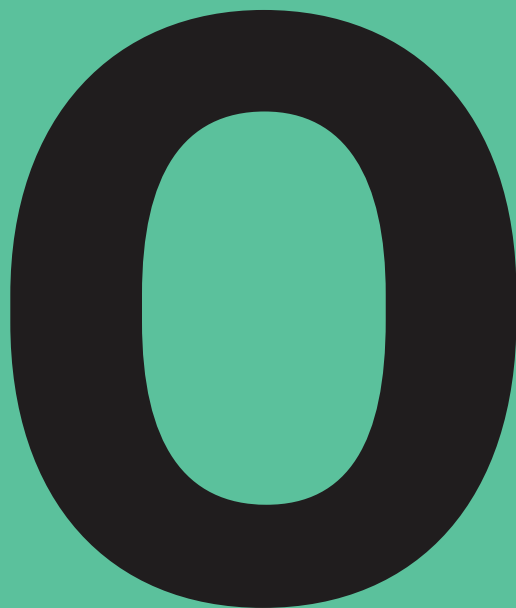
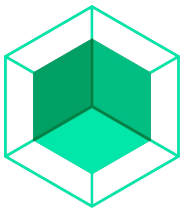




Samsung
ARTIK[™] Modules



020 Product Brief



ARTIK 020 Bluetooth[®] Module Product Brief

The ARTIK 020 is a Bluetooth[®] Module targeted for Bluetooth low energy applications where reliable RF, low-power consumption, and easy application development are key requirements. At +8 dBm TX power, ARTIK 020 is ideal for applications requiring short and medium range Bluetooth connectivity.

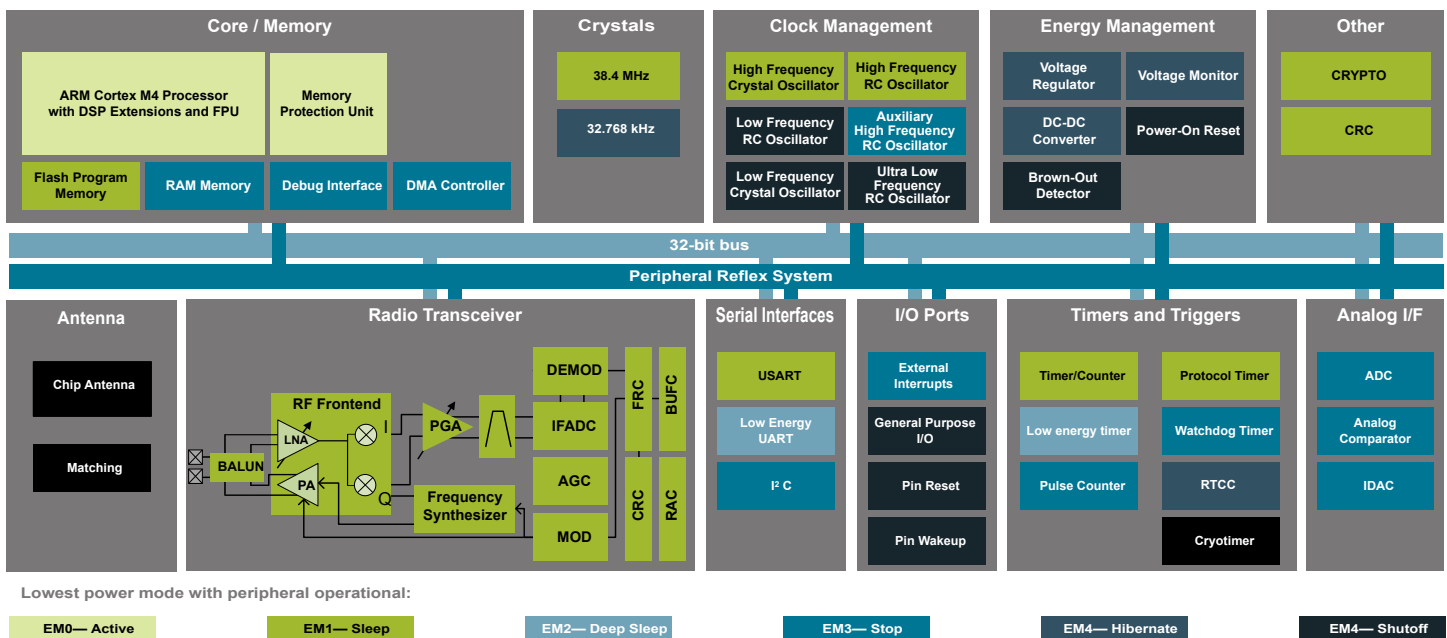
The ARTIK 020 integrates all of the necessary elements required for a Bluetooth application: Bluetooth low energy radio, a software stack, and GATT-based profiles, and it can also host end user applications, which means no external microcontroller is required in size, price or power constrained devices. The ARTIK 020 Bluetooth Module also has highly flexible hardware interfaces to connect to different peripherals or sensors.

ARTIK 020 can be used in a wide variety of applications:

- IoT Sensors and End Devices
- Commercial and Retail
- Health and Wellness
- Industrial, Home and Building Automation
- Smart Phone, Tablet and PC Accessories

KEY FEATURES

- Bluetooth 4.2 Compliant
- Integrated antenna
- TX power: up to +8 dBm
- RX sensitivity: down to -92 dBm
- Range: up to 200 meters
- 32-bit ARM[®] Cortex[®]-M4 core at 40 MHz
- Flash memory: 256 kB
- RAM: 32 kB
- Autonomous Hardware Crypto Accelerator and Random Number Generator
- Integrated DC-DC Converter
- Onboard Bluetooth stack



1. Feature List

The ARTIK 020 highlighted features are listed below.

- **Low Power Wireless System-on-Chip.**
 - High Performance 32-bit 40 MHz ARM Cortex®-M4 with DSP instruction and floating-point unit for efficient signal processing
 - 256 kB flash program memory
 - 32 kB RAM data memory
 - 2.4 GHz radio operation
 - TX power up to +8 dBm
- **Low Energy Consumption**
 - 8.7 mA RX current at 2.4 GHz
 - 8.2 mA TX current @ 0 dBm output power at 2.4 GHz
 - 63 µA/MHz in Active Mode (EM0)
 - 2.5 µA EM2 DeepSleep current (full RAM retention and RTCC running from LFXO)
 - 2.1 µA EM3 Stop current (State/RAM retention)
 - Wake on Radio with signal strength detection, preamble pattern detection, frame detection and timeout
- **High Receiver Performance**
 - -92 dBm sensitivity @ 1 Mbit/s GFSK (2.4 GHz)
- **Supported Protocols**
 - Bluetooth®
- **Support for Internet Security**
 - General Purpose CRC
 - Random Number Generator
 - Hardware Cryptographic Acceleration for AES 128/256, SHA-1, SHA-2 (SHA-224 and SHA-256) and ECC
- **Wide Selection of MCU peripherals**
 - 12-bit 1 Msps SAR Analog to Digital Converter (ADC)
 - 2× Analog Comparator (ACMP)
 - Digital to Analog Current Converter (IDAC)
 - 25 pins connected to analog channels (APORT) shared between Analog Comparators, ADC, and IDAC
 - 25 General Purpose I/O pins with output state retention and asynchronous interrupts
 - 8 Channel DMA Controller
 - 12 Channel Peripheral Reflex System (PRS)
 - 2×16-bit Timer/Counter
 - 3 + 4 Compare/Capture/PWM channels
 - 32-bit Real Time Counter and Calendar
 - 16-bit Low Energy Timer for waveform generation
 - 32-bit Ultra Low Energy Timer/Counter for periodic wake-up from any Energy Mode
 - 16-bit Pulse Counter with asynchronous operation
 - Watchdog Timer with dedicated RC oscillator @ 50nA
 - 2×Universal Synchronous/Asynchronous Receiver/Transmitter (UART/SPI/SmartCard (ISO 7816)/IrDA/I²S)
 - Low Energy UART (LEUART™)
 - I²C interface with SMBus support and address recognition in EM3 Stop
- **Wide Operating Range**
 - 1.85 V to 3.8 V single power supply
 - 2.4 V to 3.8 V when using DC-DC
 - Integrated DC-DC
 - -40 °C to +85 °C
- **Dimensions**
 - 12.9 x 15.00 x 2.2 mm

2. Ordering Information

Ordering Code	Description	Max TX Power	Antenna	Packaging	Production Status
ARTIK-020-AV2	ARTIK 020 Bluetooth Module	+8 dBm	Integrated chip antenna	Cut Reel (100 pcs)	Full Production (cer- tified)
ARTIK-020-AV2R	ARTIK 020 Bluetooth Module	+8 dBm	Integrated chip antenna	Reel (1000 pcs)	Full Production (cer- tified)
SIP-KITSLF001	ARTIK 020 Bluetooth Kit ¹	—	—	Development Kit	—

Note:

1. IAR license required for Bluetooth® software development.

Legal Information

INFORMATION IN THIS DOCUMENT IS PROVIDED IN CONNECTION WITH THE SAMSUNG ARTIK™ DEVELOPMENT KIT AND ALL RELATED PRODUCTS, UPDATES, AND DOCUMENTATION (HEREINAFTER "SAMSUNG PRODUCTS"). NO LICENSE, EXPRESS OR IMPLIED, BY ESTOPPEL OR OTHERWISE, TO ANY INTELLECTUAL PROPERTY RIGHTS IS GRANTED BY THIS DOCUMENT. THE LICENSE AND OTHER TERMS AND CONDITIONS RELATED TO YOUR USE OF THE SAMSUNG PRODUCTS ARE GOVERNED EXCLUSIVELY BY THE SAMSUNG ARTIK™ DEVELOPER LICENSE AGREEMENT THAT YOU AGREED TO WHEN YOU REGISTERED AS A DEVELOPER TO RECEIVE THE SAMSUNG PRODUCTS. EXCEPT AS PROVIDED IN THE SAMSUNG ARTIK™ DEVELOPER LICENSE AGREEMENT, SAMSUNG ELECTRONICS CO., LTD. AND ITS AFFILIATES (COLLECTIVELY, "SAMSUNG") AND ITS SUPPLIERS ASSUME NO LIABILITY WHATSOEVER, INCLUDING WITHOUT LIMITATION CONSEQUENTIAL OR INCIDENTAL DAMAGES, AND SAMSUNG DISCLAIMS ANY EXPRESS OR IMPLIED WARRANTY, ARISING OUT OF OR RELATED TO YOUR SALE, APPLICATION AND/OR USE OF SAMSUNG PRODUCTS INCLUDING LIABILITY OR WARRANTIES RELATED TO FITNESS FOR A PARTICULAR PURPOSE, MERCHANTABILITY, OR INFRINGEMENT OF ANY PATENT, COPYRIGHT, OR OTHER INTELLECTUAL PROPERTY RIGHT.

SAMSUNG RESERVES THE RIGHT TO CHANGE PRODUCTS, INFORMATION, DOCUMENTATION AND SPECIFICATIONS WITHOUT NOTICE. THIS INCLUDES MAKING CHANGES TO THIS DOCUMENTATION AT ANY TIME WITHOUT PRIOR NOTICE. CHARACTERIZATION DATA, AVAILABLE MODULES AND PERIPHERALS, MEMORY SIZES AND MEMORY ADDRESSES REFER TO EACH SPECIFIC DEVICE, AND "TYPICAL" PARAMETERS PROVIDED CAN AND DO VARY IN DIFFERENT APPLICATIONS. THIS DOCUMENTATION IS PROVIDED FOR REFERENCE PURPOSES ONLY, AND ALL INFORMATION DISCUSSED HEREIN IS PROVIDED ON AN "AS IS" BASIS, WITHOUT WARRANTIES OF ANY KIND. SAMSUNG AND ITS SUPPLIERS ASSUME NO RESPONSIBILITY FOR POSSIBLE ERRORS OR OMISSIONS, OR FOR ANY CONSEQUENCES FROM THE USE OF THE DOCUMENTATION CONTAINED HEREIN.

Samsung Products are not intended for use in medical, life support, critical care, safety equipment, or similar applications where product failure could result in loss of life or personal or physical harm, or any military or defense application, or any governmental procurement to which special terms or provisions may apply. Samsung Products shall under no circumstances be used in weapons of mass destruction including (but not limited to) nuclear, biological or chemical weapons, or missiles capable of delivering such weapons.

This document and all information discussed herein remain the sole and exclusive property of Samsung. All brand names, trademarks and registered trademarks belong to their respective owners. For updates or additional information about Samsung ARTIK™, contact the Samsung ARTIK™ team via the Samsung ARTIK™ website at www.artik.io. Silicon Laboratories Inc.®, Silicon Labs®, SiLabs®, Simplicity Studio™, EFR32™, LEUART™ and others are trademarks or registered trademarks of Silicon Laboratories Inc. ARM and Cortex-M4 are trademarks or registered trademarks of ARM Holdings.

Copyright © 2016 Samsung Electronics Co., Ltd.

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, electric or mechanical, by photocopying, recording, or otherwise, without the prior written consent of Samsung Electronics.



Samsung
Semiconductor, Inc.
3655 N. First Street
San Jose, CA 95134
USA

artik.io