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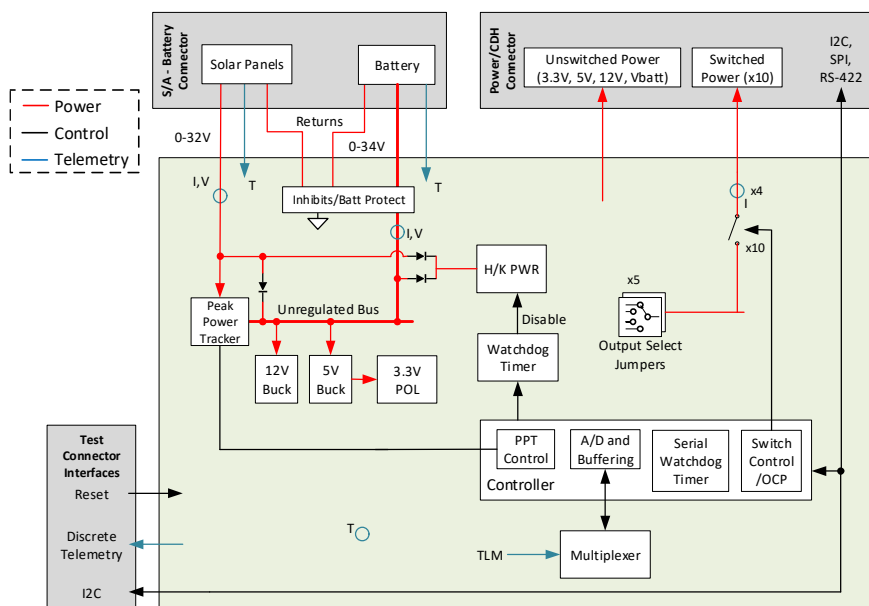
28V SmallSat Electric Power System



OVERVIEW

Ibeos's 250-Watt SmallSat Electric Power Subsystem (EPS) is a radiation tolerant, flexible peak-power tracking solution capable of efficient solar array power conversion and battery charging. The EPS provides regulated 3.3-Volt, 5-Volt, and 12-Volt power, as well as unregulated 28V battery power through switched and un-switched, current-limited outputs. The system accepts commands and provides telemetry via SPI and I²C interfaces. The EPS includes battery under/over-voltage and over-current protection in addition to a configurable watchdog timer for spacecraft loads.

BLOCK DIAGRAM



SPECIFICATIONS

Dimensions	96 x 90 x 14.5 mm
Mass	140 g
S/A Conversion Efficiency ₁	96%
12V Output Conversion Efficiency ₁	94%
5V Output Conversion Efficiency ₁	92%
3.3V Output Conversion Efficiency ₁	90%
Typical Quiescent Power Consumption ₂	1.5 W
Operating Temperature ₃	-40 to +105 °C
Single Event Effects	Operate through: LET > 37 Survive: LET > 55
Total Ionizing Dose	30 kRad (Si)

1. Typical Efficiency at >50% load, does not include ohmic loss from output switches
2. All converters enabled, no external loads
3. Designed to operate at full power with a 60°C interface temperature

Power Generation

- >250-Watt maximum input power (14-32 V)
- Solar array peak power tracking

Charging

- 33.6-Volt maximum charge voltage
- 7-Amp maximum charge current

Outputs

- 5.0-Volt regulated bus (6 A)
- 3.3-Volt regulated bus (3A)
- 12.0-Volt regulated bus (4A)
- Unregulated battery bus (10 A)
- 10x switched outputs
 - 15 mΩ typical resistance

C&DH

- I²C @ 400 kbps
- SPI @ 1 Mbps
- System configuration, telemetry, and output control

Built-In Protection

- Battery over-charge/discharge
- Battery over-current
- Programmable spacecraft watchdog timer
- Output latching current limiters
- Two-fault tolerant separation inhibits

Inquiries

info@ibeos.com