

**Synthesizer , SMT  
Fixed Frequency, 768 MHz**

**MAVC-060000-530768**

Rev: A

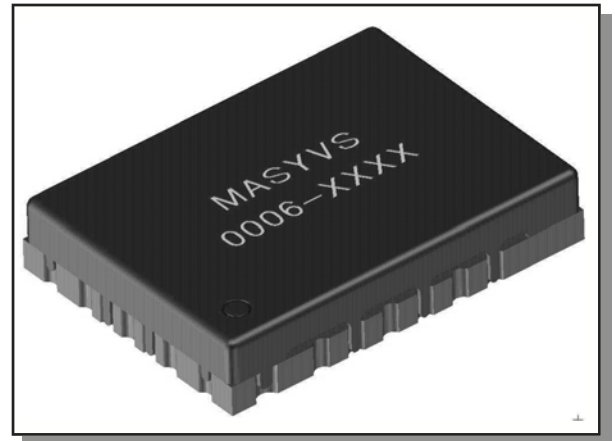
**Features**

- ◆ RoHS Compliant
- ◆ Fully Integrated VCO, PLL, Loop Filter
- ◆ High Performance, Low Cost
- ◆ Miniature SMT Package (LSM6)
- ◆ Includes microcontroller for PLL programming

**Description**

This synthesizer design integrates a high performance VCO, PLL, IC, discrete loop filter and microcontroller in a surface mount package. This SMT package provides electrical shielding, easy PCB assembly and repeatable performance. The synthesizer is designed for use in wireless base stations.

M/A-COM synthesizers are manufactured in an ISO9001 certified facility, incorporating surface mount assembly and automated electrical testing. This ensures consistent electrical performance and quality over volume production quantities.



**Electrical Specifications<sup>1</sup>:**

**T<sub>A</sub> = +25°C, Z<sub>0</sub> = 50 Ohms, V<sub>cc1</sub> = 5V, V<sub>cc2</sub> = 3.3V.**

Parameter	Test Conditions	Units	Min	Typ	Max
Frequency Range	Over T <sub>op</sub> <sup>2</sup>	MHz		768.0	
RF Output Power	Single ended output	dBm	0	+3	+6
Phase Noise	SSB at 5.5 kHz offset from carrier SSB at 10 kHz offset from carrier SSB at 100 kHz offset from carrier SSB at 1 MHz offset from carrier SSB at ≥3 MHz offset from carrier	dBc/Hz dBc/Hz dBc/Hz dBc/Hz dBc/Hz			-96 -102 -122 -138 -148
Harmonic Suppression	2nd and 3rd	dBc		-25	-20
Integrated Phase Noise + Spurs	At 100 kHz, 11 kHz bandwidth At 1 MHz, 1 MHz bandwidth At ≥3 MHz, 1 MHz bandwidth Reference breakthrough, 1 MHz bandwidth	dB dB dB dB			-82 -78 -88 -88
Integrated Phase Noise	100Hz to 5.5kHz, double sided integration	dB		-60	-56
Settling Time	Phase error < 10 degrees	ms		5	
VCO Supply Current (I <sub>cc1</sub> )	Recommended operating condition	mA		47	60
PLL Supply Current (I <sub>cc2</sub> )	Recommended operating condition	mA		13	15
VCO Power Supply (V <sub>cc1</sub> )	Recommended operating condition	V	+4.75	+5.00	+5.25
PLL Power Supply (V <sub>cc2</sub> )	Recommended operating condition	V	+2.7	+3.3	+3.6

1. All specification limits are indicated values @ +25 °C and apply over F<sub>out</sub> unless otherwise stated.  
2. See "Absolute Maximum Ratings" for T<sub>op</sub>.

1

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**Electrical Specifications<sup>1</sup>: (cont'd)**

Parameter	Test Conditions	Units	Min	Typ	Max
Reference Frequency (F <sub>R</sub> )	1.0 V pp ± 0.2V Max phase noise on reference: 100Hz: -105 dBc/Hz 1kHz: -130 dBc/Hz 10kHz: -145 dBc/Hz	MHz		52.0	
PLL Lock Monitor Output	Locked = V <sub>CC2</sub> - 0.4 Min , Unlocked = 0.4V Max				

**Pin Configuration**

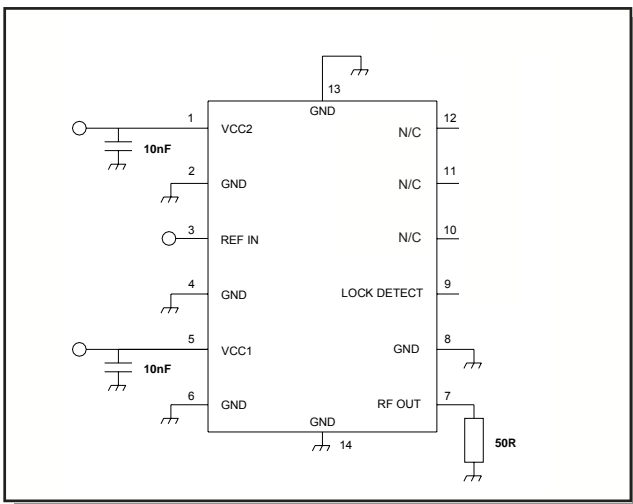
Pin No.	Function	Pin No.	Function
1	V <sub>CC2</sub>	8	GND
2	GND	9	Lock Detect
3	Ref I/P	10	NC
4	GND	11	NC
5	V <sub>CC1</sub>	12	NC
6	GND	13	GND
7	RF O/P	14	GND

**Absolute Maximum Ratings**

**T<sub>A</sub> = +25°C**

Parameter	Absolute Maximum
VCO Supply Voltage (V <sub>CC1</sub> )	-0.3V to 6.5 V
PLL Supply Voltage (V <sub>CC2</sub> )	-0.3V to 6.5 V
Reference Frequency Level	-0.3V to 6.5 V
Operating Temperature	-40°C to +85°C
Storage Temperature	-45°C to +120°C
Solder Assembly Temperature	See App Note M2032
Weight	3.0 grams

**Functional Block Diagram**



1. The diagram above shows a typical application.
2. The Reference input and RF output are internally AC coupled.
3. The diagram applies when digital lock detect is selected. For analog open-drain mode, a filter is required.

1. Operation of this device above any one of these parameters may cause permanent damage.
2. Static sensitive, observe appropriate handling precautions.

**Environmental Specifications**

Devices are designed to function after exposure to the shock, vibration, thermal shock and moisture conditions typically encountered in base station and other infrastructure environments.

**Ordering Information**

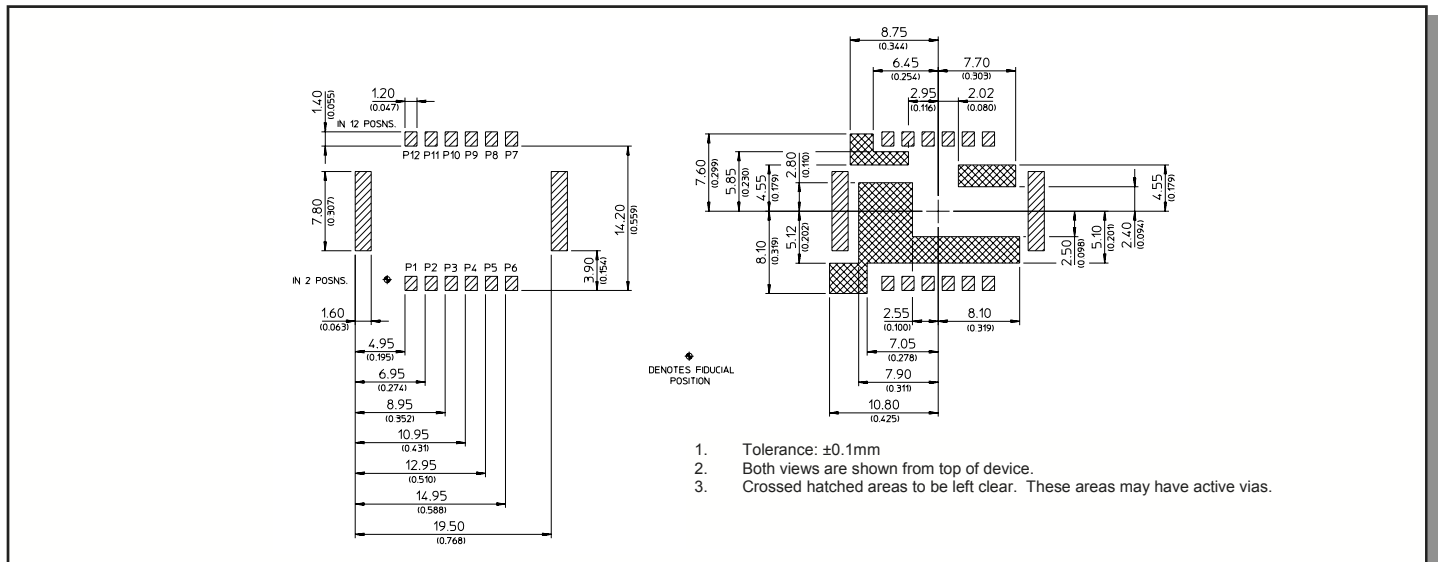
Part Number	Package
MAVC-060000-530768	Tape and Reel (300/Reel) <sup>1</sup>

1. See application note M513.

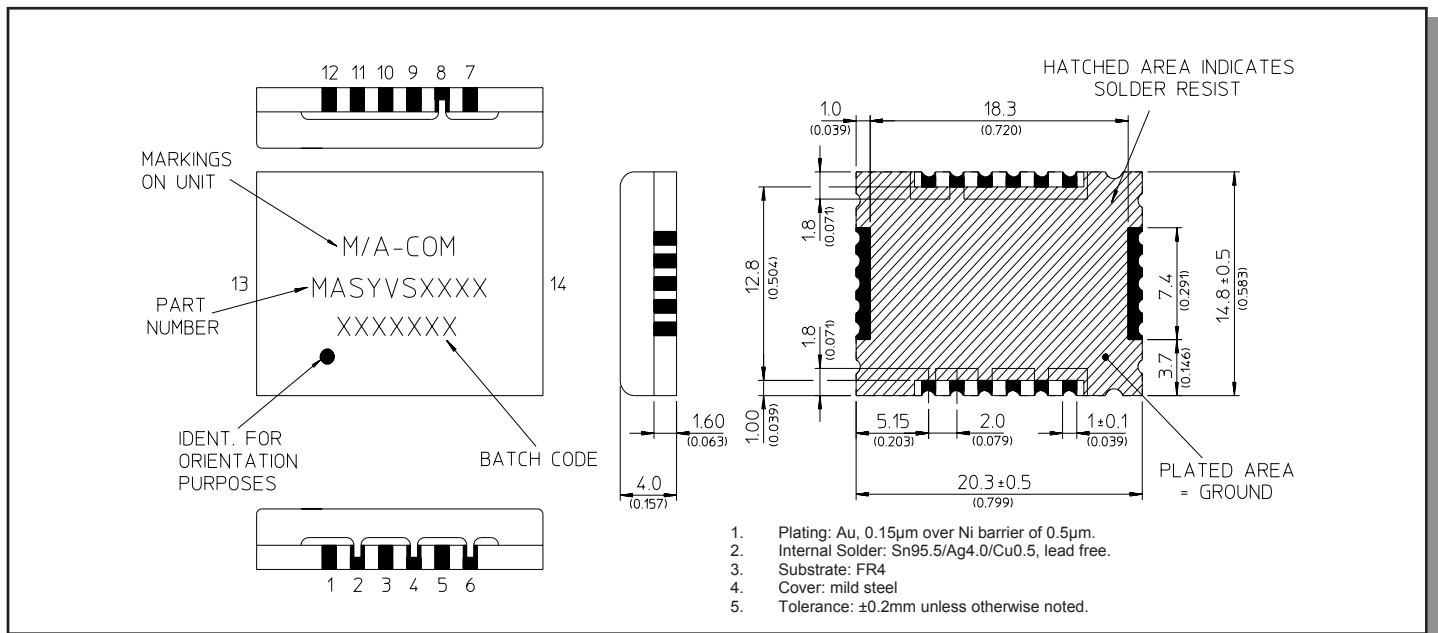
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**Recommended PCB Layout**



**Outline Drawing**



**ECO History**

Rev	Date	Description	By
A	Jan 9th 2006	Create datasheet	JS