



S-Band to X-Band Frequency Converter Card FC-SX-001

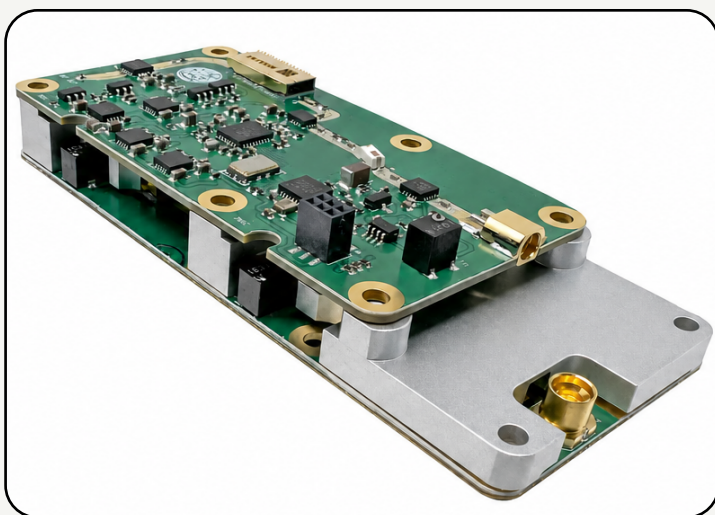
3W | Input: 2125-2625 MHz | Output: 8000-8500 MHz

TRL 9

Over 80 shipped for LEO operation

FC-SX-001 is a highly integrated, ultra-low-SWaP S-band-to-X-band frequency converter card designed to occupy approximately half the space of a standard CubeSat card. It enables CubeSat designers to operate existing S-band radio hardware over an X-band link.

Upconversion requires only an RF input, with no external oscillator reference needed, allowing simple and seamless system integration.



Key Features

- Complete 1/2 card converter assembly with internal synthesizer and reference
- Forward output power detection
- Phase Noise, Spurious / Harmonic Performance suitable for LEO RF communications links
- Low DC current draw for power sensitive applications
- UART communications for RF output power, DC current draw, and temperature reporting
- UART controllable on/off control and thermal shut-off thresholds



RF Performance Specifications

Parameter	Min	Typical	Max	Unit
Operating Frequency (Input)	2125		2625	MHz
Operating Frequency (Output)	8000		8500	MHz
Psat Power Output		35		dBm
Conversion Gain (Linear)	28		30	dB
Conversion Gain (Psat)	25		28	dB
CW Input Power to Drive to Psat		9		dBm
Gain Flatness (Peak to Peak)		1.5	2	dB
Temperature-Dependent Gain Fluctuation			±1.5	dB
Input Return Loss		-15		dB
Maximum Input Power			16	dBm
2nd Harmonic			-60	dB
3rd Harmonic			-60	dB
Spurious			-30	dBm

Electrical Specifications

Parameter	Min	Typical	Max	Unit	Notes
Supply Voltage Range	6.5	7	7.5	VDC	Supply voltage is directly tied to MMIC devices through a MOSFET switch. Performance data is based on 7.0 V operation; lower voltage may yield lower RF performance.
Quiescent Current Draw (Disabled)		0.02		A	
Quiescent Current Draw (Enabled)		2.7		A	
Operating Current Draw		3.1		A	
ON/OFF Control Enabled (High)		5		VDC	5 V TTL levels
ON/OFF Control Disabled (Low)		0		VDC	5 V TTL levels



Environmental Specifications

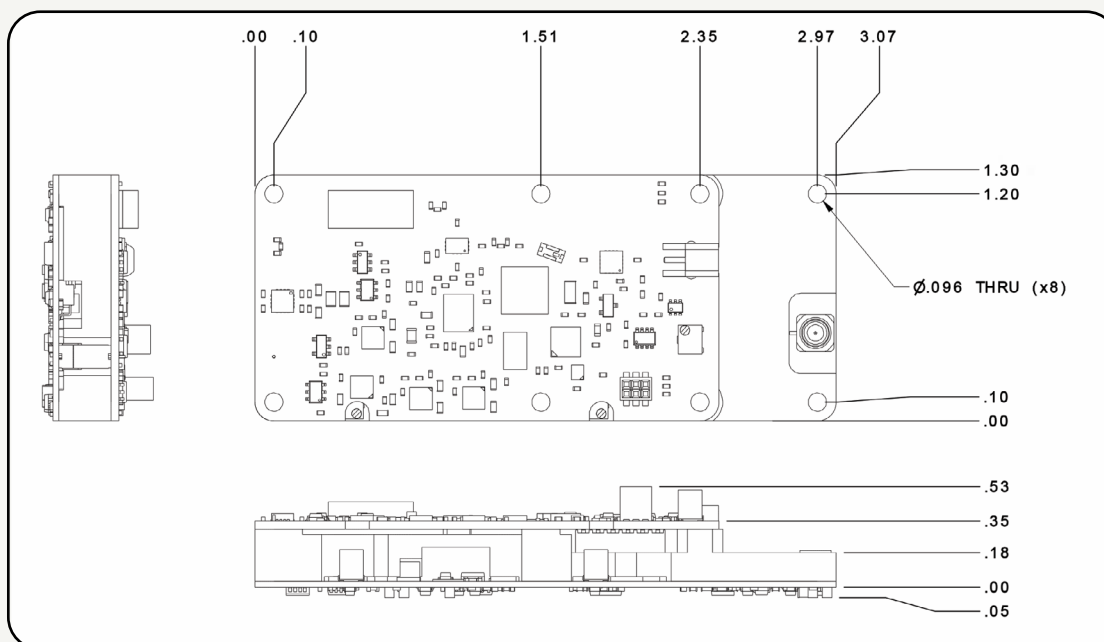
Parameter/Condition	Min	Typical	Max	Unit
Operating Temperature (Note 1)	-40		85	°C
PA Shut-Off Temperature		90		°C
Shock / Vibration	MIL-STD-810			

Note 1: Amplifier baseplate temperature; tested on a 0.150-inch-thick aluminum test fixture.

Mechanical Specifications

Parameter	Typical	Unit	Notes
Dimensions	3.07 × 1.3 × 0.55 (77.98 × 33.02 × 13.97)	inches (mm)	L × W × H
Input RF Connectors	MMCX-F	Connector	Mating connector type: MMCX-M
Output RF Connectors	SMP Vertical-M	Connector	Mating connector type: SMP Vertical-F
DC/Control Connector	Omnetics PZN A79643-001	Part Number	Mating connector P/N: Omnetics A79640-001
Mounting	2-56 Through Holes		See mechanical outline
Weight	1.2 (34.02)	oz (g)	

Mechanical Outline





DC/Control Connectors

(Omnetics PN: PZN A79643-001)

Pin	Description	Type	I/O	Notes
1	ON/OFF	Input	Input	High = Enabled; Low = Disabled
2	UART	Digital	Output	μP Interface (TX)
3	UART	Digital	Input	μP Interface (RX)
4	GND	Power	Input	Ground
5	GND	Power	Input	Ground
6	GND	Power	Input	Ground
7	GND	Power	Input	Ground
8	GND	Power	Input	Ground
9	GND	Power	Input	Ground
10	GND	Power	Input	Ground
11	+VDC	Power	Input	Supply Voltage
12	+VDC	Power	Input	Supply Voltage
13	+VDC	Power	Input	Supply Voltage
14	+VDC	Power	Input	Supply Voltage
15	+VDC	Power	Input	Supply Voltage
16	+VDC	Power	Input	Supply Voltage
17	+VDC	Power	Input	Supply Voltage
18	+VDC	Power	Input	Supply Voltage
19	GND	Power	Input	Ground
20	GND	Power	Input	Ground