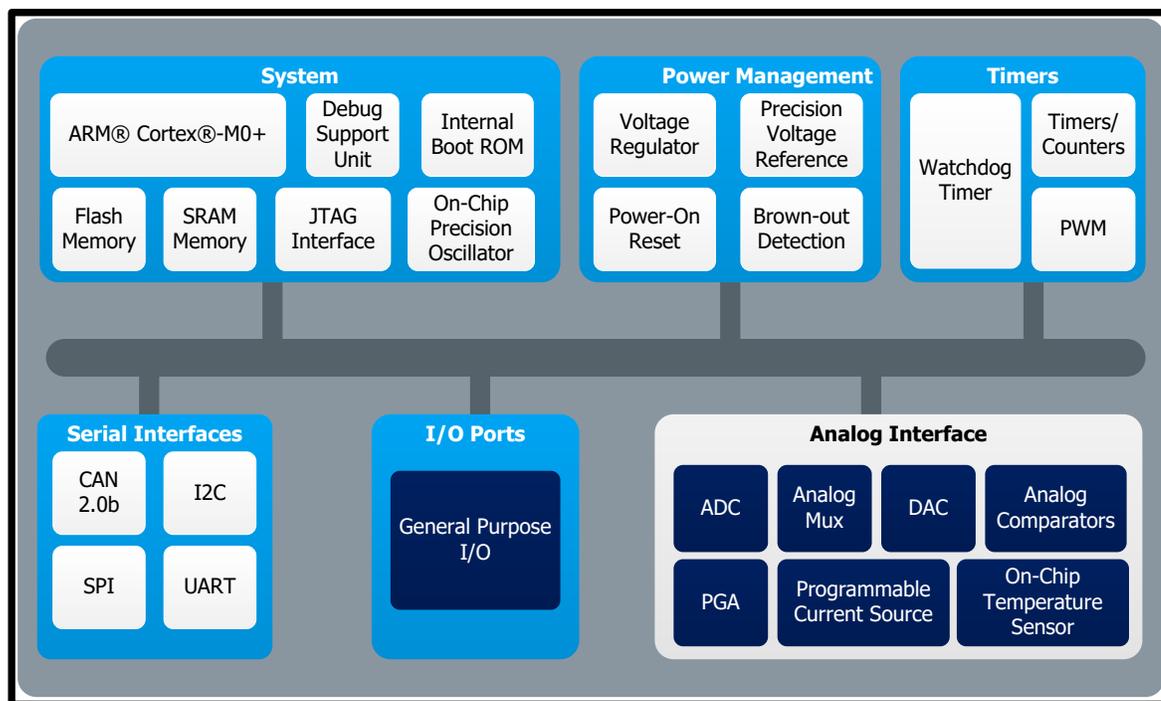32-bit ARM® Cortex® -M0+ Microcontroller

UT32M0R500

For space applications demanding the highest reliability and radiant tolerant products, Frontgrade offers the UT32M0R500, 32-bit Arm® Cortex® -M0+ microcontroller that is designed for a reduced total cost of ownership and low power.

Targeted for applications such as distributed control and command applications, this radiation tolerant microcontroller includes a complete front-end analog signal chain, wide range of digital and communication support. For added design flexibility, the microcontroller integrates two independent CAN 2.0B controllers for primary and redundant Controller Area Network (CAN) topologies. The UT32M0R500 incorporates a variety of power-saving modes to facilitate the design of low power applications all supported by the Keil® Development Tool Environment.

QML qualification has been successfully completed with SMD 5962-17212 available at DLA's website. The UT32M0R500 is available now in prototypes and production QML-Q, QML-Q+, and *Lean*REL®. A prototype evaluation board is available.

UT32M0R500 Block Diagram

32-bit ARM® Cortex® -M0+ Microcontroller

UT32M0R500

Features:

- 32-bit ARM® Cortex® -M0+ Processor @ 50MHz
- Single +3.3 V Supply
- Integrated Analog Functions
- 12-bit ADC with a Programmable Gain Amplifier
- Precision Current Source
- Two 12-bit DACs
- Two Analog Voltage Comparators
- Temperature Sensor
- Low Power Modes
- API Software Development Kit

Applications:

- CAN Bus Controller
- Space VPX Chassis Management
- Telemetry/System Health Monitoring
- Distributed Command and Control
- Data Acquisition
- RF Signal Chain Management

Operational Environment:

- Temp Range: -55°C to +105°C
- Single 3.3 V Supply Voltage (3.0 V to 3.6 V)
- TID: 50 krad(Si)
- SEL Immune: ≤ 80 MeVcm2/mg
- SER$_{HI}$: ≤2.81 × 10^{-12} errors/bit-day

Physical:

- Package Options: 143 pin CLGA, CBGA, CCGA
- 14.5 x14.5mm, 1mm pin pitch

Power:

- 300mW (typical)

Qualifications:

- QML-Q, Q+, and *Lean*REL®

*Lean*REL® components offer the right balance of reliability, radiation hardness and affordability for constellation space. Frontgrade's experience in high-reliability, radiation hardened design, packaging, testing, and screening is a strategic benefit to satellite designers and manufacturers looking for components that are mission matched and offer affordable reliability.