



Introduction

The Frontgrade™ System Power Module™ (SPSM-SM) uses Space GaN devices to implement a 28V (or 100V) to 12V DC-DC converter to power SpaceVPX chassis. The 28V module accepts an unregulated input range of 22V to 36V and outputs a peak of 24As at 12V with a +/-5% tolerance. The module provides Pulse On and Pulse Off discretes, analog thermistor interface and a RS-422 current and status voltage interface. The module includes Frontgrade's UT32M0R500 ARM Cortex M0+ microcontroller, which handles enabling the 12V output switches and provides module health status. The Compact 3U SpaceVPX based design is a compatible power supply for use in Frontgrade's Reconfigurable Processing System (RPS-PS) and supports parallel operation for additional power demand.

Features

Primary Input Power

- 22V to 36V Input range, 28V Nominal
- 42V for 2 seconds Survival Limit
- 150uF Max Input Capacitance
- Isolated from secondary > 1 Meg ohm at 50V
- Pulse Discretes for ON and OFF
- MIL-STD-461 Revision G capable
- 15 pin D-sub Connector

Secondary Output Power

- 12V at 288W (peak)
- 12V at 125W (thermal/reliability nominal)
- Seven 12V outputs groups
 - Sharable
 - Six Switchable
 - One non-switchable
 - 9A max per group

Telemetry

- Analog Thermistor Interface
- Current and Voltage via RS-422

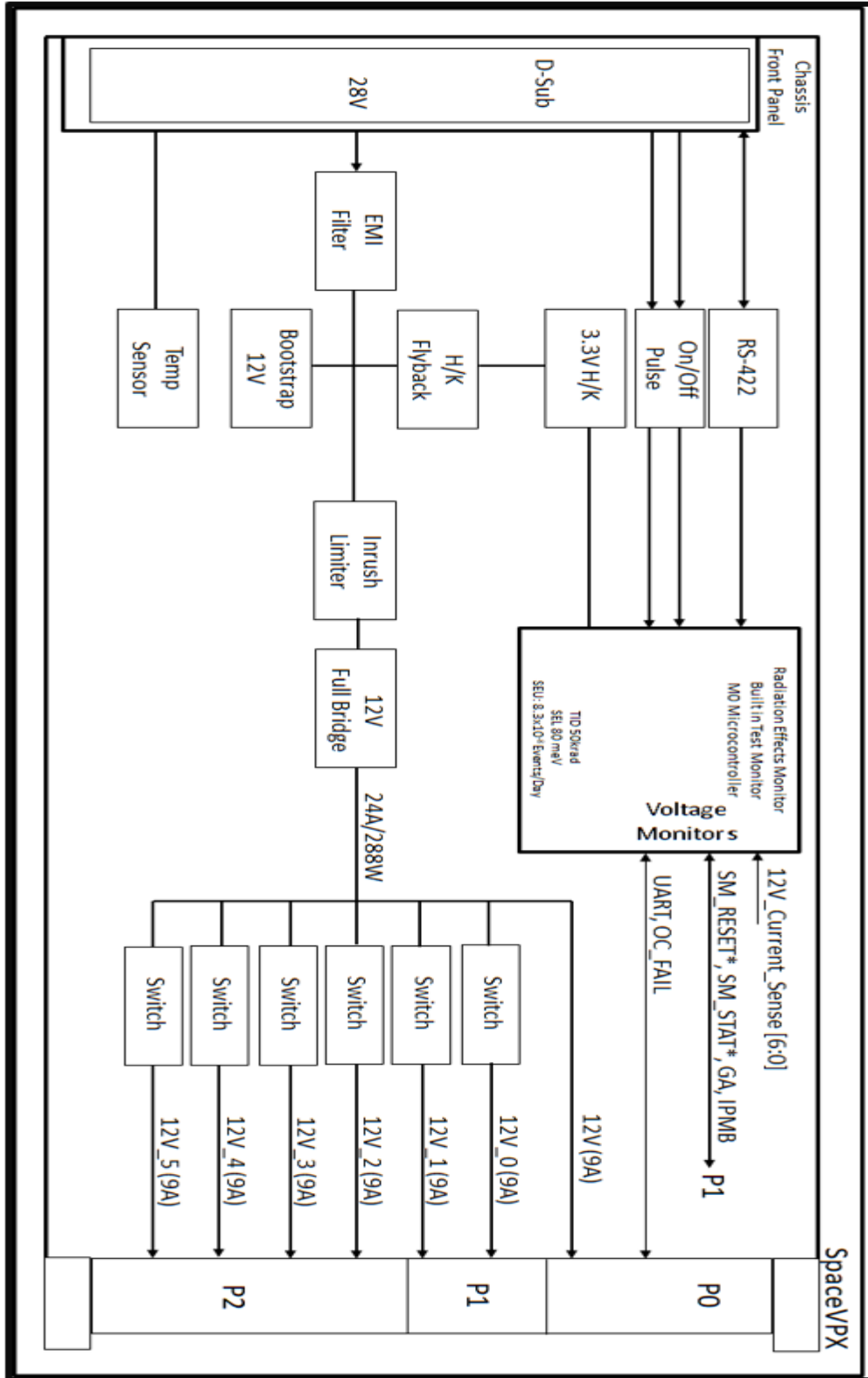
Mass / Volume / Thermal

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

Operational Life / Reliability And Performance

- System reliability over 0.98
- System SEU rate: No more than one ground intervention 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
- NASA PEM-INST-001 Level-2 parts pedigree available

Distribution Statement A: Approved for public release. Distribution is unlimited.



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