

**Synthesizer , SMT
Fixed Frequency, 144 MHz**

MAVC-060000-100144

Rev: A

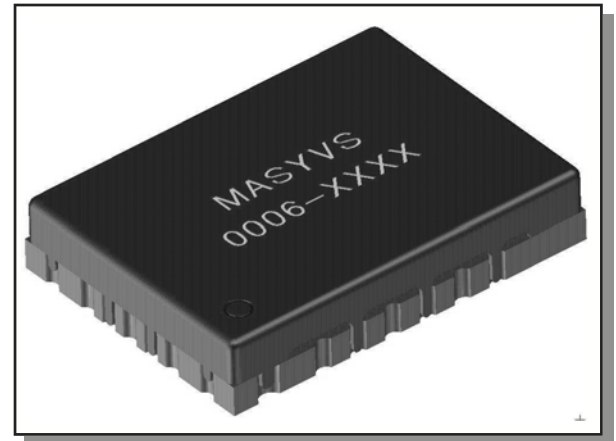
Features

- ◆ 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 Specifications¹:

T_A = +25°C, Z₀ = 50 Ohms, V_{cc1} = 5V, V_{cc2} = 3.3V.

Parameter	Test Conditions	Units	Min	Typ	Max
Frequency Range	Over T _{op} ²	MHz		144.0	
RF Output Power	Single ended output	dBm	0	+2.5	+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 _{cc1})	Recommended operating condition	mA		47	60
PLL Supply Current (I _{cc2})	Recommended operating condition	mA		13	15
VCO Power Supply (V _{cc1})	Recommended operating condition	V	+4.75	+5.00	+5.25
PLL Power Supply (V _{cc2})	Recommended operating condition	V	+2.7	+3.3	+3.6

1. All specification limits are indicated values @ +25 °C and apply over F_{out} unless otherwise stated.
2. See "Absolute Maximum Ratings" for T_{op}.

1

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Electrical Specifications¹: (cont'd)

Parameter	Test Conditions	Units	Min	Typ	Max
Reference Frequency (F _R)	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 _{CC2} - 0.4 Min , Unlocked = 0.4V Max				

Pin Configuration

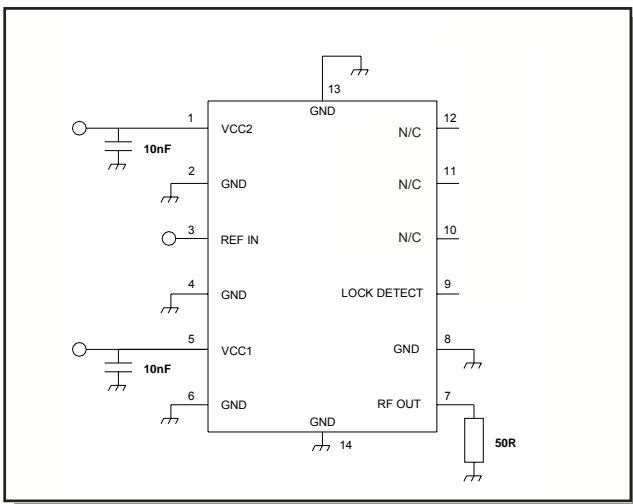
Pin No.	Function	Pin No.	Function
1	V _{CC2}	8	GND
2	GND	9	Lock Detect
3	Ref I/P	10	NC
4	GND	11	NC
5	V _{CC1}	12	NC
6	GND	13	GND
7	RF O/P	14	GND

Absolute Maximum Ratings

T_A = +25°C

Parameter	Absolute Maximum
VCO Supply Voltage (V _{CC1})	-0.3V to 6.5 V
PLL Supply Voltage (V _{CC2})	-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

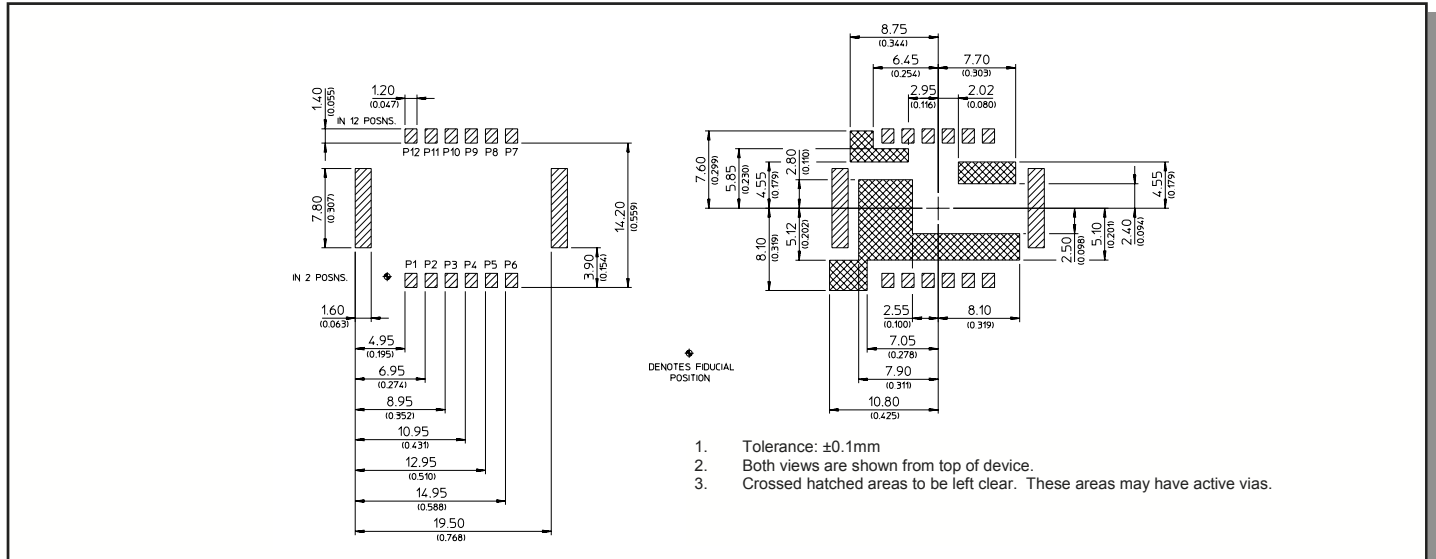
Part Number	Package
MAVC-060000-100144	Tape and Reel (300/Reel) ¹

1. See application note M513.

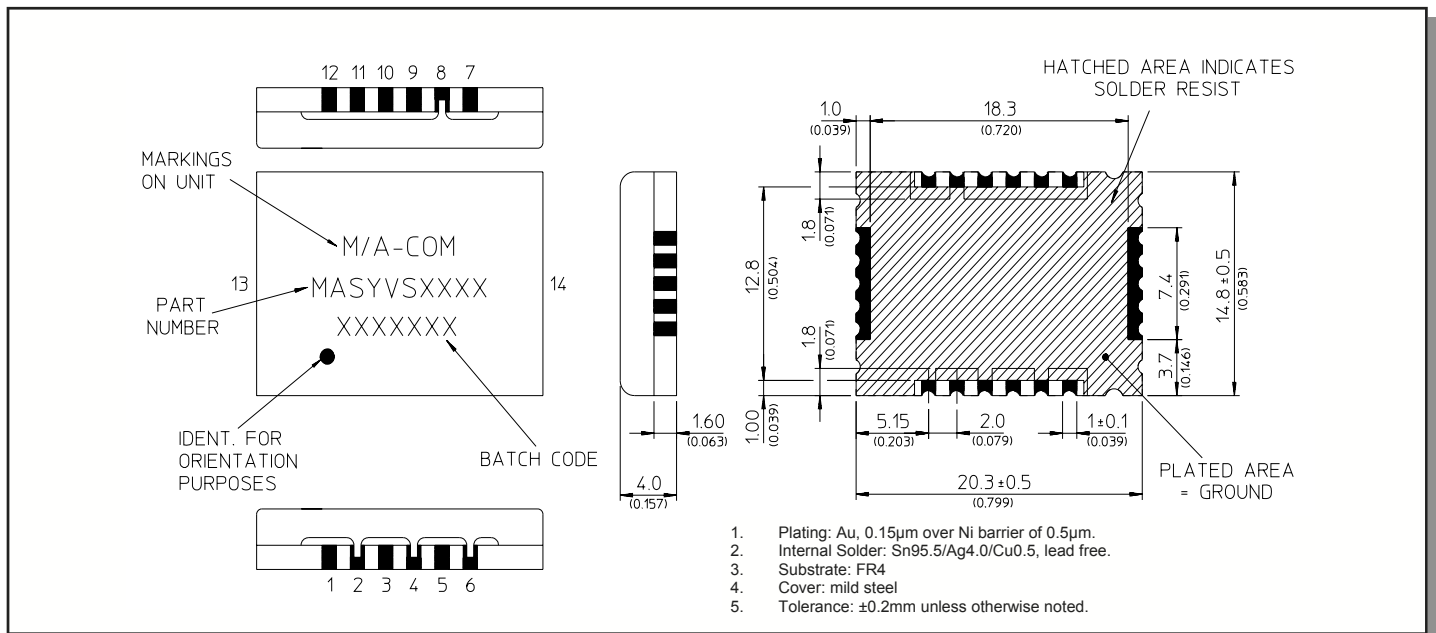
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Recommended PCB Layout



Outline Drawing



ECO History

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