

Thread

Sep. 2023

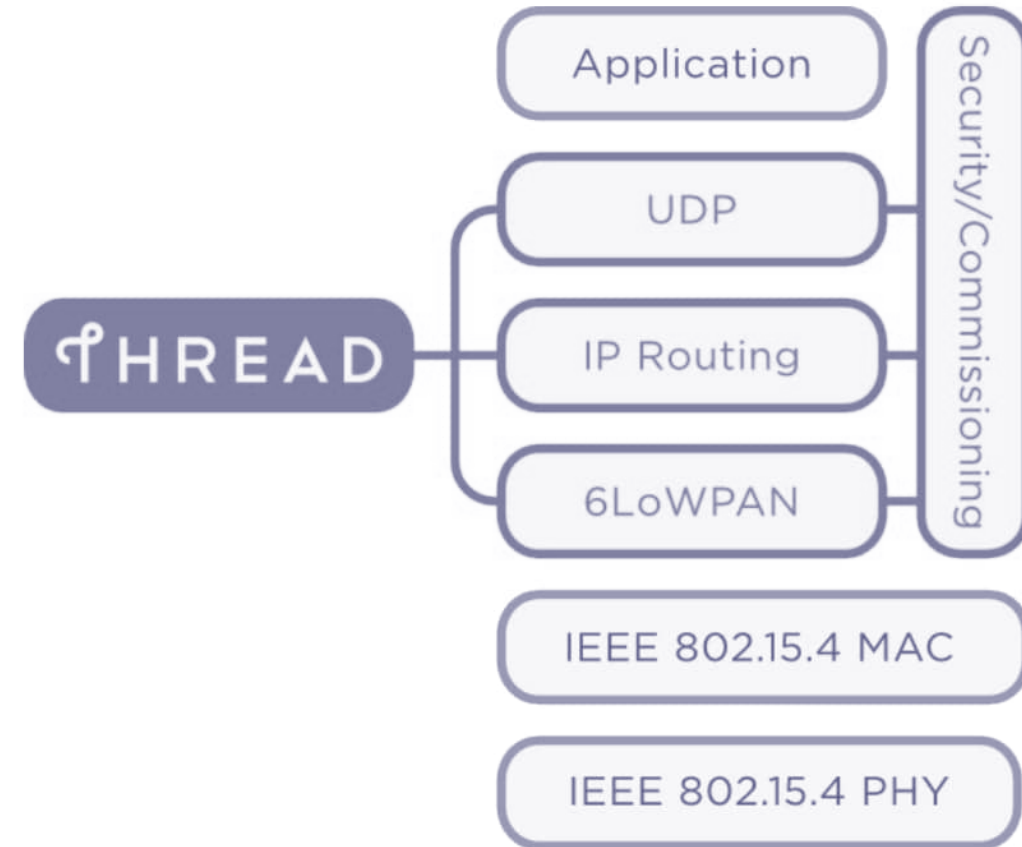


RALTRON

What is Thread?

A low-power, secure, and reliable mesh networking protocol for the Internet of Things (IoT)

- Thread is an open-source, IPv6-based mesh networking protocol designed for low-power, battery-powered devices.
- Thread devices can communicate with each other over a mesh network, which means that they can relay messages through other devices to reach their destination. This makes Thread ideal for applications where devices are spread out over a large area, such as in a smart home or industrial setting.
- Thread is also designed to be secure and reliable. It uses industry-standard security protocols to protect data from unauthorized access, and it is self-healing, so it can continue to operate even if some devices are lost or disconnected.



Source: <https://www.mouser.com/applications/IoT-protocols-growing-stack/>

What are the Benefits of Thread?

- **Low power**

Thread devices can operate for years on a single battery. Thread uses a low-power radio frequency (RF) band, and it only transmits data when necessary.

- **Secure**

Thread uses industry-standard security protocols to protect data from unauthorized access. This includes encryption, authentication, and message integrity checking.

- **Reliable**

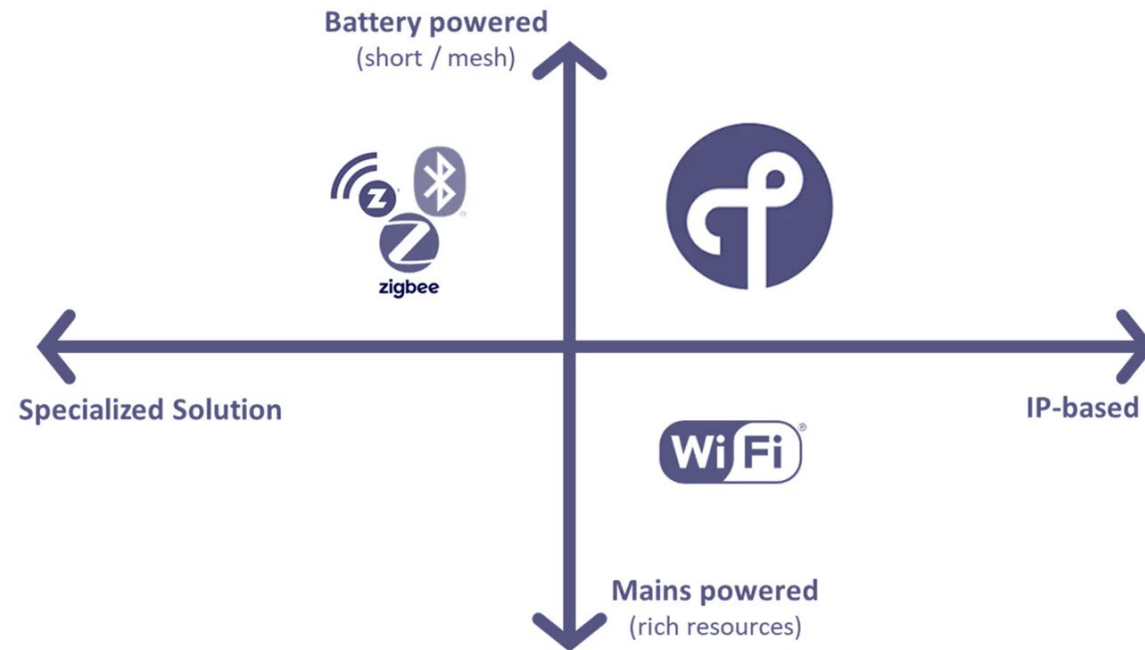
Thread networks are self-healing and can continue to operate even if some devices are lost or disconnected. Each device in a Thread network has multiple paths to communicate with other devices.

- **Interoperable**

Thread devices can work with devices from other manufacturers. Thread is based on open standards.

- **Scalable**

Thread networks can scale up to hundreds of devices. This makes it suitable for large-scale IoT deployments.



Source: <https://www.embedded.com/thread-protocol-simplifies-iot-security/>

Applicable Raltron Products

Nordic - nRF5340

32 MHz Crystal Oscillator

[RH100-32.000-8-F-1020-EXT-TR-NS2](#)

[R2520-32.000-8-F-1030-EXT-TR](#)

[R2016-32.000-8-F-2020-EXT-TR-NS1](#)

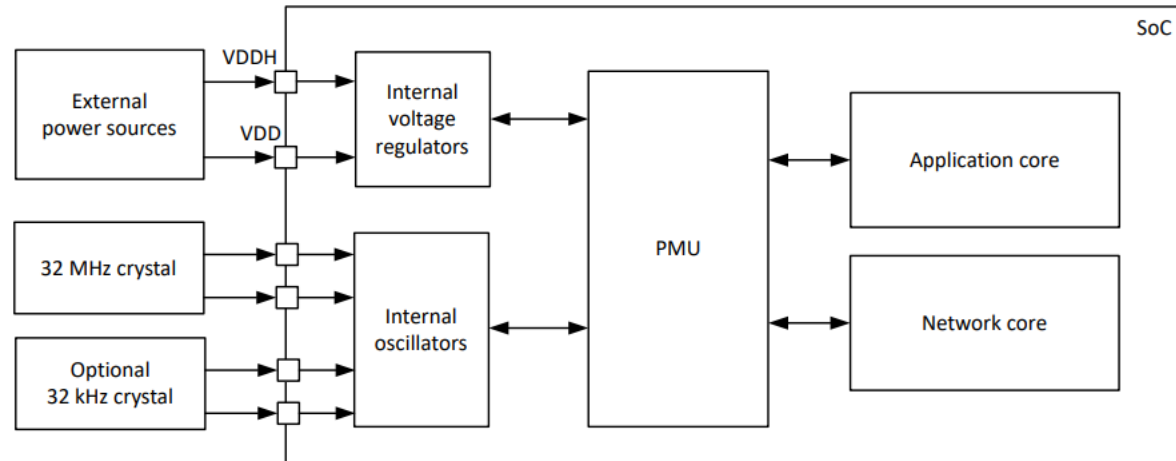
32.768 kHz Crystal

[RT3215-32.768-9-TR](#)

NFC Antenna

[RNF-VA1-4035-W-001](#)

[RNF-LF-P-50-W](#)



Power management unit

Applicable Raltron Products

Silicon Labs - EFR32BG22

38.4 MHz Crystal

R2520-38.400-10-F-1032-EXT-TR-NS1

R2016-38.400-10-F-1020-X-T-NS1

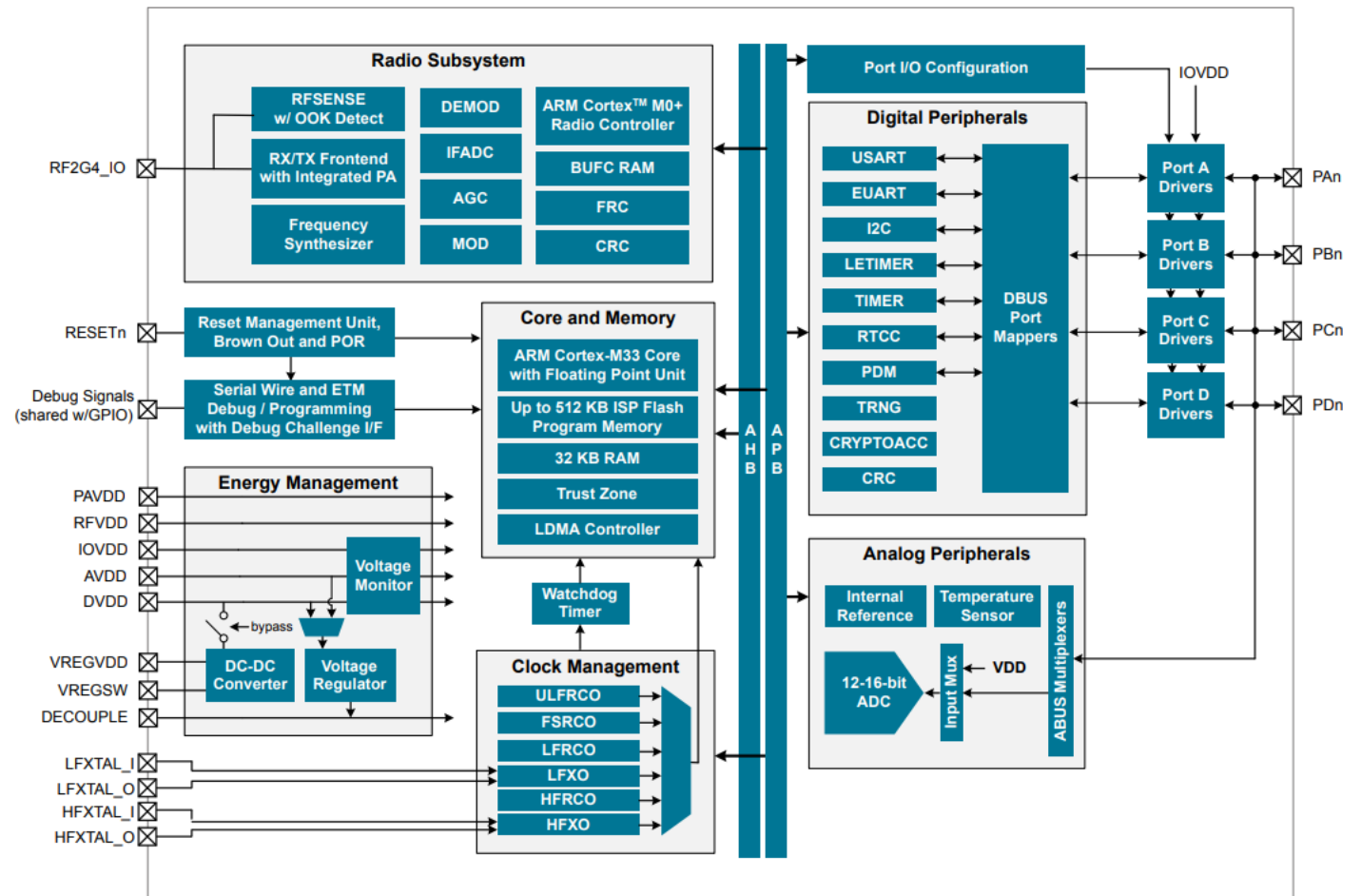
32.768 kHz Crystal

[RT3215-32.768-6-TR](#)

2.4 GHz Antenna

[RST-2400-P-190-IPEX-H](#)

[RST-W2-P-105-RPSMA-H](#)



Applicable Raltron Products

Texas Instruments - CC2642R

48 MHz Crystal

[RH100-48.000-7-F-1515-EXT-TR](#)

[R2016-48.000-7-F-1010-TR-NS3](#)

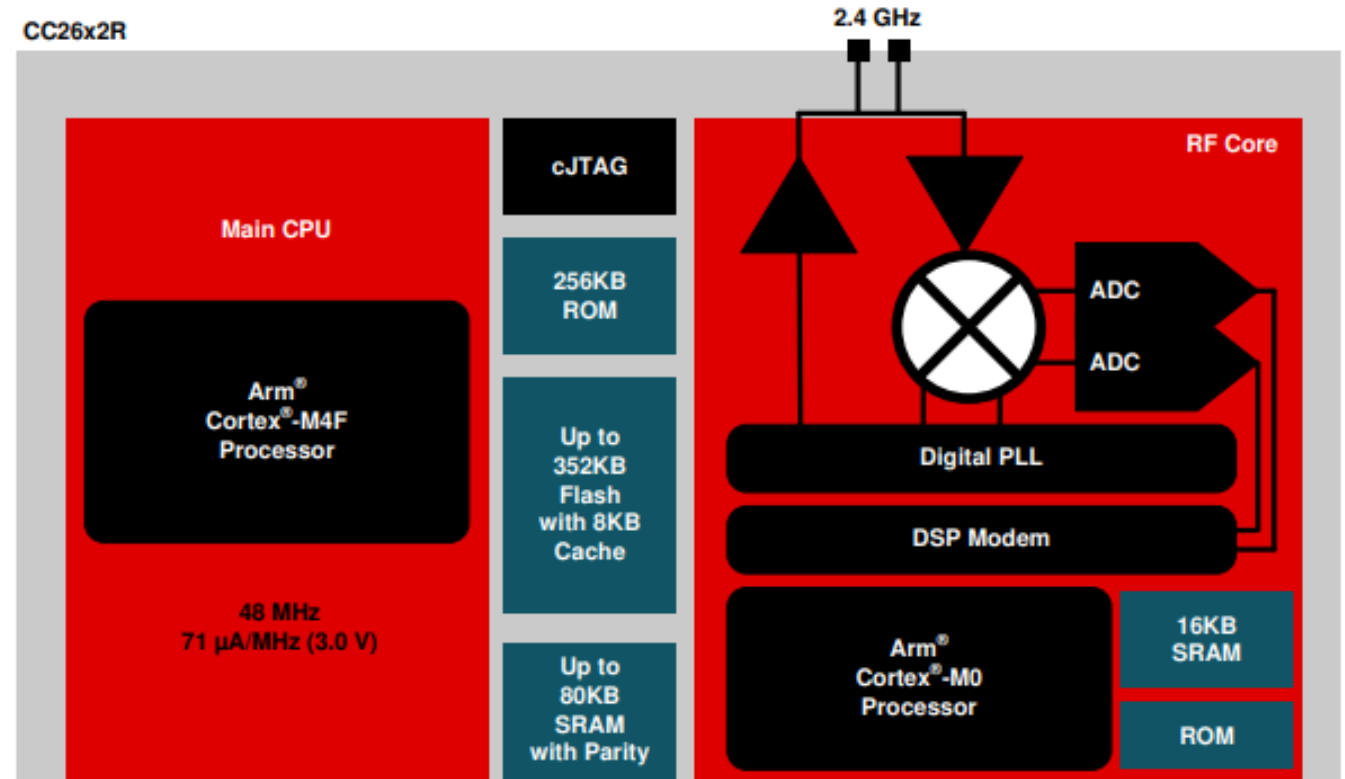
32.768 kHz Crystal

[RT3215-32.768-7-TR](#)

2.4 GHz Antenna

[RCA-5220-A0-TR](#)

[RST-W2A1-20022-17M-TE-001](#)



Raltron Solutions - MHz Crystals









Available Crystal Packages

Part #	Size(mm)
R2016-32.000-8-F-2020-EXT-TR-NS1	2.00 x 1.60 x 0.50
R2520-32.000-8-F-1030-EXT-TR	2.50 x 2.00 x 0.65
R2016-38.400-10-F-1020-X-T-NS1	2.00 x 1.60 x 0.50
RH100-48.000-7-F-1515-EXT-TR	3.20 x 2.50 x 0.70

Typical Frequencies:

32 MHz, 38.4 MHz, and 48 MHz

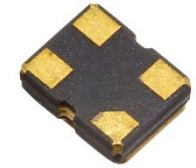
Stock at our Distributors

Product Series	Datasheet	Image	Contact Us / Buy Now
R1612 View products in stock			Buy Now
R2016 View products in stock			Buy Now
R2520 View products in stock			Buy Now
RH100 View products in stock			Buy Now

[See All Crystal Products](#)



Raltron Solutions – Oscillators



Raltron MHz Oscillators Solutions

Part #	SIZE(mm)	Frequency(MHz)
CO2016-32.000-3.3-50-EXT-TR	2.0 x 1.6	32
CO2520-48.000-3.3-50-X-T-TR	2.5 x 2.0	48

Raltron kHz Oscillators Solutions

Part #	SIZE(mm)	Frequency(kHz)
CO2016-0.032768-3.3-25-X-T-TR	2.0 x 1.6	32.768
CO2520-0.032768-3.3-50-X-TR	2.5 x 2.0	32.768

[See All Products for Oscillators](#)

Raltron Solutions - Tuning Fork 32.768 kHz

Available Tuning Fork Crystal Packages

Part #	SIZE(mm)
RT1210-32.768-9-TR	1.2 x 1.0
RT1610-32.768-12.5-TR	1.6 x 1.0
RT2012-32.768-7-20-EXT-TR	2.0 x 1.2
RT3215-32.768-7-TR	3.2 x 1.5
RSE-32.768-12.5-H14-TR	6.9 x 1.4
RSM200S-32.768-12.5-TR	8.0 x 3.8

Load capacitance values: 6 pF, 7 pF, 9 pF and 12.5 pF

Frequency Tolerances: ± 20 ppm and ± 10 ppm



Stock at our Distributors

Product Series	Datasheet	Image	Contact Us / Buy Now
RT1210 View products in stock			Buy Now
RT1610 View products in stock			Buy Now
RT2012 View products in stock			Buy Now
RT3215 View products in stock			Buy Now
RSE H14			Buy Now
RSM200S View products in stock			Buy Now

Typical example of IC for Thread using a 32.768 kHz crystal as frequency reference:

Texas Instruments - CC2642R

Using 32.768 kHz crystal













CL: 6, 7 or 12 pF

ESR: 100 k Ω max

[See All Crystal Products](#)

Raltron Solutions – Antennas

Raltron Antennas Solutions

Part #	Datasheet	Image	Frequency(MHz)	Contact Us / Buy Now
RST-W2-P-110-SMA-H			2400~2483	Buy Now
RPC-W2-P-35-70-G			2400 ~ 2500	Buy Now
RCA-5220-A0-TR			2450±50	Buy Now
RPC-W2A1-330172-O-E-001			2400 ~ 2500	Buy Now
RNF-VA1-4035-W-001			13.56	Contact Us
RNF-LF-P-50-W			13.56	Contact Us

[See All Antenna Products](#)

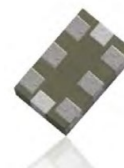


Raltron Products – LTCC Filters, Baluns and Diplexers

Raltron LTCC Filters, Baluns and Diplexers Solutions













Part #	Size(mm)
RCF-5500.000-700000-1005-W-001	1.00 x 0.50
RBL-2430.000-1005-EV-001	1.00 x 0.50 x 0.40
RCDI-24-49-1608-W-TR	1.60 x 0.80 x 0.60
RCDI-W2A1-W5A17-1608-W-TR	1.60 x 0.80 x 0.60

[See All LTCC Filters, Baluns and Diplexers Products](#)



Raltron Solutions - RF Connectors











Raltron **RF connectors** with low insertion loss and excellent voltage standing wave ratio support the high-level performance demanded by Thread Applications.

Product #	Datasheet	Image	Connector Family	Description
RCN-3F-3108-K-001			BNC	BNC Straight Jack PCB Receptacle
RCN-4F-28012-K-001			MCX	MCX Straight Jack PCB Receptacle
RCN-5F-33106-K-001			MMCX	MMCX Straight Jack PCB Receptacle
RCN-17M-12816-K-001			N	Type N Right Angle Plug
RCN-1M-21419-K-001			SMA	SMA Straight Plug (Quick Fit) for Semi Rigid Cable
RCB-13-J-1000-12-SD			TNC	TNC Jack S/T For RG316 Cable



Raltron Solutions - RF Cable Assemblies

Raltron cable assemblies range from simple jumpers to power and high-speed data cables.

Product #	Datasheet	Image	Cable Assemblies	Description
RCB-16-F-95-11-SD			SMA to IPEX	RP SMA Jack S/T For RF1.13 Cable
RCB-21-174-150-DO-001			MCX to MCX	MCX Plug to MCX R/A Plug For RG174 Cable
RCB-14-H-100-12-SD			MCX to SMA	SMA Jack to MCX Plug For RF1.37 Cable
RCB-15-A-100-12-SD			MMCX to SMA	SMA to MMCX For RG174 Cable
RCB-13-J-600-13-SD			TNC to SMA	TNC Jack S/T For RG316 Cable



[CABLE ASSEMBLIES SHORT FORM CATALOG](#)

CONTACT

<http://www.raltron.com>

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