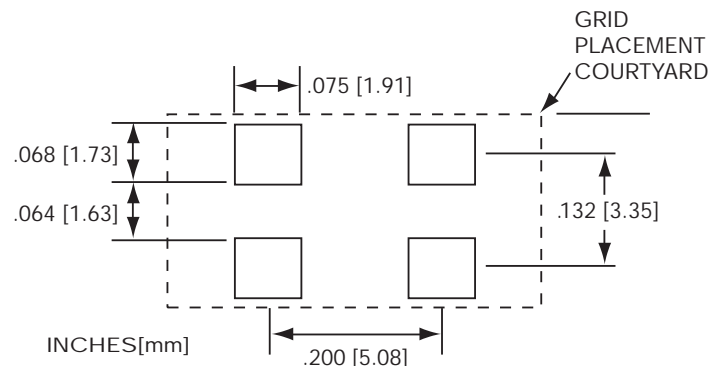


DIM	TYP.		MAX.	
	INCHES	mm	INCHES	mm
A	.400	10.16	.405	10.29
B	.180	4.57	.185	4.70
C*	.071	1.80	.079	2.00
D	.200	5.08	.205	5.21
E	.080	2.03	.085	2.16
F	.050	1.27	.058	1.47
G	.055	1.40	.063	1.60

Termination material is Au over Ni (SM1), solder dip (SM3) also available.

*SM1 Termination; SM3 = .084 in. (2.13mm) Max.

SUGGESTED LAND PATTERN



Distribution:

RSG Electronic Components GmbH ■ Sprendlinger Landstr. 115 ■ D-63069 Offenbach/Germany
Tel. +49 69 984047-0 ■ Fax +49 69 984047-77 ■ info@rsg-electronic.de ■ www.rsg-electronic.de

Änderungen vorbehalten / subject to change without notice



SPECIFICATIONS: LSM 32.768 kHz****

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

Supply Voltage*	5V ± 10% (3.3V available)		
Calibration Tolerance**	A:	± .001% (10ppm)	
	B:	± .0025%	
	C:	± .01%	
Frequency Stability***	0°C to +50°C	± 0.0025% Typ.	± 25ppm
		± 0.004% MAX.	± 40ppm
	-20°C to +70°C	± 0.007% Typ.	± 70ppm
		± 0.01% MAX.	± 100ppm
Voltage Coefficient	± 1 ppm/V Typ.		
	± 3 ppm/V MAX.		
Aging	± 1 ppm/year Typ.		
	± 3 ppm/year MAX.		
Shock	1000g, 1msec., 1/2 sine		
	± 3 ppm MAX.		
Vibration	10g rms, 10 - 2000 Hz		
	± 3 ppm MAX.		
Frequency Change vs 10% Output Load Change	± 1 ppm MAX.		
Operating Temperature	-10°C to +70°C	Commercial	
	-40°C to +85°C	Industrial	
	-55°C to +125°C	Military	

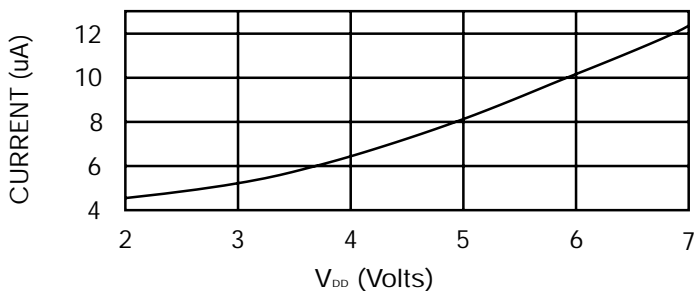
* Contact the factory for lower voltage.

** Tighter tolerances available.

*** Does not include calibration tolerance. Positive variations small compared to negative variations (See data sheet 10103).

**** Contact the factory for other frequencies.

TYPICAL CURRENT CONSUMPTION, LSM-32.768 kHz



ABSOLUTE MAXIMUM RATINGS

Supply Voltage V _{DD}	-0.3V to 7V
Storage Temperature	-55°C to +125°C
Process Temperature	260°C 20 sec.

ELECTRICAL CHARACTERISTICS

LSM 32.768 kHz

All parameters are measured at ambient temperature with a 10MΩ and 10pF load at 5V.

SYMBOL	PARAMETER	MIN.	TYP.	MAX.	UNIT
V _{OH}	Output Voltage Hi	4.8	4.95		V
V _{OL}	Output Voltage Lo		0.05	0.2	V
t _r	Rise Time (10%-90%)		12	25	nsec.
t _f	Fall Time (10%-90%)		12	25	nsec.
SYM	Duty Cycle	40	50	60	%
I _{DD}	Supply Current				
	V _{DD} =5V		8.3	15	µA
	V _{DD} =3.3V		5.5	10	µA

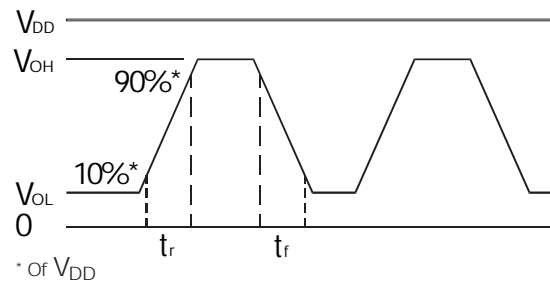
PIN CONNECTIONS

Pin	Connection
1	Output Enable or NC
2	Ground
3	Output
4	V _{DD}

PACKAGING

LSM -Tray Pack (Standard)
-16mm tape, 7" or 13" reels (Optional)
Per EIA 481 (see data sheet 10109)

OUTPUT WAVE FORM



HOW TO ORDER LSM SURFACE MOUNT CRYSTAL OSCILLATORS

LSM	<u>3</u>	<u>S</u>	<u>T</u>	<u>SM3</u>	<u>32.768 kHz</u>	(<u>A</u> / <u>I</u>)
	3=3.3V Blank=5V (Std.)	"S" if special or custom design. Blank if Std.	*T = Tri-State Blank = Pin 1 no connection	Blank = SM1 (Std.) SM1 = Gold Plated SM3 = Solder Dipped	Frequency	**Calibration Tolerance @ 25°C (A) (B) (C)
						Temp. Range: C = Commercial I = Industrial M = Military S = Specify

*Tri-state not available 100 kHz to 200 kHz
**Other calibration fill in ppm

Frequencies other than 32.768 kHz
A: ± 0.01%
B: ± 0.03%
C: ± 0.1%

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10151 - Rev B

