

SSM-2000

100 MHz Standard Temperature OCXO Source Module



Key Features

- Four 100 MHz sine wave outputs and two 100 MHz LVDS differential outputs
- Integrated power supplies, filters, and distribution amplifier
- Disciplined or free-running operation
- Very low phase noise of -118 dBc/Hz at 100 Hz offset, and noise floor of -160 dBc/Hz

Applications

- Unmanned Aerial Vehicles (UAV's)
- Radar systems
- Military satcom terminals
- Tactical radios
- · Test equipment

The Symmetricom® SSM-2000 is a compact, self-contained module that provides six 100 MHz outputs with high stability and very low phase noise, over a wide operating temperature range of -25°C to +75°C.

The SSM-2000 is based on a 10 MHz single-oven OCXO. This is used to phase lock a 100 MHz VCXO with excellent phase noise characteristics: <-118 dBc/Hz phase noise at a 100 Hz offset, and a noise floor of <-160 dBc/Hz. An onboard microprocessor provides aging and tempco correction for the SSM-2000, and the entire unit can be disciplined by an external 1 PPS or 10 MHz input.

Outputs are four separate 100 MHz sine wave signals with +6dBm amplitude, and two LVDS-compatible differential 100 MHz signals. The SSM-2000 also provides an LVDS-compatible 1 PPS output.

The SSM-2000 supports SCPI commands for status, control, and monitoring, and it also has TTL LOCK/ALARM status indicators. The built-in serial interface is user-selectable between TTL or RS-232-compatible levels.

The SSM-2000 consumes <3.2W steady state at +25°C, and it has a low profile height of only 0.66." As a free-running source, it has a holdover stability of $\pm 20\mu$ s over a 3-hour period at +25°C.

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Specifications

ELECTRICAL SPECIFICATIONS

MODULE

1 PPS Accuracy ±35ns rms to external reference,

16.666ns resolution

Better than ±8E-10 to external Frequency Accuracy

reference after 20 minutes ±20us/3 hrs @25.0°C. no airflow

Holdover Stability or motion, with 2 hrs reference

lock

ADEV 1s: <1E-11, 10s: <4E-11 1 PPS Outputs LVDS rising-edge aligned, (OCXO Flywheel ultra low jitter, sawtooth

Generated) removed

100MHz Outputs 2 x LVDS differential pairs at MMCX 100MHz, 4 x 100MHz sine wave,

+6dBm into 50Ω

Full control via SCPI-99 control RS-232 Control

commands, TTL or RS-232

External Reference 1PPS LVDS or 10MHz sine,

auto-switchover or manual select TTL Alarm Output

Holdover and event indicator (low active, 3.3V CMOS)

<15 min to <1.0E-09 accuracy at Warm Up Time / Stabilization Time +25°C, with onboard reference

only (typical)

13.8V to 15.5V DC, 15V nominal, Supply Voltage (Vdd)

<=100ms rise-time

< 3.2W at +25°C, steady-state Power Consumption

Operating Temperature -25°C to +75C

MIL-STD-202, method 204, Environmental Conformance condition I-A

Storage Temperature -55°C to +90°C Weight < 55 grams

OSCILLATOR SPECIFICATION

Frequency Output 4x 100MHz, MMCX connectors, 2x LVDS differential pairs,

Samtec connector

100MHz Retrace ±5E-08 after 24. hrs. on, 24 hrs. off,

1 hr. on @ 25°C (no reference lock)

±1.2E-08 temperature coefficient Frequency Stability

±2.5E-9/q/axis, acceleration

sensitivity, 10MHz

±3.0E-09/g/axis acceleration

sensitivity, 100MHz

At least ±40Hz @ 100MHz

Output Amplitude 6dBm ±2dB into 50Ω

Frequency adjustment range (SCPI control or to external reference)

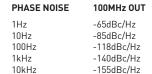
Harmonics (Sine <-45dBc

Output)

<0.5ppm in 10 years

< 8 min to $\pm 2E-8$ (ref. to Warm Up Time at 25°C

frequency after 1 Hr)



100KHz

Connector Type: Samtec, PN: TFML-115-01-S-D-LC

-160dBc/HZ

PIN	DESCRIPTION	LEVEL	IN/OUT
1	GND	GND	IN
2	GND	GND	IN
3	+15V Power	13.8V to 15.5V	IN
4	+15V Power	13.8V to 15.5V	IN
5	GND	GND	IN
6	GND	GND	IN
7	SCPI TXD TTL	3.3V CMOS	OUT
8	SCPI TXD RS232	RS232	OUT
9	GND	GND	IN
10	SCPI RXD RS232	RS232	IN
11	SCPI RXD TTL	3.3V CMOS	IN
12	GND	GND	IN
13	RESET#	3.3V Open Collector	IN
14	100MHz LVDS-A P	LVDS	OUT
15	EVENT#	3.3V CMOS	OUT
16	100MHz LVDS-A N	LVDS	OUT
17	GND	GND	IN
18	GND	GND	IN
19	TTL#/RS232	3.3V CMOS	IN
20	100MHz LVDS-B P	LVDS	OUT
21	ENTER ISP#	3.3V CMOS	IN
22	100MHz LVDS-B N	LVDS	OUT
23	GND	GND	IN
24	GND	GND	IN
25	1PPS REF-IN P	LVDS	IN
26	1PPS OUT P	LVDS	OUT
27	1PPS REF-IN N	LVDS	IN
28	1PPS OUT N	LVDS	OUT
29	GND	GND	IN
30	GND	GND	IN

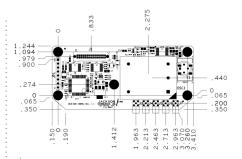


Figure 1: Connector Pinout Schematic

