



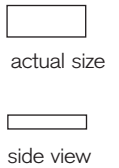
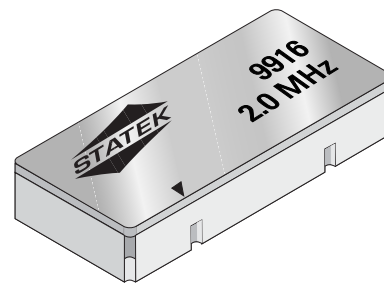
# LSM OSCILLATOR

700 kHz to 2.1 MHz

Low Power Surface Mount Crystal Oscillator

## DESCRIPTION

The LSM oscillator has the highest accuracy, stability and the lowest current of all STATEK surface mount oscillators. The design consists of a 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
- Hermetically sealed package
- Full military testing available
- 3 Volt operation available

## APPLICATIONS

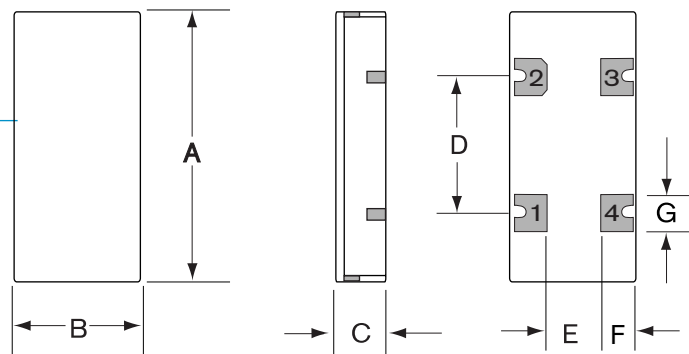
Industrial, Computer & Communications

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

Military

- Portable field communication
- Military high speed modem

## PACKAGE DIMENSIONS

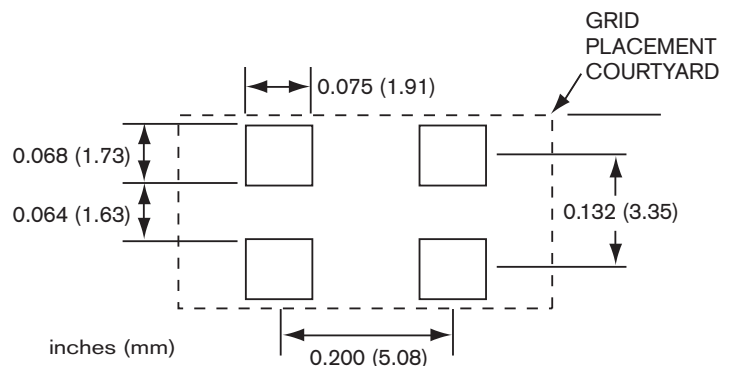


DIM	TYPICAL		MAXIMUM	
	inches	mm	inches	mm
A	0.400	10.16	0.405	10.29
B	0.180	4.57	0.185	4.70
C*	0.071	1.80	0.079	2.00
D	0.200	5.08	0.205	5.21
E	0.080	2.03	0.085	2.16
F	0.050	1.27	0.058	1.47
G	0.055	1.40	0.063	1.60

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

\*SM1 Termination; SM3 = 0.084 in. (2.13mm) Max.

## SUGGESTED LAND PATTERN



10154 - Rev B



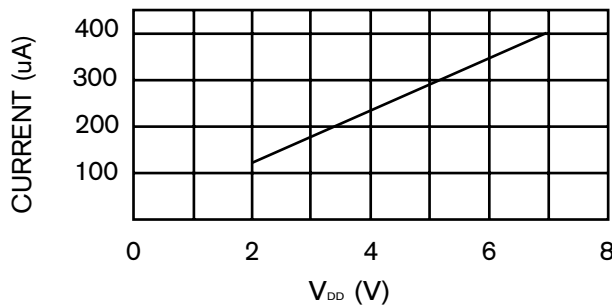
## SPECIFICATIONS: LSM 2.0 MHz<sup>4</sup>

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

Supply Voltage <sup>1</sup>	5V ± 10% (3.3V available)
Calibration Tolerance <sup>2</sup>	± 100 ppm (0.01%) ± 300 ppm (0.03%) ± 1000 ppm (0.1%)
Frequency Stability <sup>3</sup>	0°C to +70°C - 0.12% Typ. - 0.017% MAX.
Voltage Coefficient	± 5 ppm/V MAX.
Aging	± 10 ppm/year MAX.
Shock, survival	750 g peak, 0.3 ms, 1/2 sine
Vibration, survival	10 g RMS, 10 - 2000 Hz
Frequency Change vs 10% Output Load Change	± 1 ppm MAX.
Operating Temp. Range	-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 are much smaller.
- Contact the factory for other frequencies.

## TYPICAL CURRENT CONSUMPTION, LSM 2.0 MHz



## ABSOLUTE MAXIMUM RATINGS

Supply Voltage V <sub>DD</sub>	3.3V to 7V
Storage Temperature	-55°C to +125°C
Process Temperature	260°C 20 sec.

## ELECTRICAL CHARACTERISTICS

### LSM 2.0 MHz

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

SYMBOL	PARAMETER	MIN.	TYP.	MAX.	UNIT
V <sub>OH</sub>	Output Voltage Hi	4.8	4.95		V
V <sub>OL</sub>	Output Voltage Lo		0.05	0.2	V
t <sub>r</sub>	Rise Time (10%-90%)		12	25	nsec.
t <sub>f</sub>	Fall Time (10%-90%)		12	25	nsec.
SYM	Duty Cycle	40	50	60	%
I <sub>DD</sub>	Supply Current				
	V <sub>DD</sub> =5V		300	400	µA
	V <sub>DD</sub> =3.3V		200	300	µA
	Start-Up Time		20		msec.

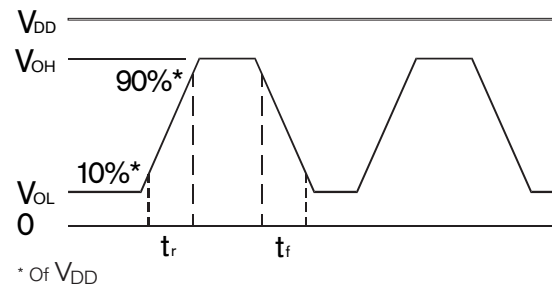
## PIN CONNECTIONS

Pin	Connection
1	NC
2	Ground
3	Output
4	V <sub>DD</sub>

## PACKAGING OPTIONS

LSM -Tray Pack  
-16mm tape, 7" or 13" reels  
(Reference tape and reel data sheet 10109)

## OUTPUT WAVE FORM



## HOW TO ORDER LSM CRYSTAL OSCILLATORS

