

9.05 to 9.55 GHz Dual Channel RF Downconverter Core Module

The SC5360B is a 9.05 GHz to 9.55 GHz, dual channel, dual-stage conversion, super-heterodyne downconverter with integrated local oscillators (LO) that delivers superior performance. Designed initially for EW, it meets demanding applications such as X-band radar systems, communication systems, spectral monitoring systems, and as a sub-system component in custom precision test equipment (e.g., spectrum analyzers).



The SC5360B has a typical noise figure of 5 dB, typical gain of 63 dB (no attenuation), and input OIP3 better than 35 dBm. It also exhibits very low phase noise; better than -100 dBc/Hz @ 10 kHz offset from the carrier.

The standard output IF is 140 MHz with a 3 dB bandwidth of 40 MHz and exhibits no spectral inversion. Both channels are driven directly by common LOs, making the SC5360B desirable for applications that require dual coherent reception of signals in a compact size. Typical power consumption is less than 17 Watts, thus it is suitable for portable applications. Communication interface is USB, RS-232, or 4-wire SPI.

Frequency accuracy is provided by an onboard 100 MHz crystal oscillator (VCXO) which can be phase locked to an external reference source if required, and it is recommended to do so in applications that may require a more stable and accurate base reference. All LOs are by default referenced to the internal VCXO, however, the device can be programmed to have all internal LOs referenced directly to an external source, bypassing the internal VCXO.

Product Features

- Low residual phase noise < -100 dBc/Hz @ 10 kHz offset
- Signal bandwidth 40 MHz
- Noise figure 4.8 dB typical
- Output IP3 > 38 dBm
- LO leakage < -100 dBm
- IF Test Ports

TECHNICAL SPECIFICATIONS (AT 25°C AMBIENT, SINE WAVEFORM)

SPECTRAL SPECIFICATIONS

RF input frequency range	9.05 – 9.55 GHz
IF output center freq	140 MHz non-inverted
Real-time IF Bandwidth (3 dB)	40 MHz
Internal frequency reference stability	< ±20 ppm
Aging	< 1 ppm after 1 year
Phase locking range	±20 ppm
Tuning ¹	
Range	±250 MHz
Resolution	1.5 MHz

Sideband phase noise (typical, dBc/Hz)

Offset	Max dBc/Hz	Typical dBc/Hz
100 Hz	-85	-88
1 kHz	-92	-95
10 kHz	-97	-100
100 kHz	-101	-106
1 MHz	-123	-128

Sideband phase spurious signals

< 100 kHz	-65 dBc typical
> 100 kHz	-70 dBc typical

AMPLITUDE SPECIFICATIONS

Gain.....	63 dB typical
Noise Figure.....	4.8 dB typical
Nominal Input RF range	-167 dBm to -25 dBm
Max input (without damage)	+ 10 dBm
IF Output Compression	+ 13 dBm
IF attenuation	0 to 60 dB
IF attenuation resolution	1 dB
Accuracy (calibration applied) ²	±0.75 dB
Input P1dB compression (< 30 dB Gain)	-25 dBm typical
IIP3 (2 tone at -40 dBm)	-13 dBm typical
IMD3 ³ (two -50 dBm input tones, 1 MHz apart)	< -70 dBc
Channel Isolation.....	> 75 dB

TERMINAL SPECIFICATIONS

RF input and IF output terminals

Impedance	50 Ω
RF VSWR	< 1.5
IF VSWR	< 1.5
Connector type	SMA female
Coupling	AC

Reference input terminal

Impedance (single ended)	50 Ω
Connector type	SMA female
Coupling	AC
Frequency	10/100 MHz
Amplitude range	
Locking	-5 dBm to +7 dBm
Direct Drive.....	+0 dB to +7 dBm
Frequency Lock range	± 10 ppm

Communication interface

Power consumption	16.5 W typical
Operating temperature ⁴	0°C to 50°C
Weight	1.6 lbs
Dimensions (W x H x D, max envelope)	3.7" x 0.8" x 6.4"
Warranty	1 year parts and labor on defects in materials or workmanship

ORDER INFORMATION

7100039-03 SC5360B, 9.55 GHz X-Band Dual Channel RF Downconverter Core Module with USB and SPI Interface

Specifications are subject to change without notice. For the most recent product specifications, please visit www.signalcore.com.

(1) Tuning is available over a wider range. Range depends on frequency option. Contact SignalCore for details.
 (2) All units are factory calibrated and calibration is stored in onboard EEPROMs..
 (3) IMD3 specified for 0 dBm IF output power, gain at 50 dB.

(4) It is required of the user to keep the internal device temperature below 65 °C under the specified ambient temperature conditions.