32-Bit ARM® Cortex®-M0 Microcontroller manufactured with HARDSIL® technology offering superior radiation performance >300K rad (Si) and latch-up immunity for extreme environments.

KEY FEATURES
- Manufactured with HARDSIL® technology
- 32-bit ARM® Cortex®-M0 processor
  - JTAG based debug interface
- Operating voltages
  - Core voltage 1.5 +/- 0.15V
  - I/O voltage 3.3 +/- 0.33V
- Clock rate 50MHz
- Memory
  - 32KB on-chip data and 128KB on-chip program memory
  - 1Kb Efuse for custom boot and unique ID support
  - On-chip Error Detection & Correction (EDAC) and Scrub
- Peripherals
  - 54 configurable GPIO pins
  - 2 UART interfaces
  - 2 I2C interfaces
  - 3 SPI interfaces (2 master/slave, 1 master)
- Timer System
  - 24 configurable 32-bit counters/timers
  - Input capture, Output compares
  - PWMs, Pulse Counters, Watchdog timer
- System Redundancy
  - Triple Modular Redundancy (TMR) - all internal registers
- Temperature range -55 to 125C
- Package
  - Ceramic 128 pin LQFP (14 x 14mm)
  - Die option available

RADIATION HARDENED PERFORMANCE
- Total Ionizing Dose (TID) > 300K rad (Si)
- Soft Error Rate (SER) with EDAC disabled: 1.3e-7 errors / bit-day
- Soft Error Rate (SER) with EDAC enabled: < 1e-15 errors / bit-day
- Latchup immunity > LET = 110 MeV-cm² / mg (T = 125C)

SUPPORT
- REB1 development board
- Keil™ MDK-ARM microcontroller software kit

APPLICATIONS
- Industrial
- Aerospace
- Space
- Medical
- Military

For more information, contact below or visit our web site at www.voragotech.com

VORAGO Technologies | 2028 East Ben White Blvd Suite 220, Austin, Texas, 78741 | info@voragotech.com
## MCU ORDERING INFORMATION

<table>
<thead>
<tr>
<th>Description</th>
<th>Part number</th>
<th>Environment</th>
<th>Temperature Range</th>
<th>Package</th>
</tr>
</thead>
<tbody>
<tr>
<td>Radiation-hardened microcontroller</td>
<td>VA10820-D0000F0EAA</td>
<td>Rad-hard 300K rad (Si)</td>
<td>-55 to 125 °C</td>
<td>Die</td>
</tr>
<tr>
<td>Radiation-hardened microcontroller</td>
<td>VA10820-CQ128F0EAA</td>
<td>Rad-hard 300K rad (Si)</td>
<td>-55 to 125 °C</td>
<td>Ceramic 128 LQFP</td>
</tr>
</tbody>
</table>

## DEVELOPMENT BOARD ORDERING INFORMATION

<table>
<thead>
<tr>
<th>Description</th>
<th>Part number</th>
<th>Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>Development Board</td>
<td>REB1-VA10820</td>
<td>Supported by Keil™ MDK-ARM Microcontroller Software Kit Board Support Package (BSP) includes example software for peripherals Segger J-Link OB</td>
</tr>
</tbody>
</table>

## REB1-VA10820 DEVELOPMENT BOARD BLOCK DIAGRAM

- PC
- VA10820 MCU
- Connector (GPIO) Arduino compatible
- Mode Select & Config. Jumpers
- 10 MHz Clock Generator
- 3.3V and 1.5V regulators
- 1Mbit EEPROM
- J-Link OB
- 6-pin PMOD connector
- 12-pin PMOD connector
- Temp sensor (I2C)
- 3 LEDs
- 2 push button switches
- Arduino compatible

For more information, contact below or visit our web site at [www.voragotech.com](http://www.voragotech.com)

VORAGO Technologies | 2028 East Ben White Blvd Suite 220, Austin, Texas, 78741 | info@voragotech.com

Rev 1.0