



FRONTGRADE

PRODUCT BRIEF

Frontgrade SRFM

Frontgrade System RF

Module Advanced Product Brief

4/16/2024
Version 1.0.0

Introduction

The Frontgrade™ System RF Module™ (SRFM) uses an Analog Devices' AD9172 Digital to Analog Converter (DAC) that's configured to support a 16-bit, 12.6 GSPS channel and an Analog Devices' AD9213 Analog to Digital Converter (ADC) that's configured to support a 12-bit, 10.25 GSPS channel. The module accepts a 100MHz reference clock and uses that clock to generate the sampling clocks used by the DAC and ADC. The module includes Frontgrade's MO ARM processor which handles configuring the DAC, ADC, and the clocking devices along with providing module health status. The Compact 3U design allows systems to add additional modules for additional channels.

System RF Module: SRFM

Features

AD9172 Digital to Analog Converter (DAC)

- 12.6 GSPS, 16-Bit Resolution, with interpolation
- 6.16 GSPS, 16-Bit Resolution, no interpolation
- Supports Real and Complex Data
- 48-bit NCO
- JESD204B x8
- 2-tone intermodulation distortion (IMD) = -83 dBc at 1.8 GHz, -7 dBFS/tone RF output
- Spurious free dynamic range (SFDR) <-80 dBc at 1.8 GHz, -7 dBFS RF output

AD9213 Analog to Digital Converter (ADC)

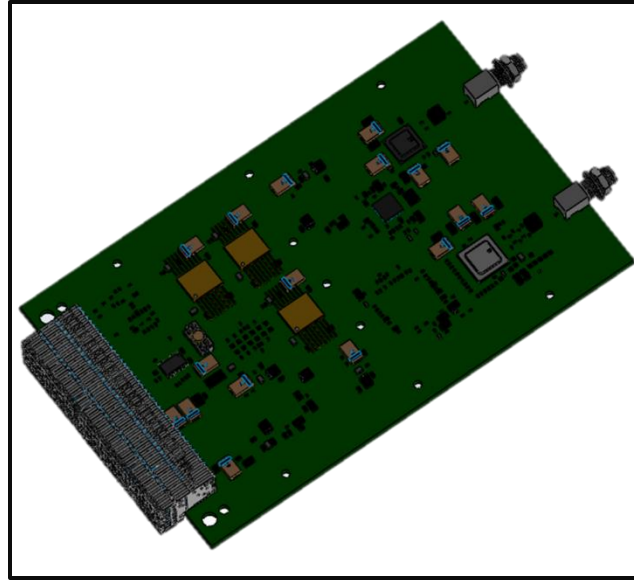
- 10.25 GSPS, 12-Bit Resolution, 6.5GHz bandwidth
- Integrated Digital Downconverter
- Supports Real and Complex Data
- 48-bit NCO
- JESD204B x8

Mass / Volume / Thermal

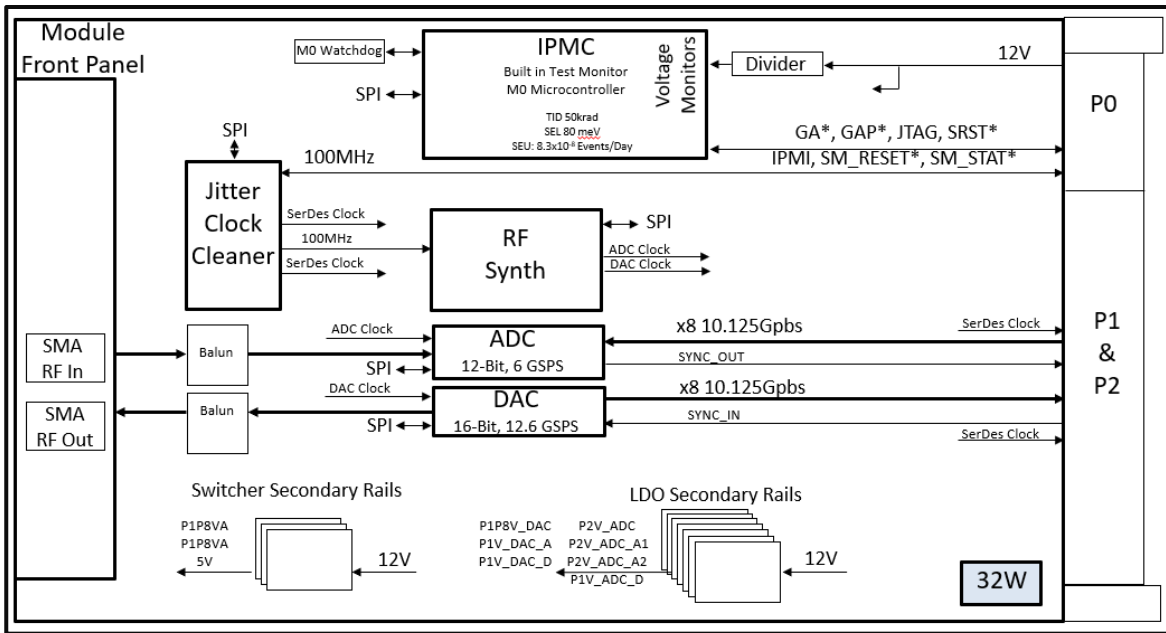
- Mass: less than 600 grams (estimated), standard 3U 160mm SpaceVPX form factor
- Maximum operating temperature mounted on a regulated thermal interface: 52°C
- Maximum power consumption: 32W

Operational Life / Reliability And Performance

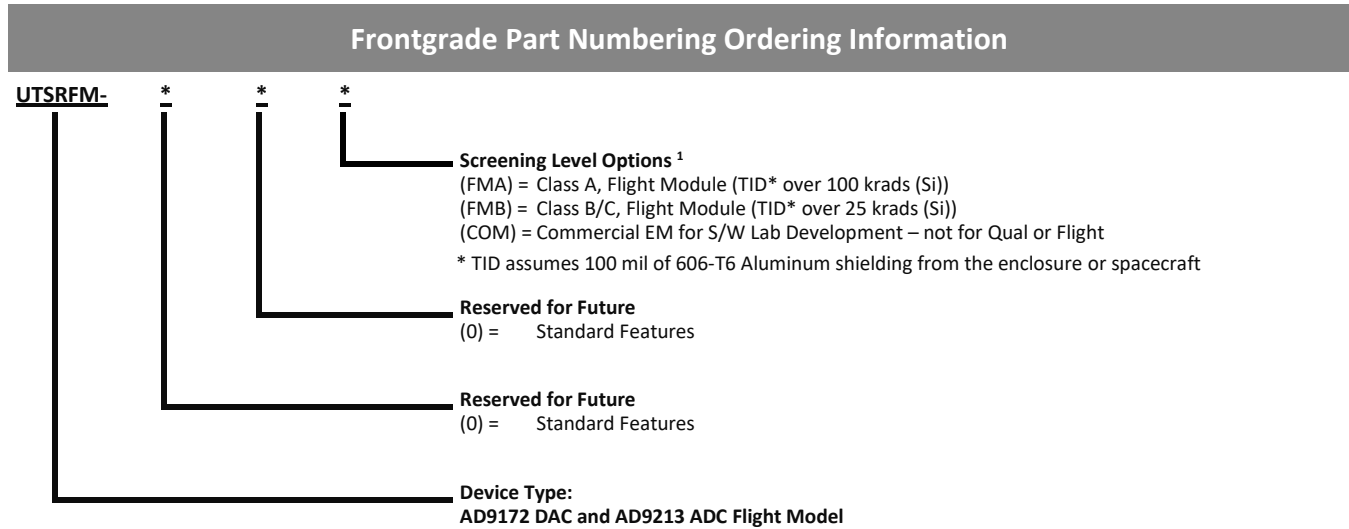
- System reliability over 0.9
- System SEU rate: No more than one per year for typical LEO Missions
- TID of 25 krad (Si) or 100 krad (Si) optional assuming 100 mils of shielding with 6061-T6 Aluminum
- Level-2 parts pedigree available



Frontgrade SRFM



Ordering Information



Notes:

1. Screening Level Options (FMA, FMB, or COM) must be specified.

Revision History

Date	Revision #	Author	Change Description	Page #
2/22/24	1.0.0	KCaster	First release in Frontgrade Template and descriptions updated	All

Datasheet Definitions

	Definition
Advanced Datasheet	Frontgrade reserves the right to make changes to any products and services described herein at any time without notice. The product is still in the development stage and the datasheet is subject to change . Specifications can be TBD and the part package and pinout are not final .
Preliminary Datasheet	Frontgrade reserves the right to make changes to any products and services described herein at any time without notice. The product is in the characterization stage and prototypes are available.
Datasheet	Product is in production and any changes to the product and services described herein will follow a formal customer notification process for form, fit or function changes.

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