

### Low Power - Low Frequency SMD Oscillator

- Low current consumption, low frequency from 30kHz
- Low profile, miniature SMD package
- Full military testing available
- Testing to MIL-PRF-55310 available

#### DESCRIPTION

LSM series oscillators are precision surface mount oscillators with a frequency range from 30kHz to 200kHz. The part comprises of a hermetically sealed crystal with a hybrid circuit sealed in a ceramic package with a Kovar lid. Full MIL testing is available.

#### SPECIFICATION

Frequency Range****:	30kHz to 200kHz (32.768kHz)
Supply Voltage*:	3.3 or 5.0 Volts $\pm 10\%$
Calibration Tolerance**	
Code A:	$\pm 0.001\%$ ( $\pm 10\text{ppm}$ )
Code B:	$\pm 0.0025\%$
Code C:	$\pm 0.01\%$
Frequency Stability***	
0° to +50°C:	$\pm 0.0025\%$ typical ( $\pm 25\text{ppm}$ ) $\pm 0.004\%$ maximum ( $\pm 40\text{ppm}$ )
-20° to +40°C:	$\pm 0.007\%$ typical ( $\pm 70\text{ppm}$ ) $\pm 0.01\%$ maximum ( $\pm 100\text{ppm}$ )
Voltage Coefficient	$\pm 1\text{ppm/V}$ typical $\pm 3\text{ppm/V}$ maximum
Ageing:	$\pm 1\text{ppm/year}$ typical $\pm 3\text{ppm/year}$ maximum
Shock:	1000g, 1ms, $\frac{1}{2}$ sine, $\pm 3\text{ppm}$ max.
Vibration:	10g rms, 10-2000Hz, $\pm 3\text{ppm}$ max.
Frequency Change vs. Output Load Change:	$\pm 1\text{ppm}$ maximum
Operating Temperature:	-10° to +70°C Commercial -40° to +85°C Industrial -55° to +125°C Military
Output Voltage (5.0V supply)	
HIGH:	4.8V minimum, 4.95V typical
LOW:	0.2V maximum, 0.05V typical
Rise/Fall Times:	12ns typical
Symmetry:	40/60% maximum, 45/55% typical
Supply Current	
5.0V supply:	15 $\mu\text{A}$ max., 8.3 $\mu\text{A}$ typical
3.3V supply:	10 $\mu\text{A}$ max., 5.5 $\mu\text{A}$ typical
Packaging:	Tray pack (standard) 16mm tape, 17.8cm or 33cm reels

#### ENABLE/DISABLE, POWER DOWN, NOT CONNECTED

Option	Specifying Code	Pad 1 *	Pad 3
Power Down	P	LOW	High Z
Enable/Disable	T	HIGH	Frequency output
Not Connected	Blank	LOW	High Z
		HIGH	Frequency output

\* Normally HIGH (internal pull-up resistor)

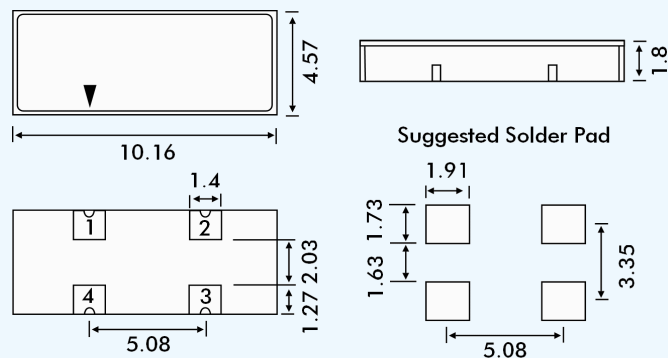
#### ENABLE/DISABLE vs. POWER DOWN

P - Power Down: When Pad 1 is LOW the oscillator stops running  
T - Enable/Disable: When Pad 1 is LOW the internal oscillator continues to run but the output (Pad 3) is in a high impedance (Z) state.

Power Down: Disabled current consumption low, recovery delayed.  
Enable/Disable: Disabled current consumption lower than normal, Recovery immediate.



#### OUTLINE & DIMENSIONS



Pad Connections

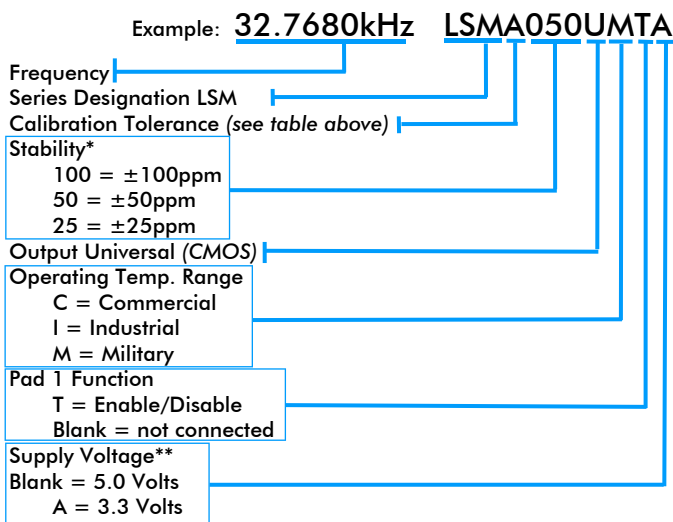
1. Not connected or enable/disable
2. Ground
3. Output
4. Supply Voltage

Terminations: Au over Ni

#### Notes:

- \* Contact factory for lower supply voltages
- \*\* Tighter tolerances available
- \*\*\* Does not include calibration tolerance. Positive variations are small compared to negative variations.
- \*\*\*\* Contact factory for frequencies other than 32.768kHz

#### PART NUMBERING



- \* For other stability requirements enter figure required.
- \*\* For other supply voltage enter required voltage.