

Synthesizer , SMT
2027 — 2222 MHz, 125 kHz PRELIMINARY

MAVC-060125-532125

Rev: A

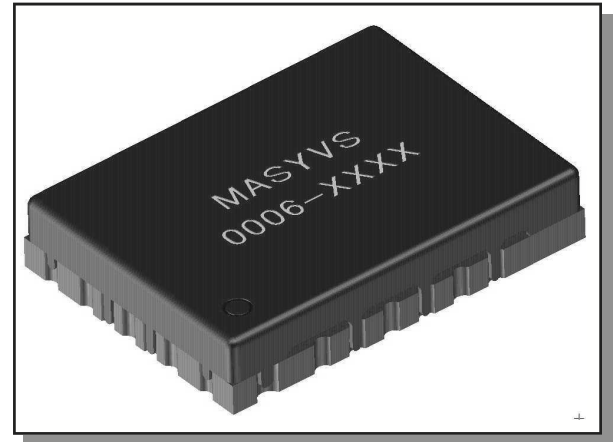
Features

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

Description

This synthesizer design integrates a high performance VCO, PLL, IC and discrete loop filter 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	2027		2222
RF Output Power	Single ended output	dBm	+3.0		+6.0
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 -141 -144
Harmonic Suppression	2nd and 3rd	dBc			-20
Phase Noise + Spurs	At 100 kHz, 11kHz bandwidth At 1 MHz, 1 MHz bandwidth At 3 MHz, 1 MHz bandwidth Reference & phase detector feedthrough spurs	dBc dBc dBc dBc			-82 -81 -84 -84
Settling Time		ms		5	
Integrated Phase Noise	100 Hz to 5.5 kHz, double sided integration	dB			-43
VCO Supply Current (I _{cc1})	Recommended operating condition	mA			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	+3.1	+3.3	+3.5

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}.

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Visit www.macom.com for additional data sheets and product information.

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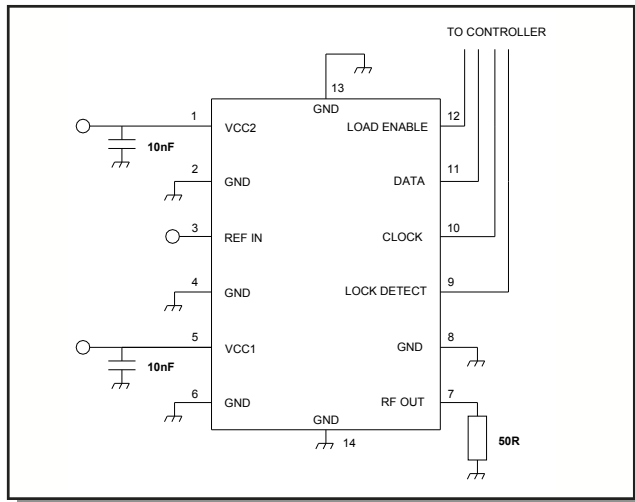
Electrical Specifications¹: (cont'd)

Parameter	Test Conditions	Units	Min	Typ	Max
Step Size (ΔF)	Recommended operating limit	kHz		125	
Reference Frequency (F_R)	1.0 V pp \pm 0.2V Maximum phase noise of reference: 100 Hz : -105 dBc/Hz 1 kHz : -130 dBc/Hz 10 kHz : -145 dBc/Hz	MHz		52	
PLL Programming	3-wire serial CMOS IAW ADF4153 Logic high = $V_{CC2} \times 0.8$ Min and Logic low = $V_{CC2} \times 0.2$ Max				
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	Clock
4	GND	11	Data
5	V_{CC1}	12	Load Enable
6	GND	13	GND
7	RF O/P	14	GND

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.

Absolute Maximum Ratings

$T_A = +25^\circ C$

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
Data, Clock, Strobe Voltages	-0.3V to $V_{CC} + 0.3$ 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

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

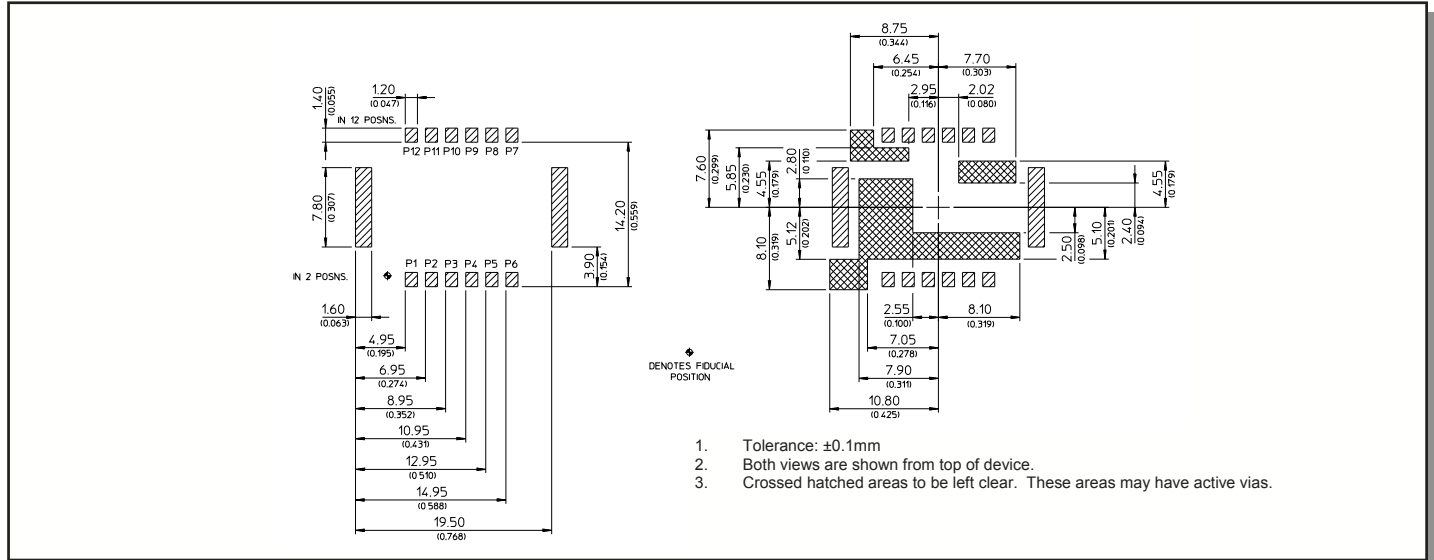
Part Number	Package
MAVC-060125-532125	Tape and Reel (300/Reel) ¹

1. See application note M513.

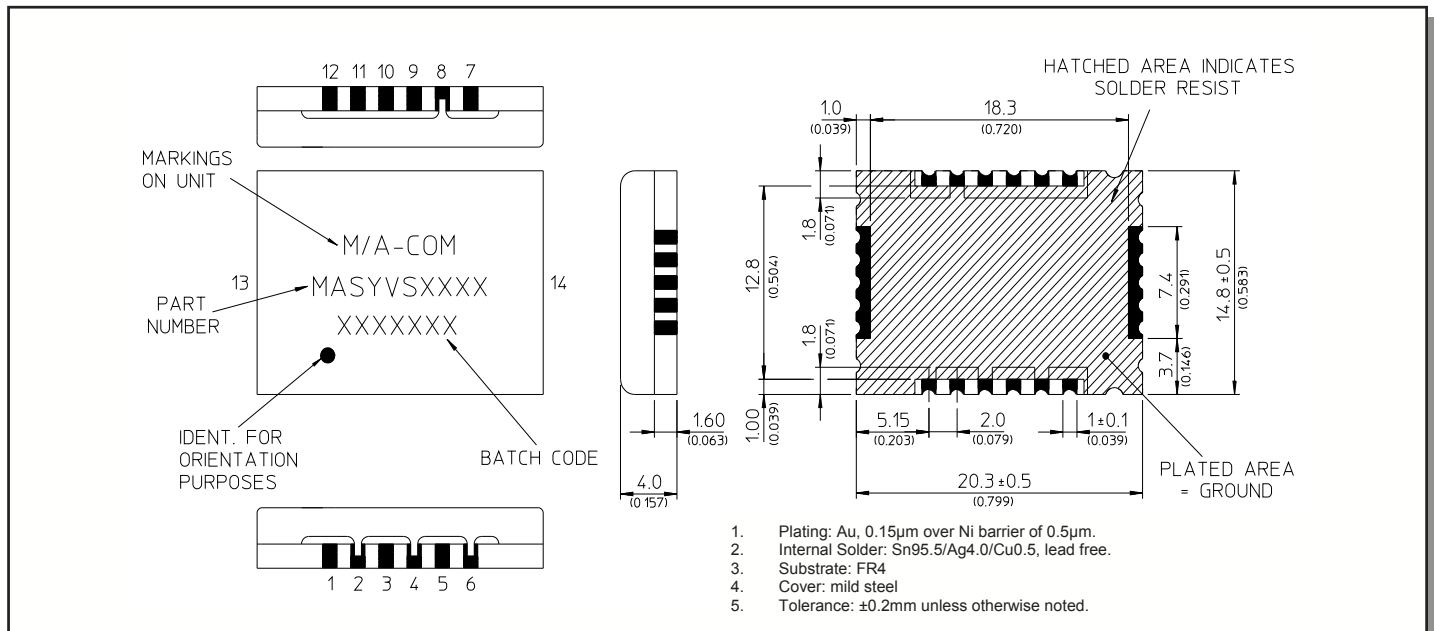
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Recommended PCB Layout



Outline Drawing



ECO History

Rev	Date	Description	By
A	Aug 2 2005	Create datasheet	BH