

Synthesizer , SMT 1920 — 2000 MHz, 100 & 200 kHz

MASYVS0006-1950

Rev: F

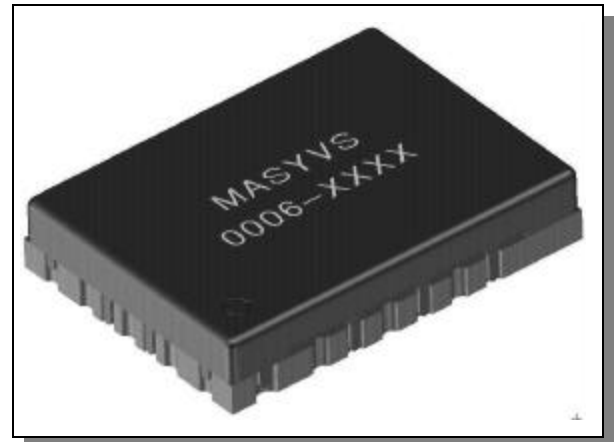
Features

- ◆ 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	1920		2000
RF Output Power	Over T _{op} ²	dBm	-3.0		+3.0
Phase Noise	SSB at 100 Hz offset from carrier SSB at 1 kHz offset from carrier SSB at 10 kHz offset from carrier SSB at 100 kHz offset from carrier SSB at 1.0 MHz offset from carrier	dBc/Hz dBc/Hz dBc/Hz dBc/Hz dBc/Hz			-65 -65 -90 -118 -138
Integrated Phase Noise	100 Hz to 1 MHz bandwidth	Degree		1.2	
Harmonic Suppression		dBc			-15
Spurious Suppression (Non-Harmonic)	Phase comparison frequency (± 100 kHz or ± 200 kHz)	dBc			-65
	Reference breakthrough (± 10 MHz)	dBc			-90
Frequency Lock Time	Over F _{out} , Measured to within ± 50 Hz	ms			50
VCO Supply Current (I _{cc1})	Recommended operating condition	mA		25	30
PLL Supply Current (I _{cc2})	Recommended operating condition	mA		6	10
VCO Power Supply (V _{cc1})	Recommended operating condition	V	+4.75	+5.00	+5.25
PLL Power Supply (V _{cc2})	Recommended operating condition	V	+2.85	+3.30	+3.45

1. All specification limits are indicated values @ +25°C and apply over F_{out} unless otherwise stated.
2. T_{op} = -40°C to +85°C operating temperature.

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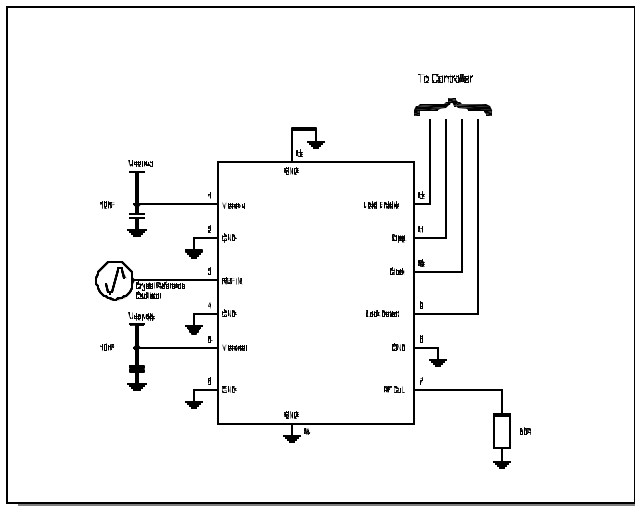
Electrical Specifications¹: (cont'd)

Parameter	Test Conditions	Units	Min	Typ	Max
Step Size (ΔF)	Recommended operating limit	kHz		100/200	
Reference Frequency (F_R)	1.0 V pp $\pm$ 0.2V square wave with input filter	MHz	5		40
PLL Programming	3-wire serial CMOS IAW LMX2326, Charge Pump 1 mA 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. See AN3003 for design information.

Absolute Maximum Ratings $T_A = +25^\circ\text{C}$

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

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

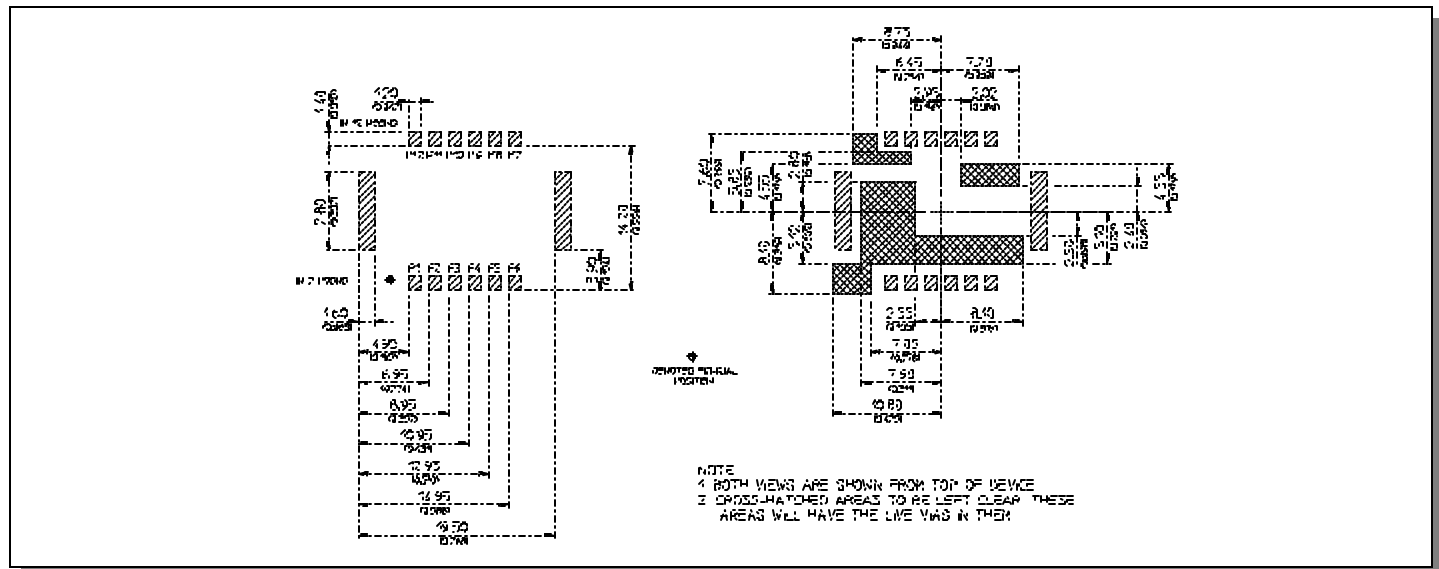
Part Number	Package
MASYVS0006-1950 B	Bulk Packaging
MASYVS0006-1950 T	Tape and Reel (300/Reel) ¹
MASYVS0006-1950 R	Reverse Tape and Reel (300/Reel) ¹

1. See application note M513.

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Recommended PCB Layout



Outline Drawing

