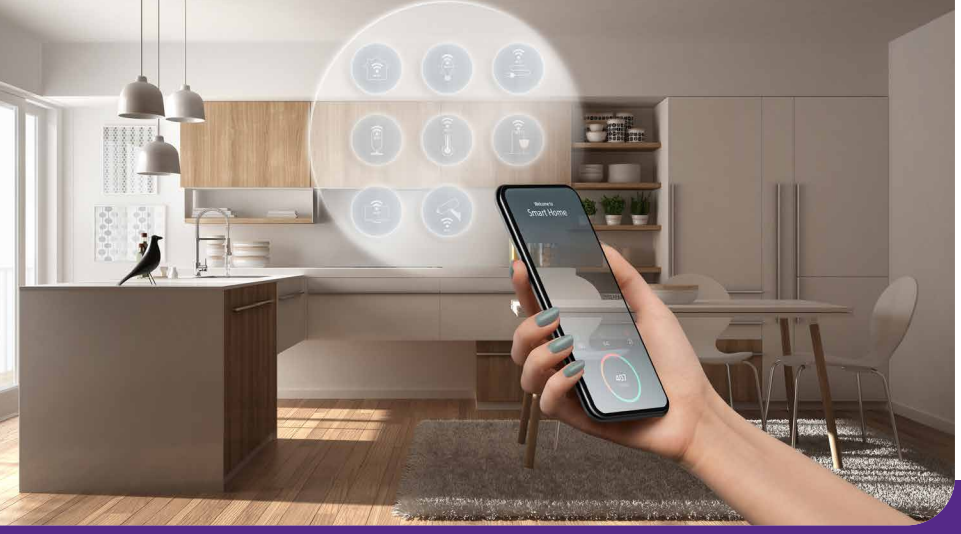


JN5189 and JN5188: Ultra-low Power Wireless Intelligent Connectivity

High Performance and Ultra-low power MCU for Zigbee® and Thread with Built-in NFC option

JN5189/88 consists of advanced and ultra-low power wireless microcontrollers for Zigbee, Thread and IEEE® 802.15.4 that integrates a comprehensive mix of analog and digital peripherals. These highly integrated devices allow developers to create products that have rich features and contactless NFC commissioning.

OVERVIEW

The JN5189/88 portfolio is designed to power the next generation of very low current wireless devices, supporting Zigbee 3.0, Thread, and IEEE 802.15.4. It includes several low-power modes and ultra-low TX and RX power consumption, which enables devices powered by JN5189/88 to have a longer battery life. With -100 dBm RX sensitivity and up to +11 dBm TX output power, JN5189/88 offers reliable and robust communications performance.

JN5189/88 is powered by an Arm® Cortex® M4 MCU and can run up to 640 KB on-board flash and 152 KB SRAM, with enough room and flexibility for complex applications and Over-the-Air (OTA) upgrade capability without external memory. It has a rich set of MCU peripherals and multiple serial communication interfaces for embedded connected applications with the quad serial flash memory controller, SPIFI, which can be used to extend non-volatile memory for data or code.

TARGET APPLICATIONS

- Zigbee 3.0 network
- Thread networks
- Home and building automation
- Sensor network
- Smart lighting
- Smart metering

NFC OPTION

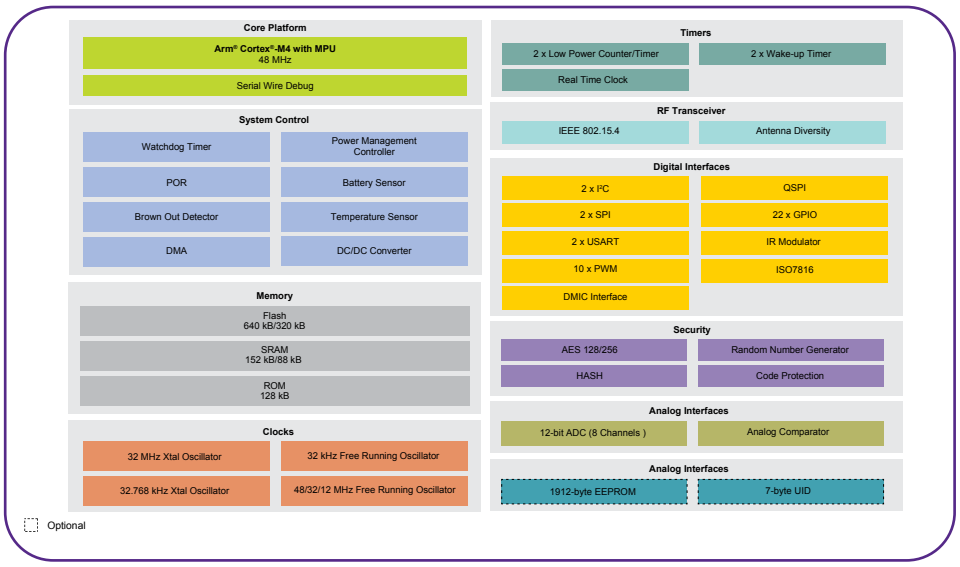
JN5189T/88T has an integrated NFC NTAG to implement contactless NFC commissioning, simplifying the network build-out while saving energy and increasing safety.

SUPPORT

The development kit's rich components include a control bridge with an NFC reader, a generic switch node, a light/sensor node, and a USB dongle that help enable quick assembly for small wireless networks.

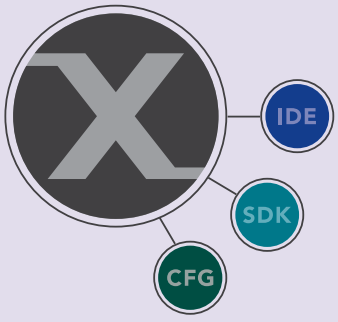
The JN5188/JN5189 development platform comes with an integrated programmer and debugger along with a suite of application examples in a complete software development kit (SDK). The platform is also compatible with the NXP MCUXpresso software suite. MCUXpresso tools and enablement provide a smooth software experience across all NXP devices and offer a faster path for adding IEEE 802.15.4 capability to existing code based on other NXP devices. NXP also offers test tools to allow developers to evaluate and test efficiently.

JN5188/JN5189 BLOCK DIAGRAM



SOFTWARE AND TOOLS

NXP's **MCUXpresso software and tools** offer comprehensive development solutions designed to optimize, ease and accelerate embedded system development of applications based on Cortex-M core devices, including members of NXP's portfolio of general-purpose microcontrollers and i.MX RT crossover MCUs.



JN5188/JN5189 MCU FEATURES AND BENEFITS

Features	Benefits
System Current Consumption 7.4 mA @ +0 dBm TX, 4.3 mA Rx peak current	Extends battery life and allows for optimized form-factors
RF Performance -100 dBm RX sensitivity Up to +11 dBm TX output power	High sensitivity allows for a more robust link budget and integrated balun reduces system size and cost; high TX power helps enable long-distance transition
Processing and Memory 48 MHz Arm® Cortex®–M4 core Up to 640 KB/320 KB flash, 152 KB/88 KB RAM	High-performance Arm core with memory options for the connectivity stack (Zigbee, Thread) and user applications
Complete Connectivity Zigbee® 3.0, Green Power, Thread™	Zigbee 3.0, Green Power and Thread complete solutions and reference designs
NFC Communications NFC Forum Type 2 Tag with integrated UID and memory	Simplifies the device pairing and provisioning improving the user experience
Scalability Hardware compatible with QN9090 and K32W061 product families	Allows for fast-moving multi-protocol applications by only updating firmware without hardware design change
Environmental Conditions Wide temperature range: -40 °C to +125 °C	Applicable in various environments
Development Environment Compatible with IAR and MCUXpresso IDEs	Example projects support industry-standard IAR toolchains; MCUXpresso support allows for easy code migration based on other NXP devices

JN5189/88 PORTFOLIO

Part Number	Flash / RAM (KB)	NTAG®	Package (mm)
JN5189T	640/152	Y	6 x 6 QFN
JN5189	640/152	N	6 x 6 QFN
JN5188T	320/88	Y	6 x 6 QFN
JN5188	320/88	N	6 x 6 QFN

Part Number	Description
JN5189-DK006	Development kit for Zigbee®, Thread™ and IEEE® 802.15.4 connectivity/enablement
OM15080-JN5189	USB dongle preprogrammed with a Zigbee, Thread, and IEEE 802.15.4 host stack

www.nxp.com/JN5189

NXP, the NXP logo and NTAG are trademarks of NXP B.V. All other product or service names are the property of their respective owners. Arm and Cortex are trademarks or registered trademarks of Arm Limited (or its subsidiaries) in the US and/or elsewhere. The related technology may be protected by any or all of patents, copyrights, designs and trade secrets. All rights reserved. © 2020 NXP B.V.

Document Number: JN5189_88FS REV 1