

General Description

BDE-MP26R is a high performance multiprotocol 2.4-GHz wireless module series based on Texas Instrument (TI)'s multiprotocol wireless microcontroller (MCU) CC2652R74TORGZR CC2674R106TORGZR CC2651R31TORGZ CC2652R1FRGZR or CC2642R1FRGZR. In order to fulfil different integration scenarios, we provide different variants for this module series. They are listed and described in Table 1-1.

BDE-MP26R module series supports Thread, Zigbee®, Matter, Bluetooth® 5.2 Low Energy, IEEE 802.15.4g, IPv6-enabled smart objects (6LoWPAN), TI 15.4-Stack (2.4-GHz), and concurrent multiprotocol through a Dynamic Multiprotocol Manager (DMM) driver. The device is optimized for low-power wireless communication and advanced sensing in building security systems, HVAC, medical, wired networking, portable electronics, and home theater & entertainment markets.

BDE-MP26R module series can support +5 dBm output power and a receive sensitivity of -104 dBm for 125-kbps Bluetooth® Low Energy Coded PHY. It is with low standby current of 0.9 μ A with 144 KB RAM retention that enables longer battery life wireless applications. The module series supports for ARM® TrustZone® based secure key storage, device ID and trusted functions; Low SER (Soft Error Rate) FIT (Failure-in-time) for long operational lifetime with no disruption for industrial markets with always-on SRAM parity against corruption due to potential radiation events. The device also has an autonomous ultra-low power Sensor Controller CPU with fast wake-up capability. As an example, the sensor controller is capable of 1-Hz ADC sampling at 1- μ A system current.

BDE-MP26R module series integrates all required system-level hardware components including clocks, balun filter, other passives, and PCB trace antenna or U.FL connector into a small PCB form factor. It is for easy assembly and low-cost PCB design. It can work standalone without using an external MCU. With its best-in-class radio performance, ultra-low power, small form factor and low cost, the BDE-MP26R module series is the best choice for the applications that are sensitive to power consumption, size and cost.

Table 1-1. Module Variants

Model Number	Orderable Part Number	Chipset	Flash (KB)	SRAM (KB)	Antenna on 2.4G	On-Board SPI Nor Flash Support
BDE-MP26R	BDE-MP2652R7A32	CC2652R7	704	152	PCB Trace Antenna	32Mbit
	BDE-MP2652R7U32				U.FL Connector	
	BDE-MP2652R7N32				ANT Pin	
	BDE-MP2652R7A0				PCB Trace Antenna	Not Included
	BDE-MP2652R7U0				U.FL Connector	
	BDE-MP2652R7N0				ANT Pin	
	BDE-MP2674R10A32	CC2674R10	1024	296	PCB Trace Antenna	32Mbit
	BDE-MP2674R10U32				U.FL Connector	
	BDE-MP2674R10N32				ANT Pin	
	BDE-MP2674R10A0				PCB Trace Antenna	Not Included
	BDE-MP2674R10U0				U.FL Connector	
	BDE-MP2674R10N0				ANT Pin	
	BDE-MP2651R3A32	CC2651R3	352	40	PCB Trace Antenna	32Mbit
	BDE-MP2651R3U32				U.FL Connector	
	BDE-MP2651R3N32				ANT Pin	
	BDE-MP2651R3A0				PCB Trace Antenna	Not Included
	BDE-MP2651R3U0				U.FL Connector	

Model Number	Orderable Part Number	Chipset	Flash (KB)	SRAM (KB)	Antenna on 2.4G	On-Board SPI Nor Flash Support
	BDE-MP2651R3N0				ANT Pin	
	BDE-MP2652RA32	CC2652R	352	88	PCB Trace Antenna	32Mbit
	BDE-MP2652RU32				U.FL Connector	
	BDE-MP2652RN32				ANT Pin	
	BDE-MP2652RA0				PCB Trace Antenna	Not Included
	BDE-MP2652RU0				U.FL Connector	
	BDE-MP2652RN0				ANT Pin	
	BDE-MP2642RA32	CC2642R	352	88	PCB Trace Antenna	32Mbit
	BDE-MP2642RU32				U.FL Connector	
	BDE-MP2642RN32				ANT Pin	
	BDE-MP2642RA0				PCB Trace Antenna	Not Included
	BDE-MP2642RU0				U.FL Connector	
	BDE-MP2642RN0				ANT Pin	

Note: This module series supports extended industrial temperature grade which can operates from -40°C to 105°C. The part number should comes with “-IN” suffix. For example, the part number BDE-MP2652R7A32-IN is the extended industrial temperature grade version.

Key Features

- Wireless microcontroller
 - Powerful 48-MHz Arm® Cortex®-M4F (CC2652R7) or Cortex®-M33 (CC2674R10) or Cortex®-M4 (CC2651R3) or Cortex®-M4F (CC2652R) or Cortex®-M4F (CC2642R)
 - 704kB (CC2652R7) or 1024kB (CC2674R10) or 352kB (CC2651R3) or 352KB (CC2652R) or 352KB (CC2642R) flash program memory
 - 8kB of Cache SRAM
 - 152kB (CC2652R7) or 296kB (CC2674R10) or 40kB (CC2651R3) or 88kB (CC2652R) or 88KB (CC2642R) of ultra-low leakage SRAM
 - Dynamic multiprotocol manager (DNM) driver
 - Programmable radio includes support for 2-(G)FSK, 4-(G)FSK, MSK, BLE, IEEE 802.15.4 PHY and MAC
 - Supports over-the-air upgrade (OTA)
- Ultra-Low power sensor controller
 - Autonomous MCU with 4kB of SRAM
 - Sample, store, and process sensor data
 - Fast wake-up for low-power operation
 - Software defined peripherals; capacitive touch, flow meter, LCD
- Low power consumption
 - MCU consumption:
 - ◇ 3.1 mA active mode, CoreMark®
 - ◇ 65 µA/MHz running CoreMark
 - ◇ 0.9 µA standby mode, RTC, 256KB RAM
 - ◇ 0.1 µA shutdown mode, wake-up on pin
 - Ultra Low-power sensor controller consumption:
 - ◇ 29.2 µA in 2 MHz mode
 - ◇ 799 µA in 24 MHz mode
 - Radio Consumption:
 - ◇ 6.4 mA RX
 - ◇ 7.3 mA TX at 0 dBm
 - ◇ 9.7 mA TX at +5 dBm
- Wireless protocol support
 - Thread, Zigbee®, Matter
 - Bluetooth®5.2 Low Energy
 - SimpleLink™ TI 15.4-stack
 - 6LoWPAN
 - Proprietary systems
- High performance radio
 - -104 dBm for Bluetooth® Low Energy 125kbps
- Regulatory compliance (On-going)
 - FCC
 - IC
 - CE-RED
- MCU peripherals

- Most digital peripherals can be routed to any GPIO
- Four 32-bit or eight 16-bit general-purpose timers
- 12-bit SAR ADC, 200 ksps, 8 channels
- 8-bit DAC
- Two Comparators
- Programmable current source
- Two UART, Two SSI, I²C, I²S
- Real-time clock (RTC)
- Integrated temperature and battery monitor
- Security enablers
 - Supports secure boot
 - Supports secure key storage and device ID
 - Arm TrustZone for trusted execution environment
 - AES 128- and 256-bit cryptographic accelerator
 - Public key accelerator
 - SHA2 accelerator (full suite up to SHA-512)
 - True random number generator (TRNG)
- Secure debug lock
- Software anti-rollback protection
- Operating range
 - On-chip buck DC/DC converter
 - 1.8-V to 3.8-V single supply voltage
 - -40 to +85°C
 - -40 to +105°C (-IN variants)
- Antenna:
 - PCB trace antenna, U.FL connector or ANT pin
- Package
 - Dimension: 21.5 mm x 15 mm x 2.15 mm
 - LCC-39 (31 GPIOs)
 - RoHS-compliant package

Applications

- 2400 to 2480 MHz ISM and SRD systems with down to 4 kHz of receive bandwidth
- Building automation
- Building security systems – motion detector, electronic smart lock, door and window sensor, garage door system, gateway
- HVAC – thermostat, wireless environmental sensor, HVAC system controller, gateway
- Fire safety system – smoke and heat detector, fire alarm control panel (FACP)
- Video surveillance – IP network camera
- Elevators and escalators – elevator main control panel for elevators and escalators
- Industrial transport – asset tracking
- Factory automation and control
- Medical
- Personal care & fitness
- Patient monitoring & diagnostics – medical sensor patches, multiparameter patient monitor
- Medical equipment
- Home healthcare – blood glucose monitor, pulse oximeter
- Electronic point of sale (EPOS) – Electronic Shelf Label (ESL)
- Communication equipment
- Wired networking – wireless LAN or Wi-Fi access points, edge router
- Personal electronics
- Portable electronics – RF smart remote control
- Home theater & entertainment – smart speakers, smart display, set-top box
- Connected peripherals – consumer wireless keypads
- Gaming – electronic and robotic toys
- Wearables (non-medical) – smart trackers, smart clothing
- Wireless Modules
 - Wireless third party modules
 - Wireless communications modules

Contents

General Description	1
Key Features.....	2
Applications.....	3
Contents	4
1. References	5
2. Block Diagram	6
3. Terminal Configuration and Functions.....	7
3.1. Pin Diagram	7
3.2. Pin Attributes and Pin Multiplexing.....	8
4. Specifications	9
4.1. Absolute Maximum Ratings	9
4.2. Recommended Operating Conditions	9
5. Mechanical Specifications.....	10
5.1. Dimensions.....	10
5.2. PCB Footprint	11
6. Typical Reflow Profile.....	12
7. Certification	13
7.1. Regulatory Compliance	13
7.2. Antenna	14
7.3. FCC Compliance.....	15
7.4. IC/ISED Compliance.....	16
7.5. ETSI/CE Compliance	17
8. Ordering Information	18
9. Revision History	18
Contacts	19

1. References

- [1] CC2652R7 resources: <https://www.ti.com/product/CC2652R7>
- [2] CC2674R10 resources: <https://www.ti.com/product/CC2674R10>
- [3] CC2651R3 resources: <https://www.ti.com/product/CC2651R3>
- [4] CC2652R resources: <https://www.ti.com/product/CC2652R>
- [5] CC2642R resources: <https://www.ti.com/product/CC2642R>

2. Block Diagram

The module, as seen in Figure 2-1, comprises of:

- 48-MHz HFXT
- 32.768-kHz LFXT
- 32-Mbit SPI flash (SPI flash variants)
- Power inductors and capacitors
- Pull-up resistor
- Passive balun filter
- Decoupling capacitors
- Matching circuit
- PCB trace antenna / U.FL connector for external antenna / ANT pin out for external antenna

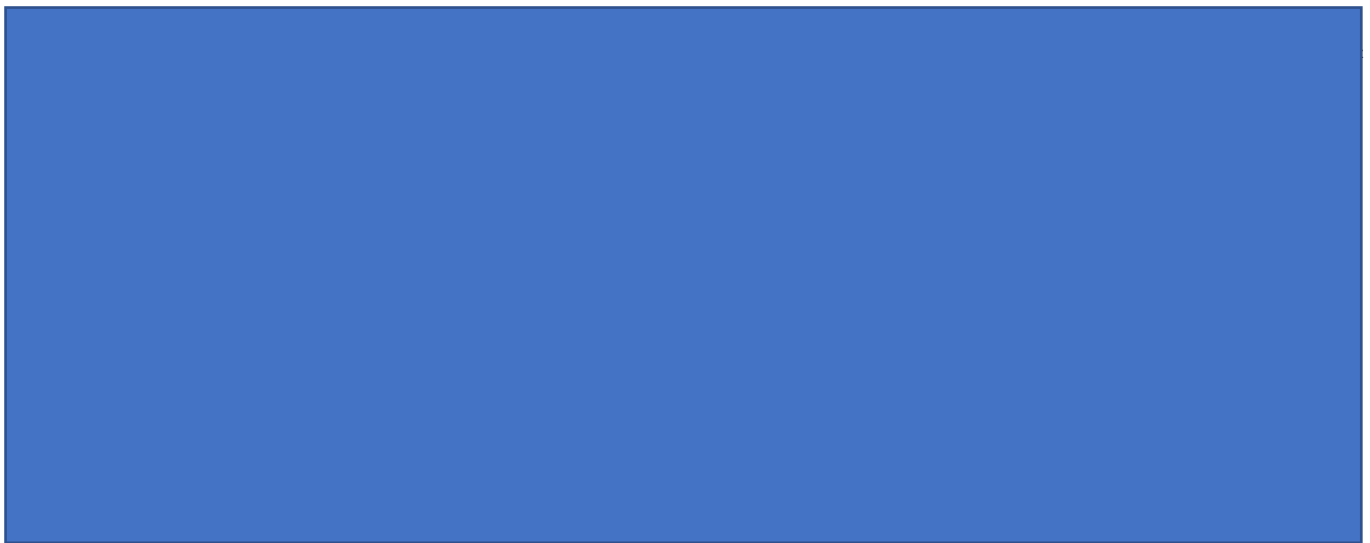
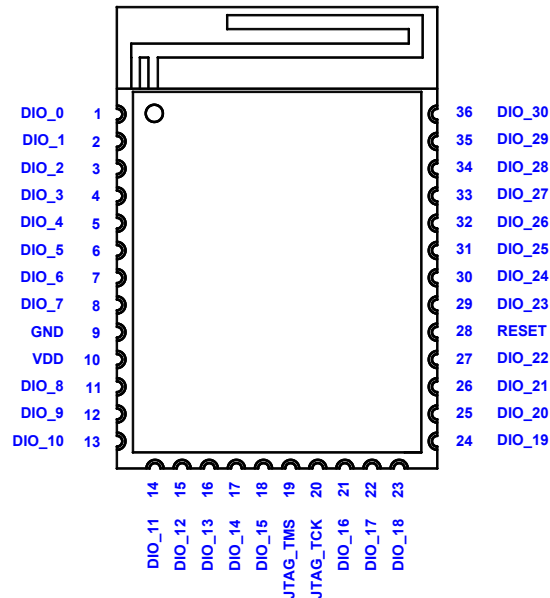


Figure 2-1. BDE-MP26R Module Block Diagram

3. Terminal Configuration and Functions

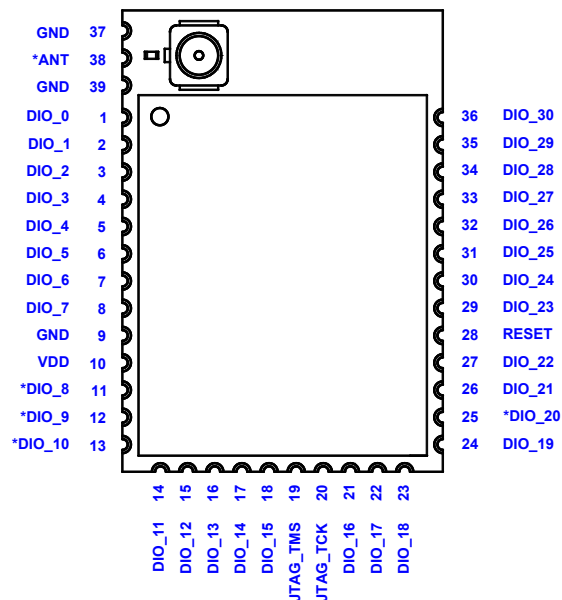
3.1. Pin Diagram



Notes:

1. DIO_8, DIO_9, DIO_10 and DIO_20 are assigned to the on-module SPI flash, therefore, please leave those four pins NC if the SPI flash versions are selected.

Figure 3-1. Pinout Diagram of BDE-MP26R_A Top View



Notes:

2. DIO_8, DIO_9, DIO_10 and DIO_20 are assigned to the on-module SPI flash, therefore, please leave those four pins NC if the SPI flash versions are selected.

Figure 3-2. Pinout Diagram of BDE-MP26R_U and BDE-MP26R_N Top View

3.2. Pin Attributes and Pin Multiplexing

Table 3-1 describes the definitions of the pins of the module. Pin number of the chip is also stated here, because the VQFN pin is referred to in the software design kit (SDK).

Table 3-1. Pin Description

Module Pin #	Pin Name	Type	Description
1	DIO_0	I/O	GPIO
2	DIO_1	I/O	GPIO
3	DIO_2	I/O	GPIO
4	DIO_3	I/O	GPIO
5	DIO_4	I/O	GPIO
6	DIO_5	I/O	GPIO, high-drive capability
7	DIO_6	I/O	GPIO, high-drive capability
8	DIO_7	I/O	GPIO, high-drive capability
9	GND	Ground	Power ground
10	VDD	Power	Power supply
11	DIO_8	I/O	SFL_MISO ⁽¹⁾ , GPIO
12	DIO_9	I/O	SFL_MOSI ⁽¹⁾ , GPIO
13	DIO_10	I/O	SFL_SCLK ⁽¹⁾ , GPIO
14	DIO_11	I/O	GPIO
15	DIO_12	I/O	GPIO
16	DIO_13	I/O	GPIO
17	DIO_14	I/O	GPIO
18	DIO_15	I/O	GPIO
19	JTAG_TMS	I/O	JTAG TMS, high-drive capability
20	JTAG_TCK	I	JTAG TCK
21	DIO_16	I/O	GPIO, JTAG_TDO, high-drive capability
22	DIO_17	I/O	GPIO, JTAG_TDI, high-drive capability
23	DIO_18	I/O	GPIO
24	DIO_19	I/O	GPIO
25	DIO_20	I/O	SFL_CS ⁽¹⁾ , GPIO
26	DIO_21	I/O	GPIO
27	DIO_22	I/O	GPIO
28	RESET	I	Reset, active-low, 100K ohm internal pull-up resistor
29	DIO_23	I/O	GPIO, analog capability
30	DIO_24	I/O	GPIO, analog capability
31	DIO_25	I/O	GPIO, analog capability
32	DIO_26	I/O	GPIO, analog capability
33	DIO_27	I/O	GPIO, analog capability
34	DIO_28	I/O	GPIO, analog capability
35	DIO_29	I/O	GPIO, analog capability
36	DIO_30	I/O	GPIO, analog capability
37 ⁽²⁾	GND	Ground	Power ground
38 ⁽²⁾	ANT	RF	Antenna port

Module Pin #	Pin Name	Type	Description
39 ⁽²⁾	GND	Ground	Power ground

Note ⁽¹⁾: These four pins can be used as GPIOs in none SPI flash variants modules BDE-MP26R_X0; these four pins are used as SPI for on-board 32-Mbit flash in SPI flash variants modules BDE-MP26R_X32;

Note ⁽²⁾: Pin 37, Pin 38 and Pin 39 are only included in BDE-MP26R_U and BDE-MP26R_N.

4. Specifications

4.1. Absolute Maximum Ratings

Stresses beyond those listed under Absolute Maximum Ratings may cause permanent damage to the device. These are stress ratings only, so functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specification are not implied. Exposure to Absolute Maximum Rating conditions for extended periods may affect device reliability.

Parameter	MIN	MAX	Unit	Note
VDD, Supply voltage	-0.3	4.1	V	
Voltage on any digital pins	-0.3	VDD _S +0.3≤4.1	V	Including DIOs with analog capability
Voltage on ADC input	-0.3	VDD _S	V	Voltage scaling enabled
	-0.3	1.49	V	Voltage scaling disabled, internal reference
	-0.3	VDD/2.9	V	Voltage scaling disabled, VDD as reference
Input level, for ANT pin (Pin38)		5	dBm	For -N variants
T _{STG} , Storage temperature	-40	125	°C	

4.2. Recommended Operating Conditions

PARAMETER	MIN	TYP	MAX	UNIT	NOTE
VDD	1.8	3.3	3.8	V	
	2.3	3.3	3.8	V	SPI flash variants
Operating temperature	-40	-	85	°C	
	-40	-	105	°C	-IN variants
Rising supply voltage slew rate	0		100	mV/μs	
Falling supply voltage slew rate	0		20	mV/μs	

5. Mechanical Specifications

5.1. Dimensions

The following pages include mechanical, footprint drawings, and marking information. This information is the most current data available for the designated devices. This data is subject to change without notice and revision of this document.

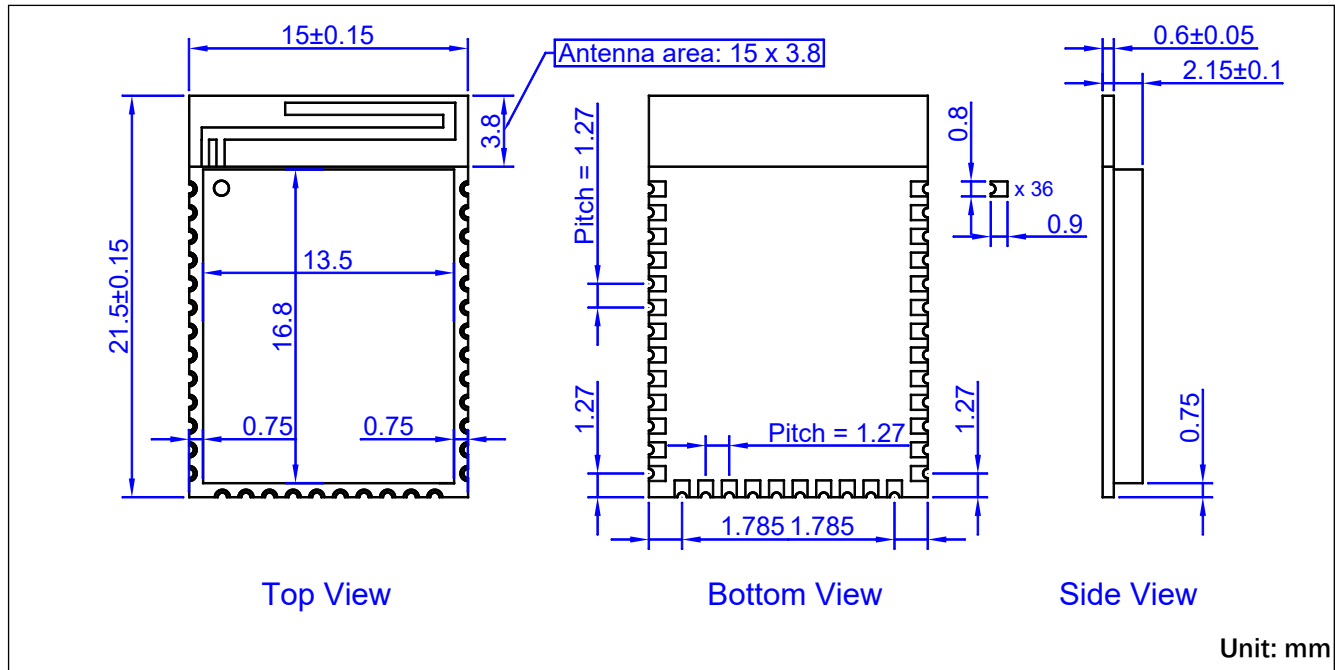


Fig 5-1. Mechanical Drawing of BDE-MP26R_A

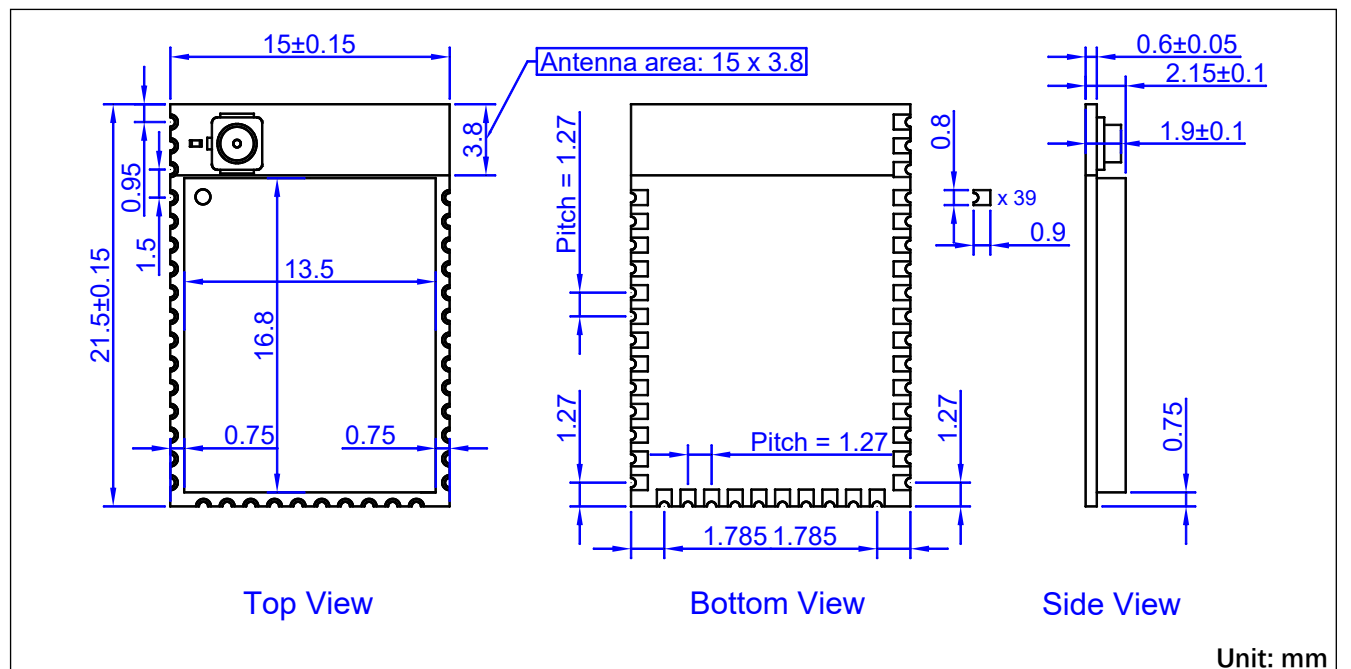


Figure 5-2. Mechanical Drawing of BDE-MP26R_U and BDE-MP26R_N

5.2. PCB Footprint

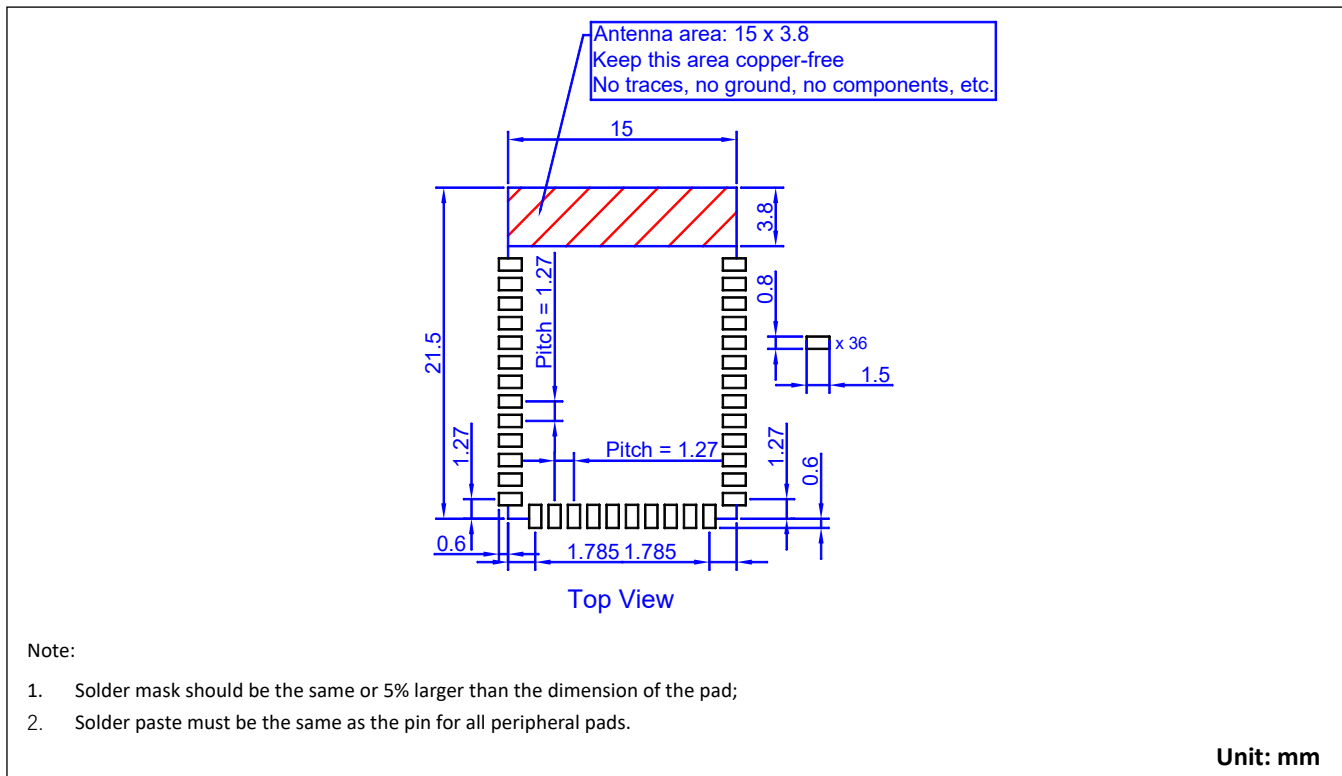


Figure 5-3. Recommended Module Footprint of BDE-MP26R_A

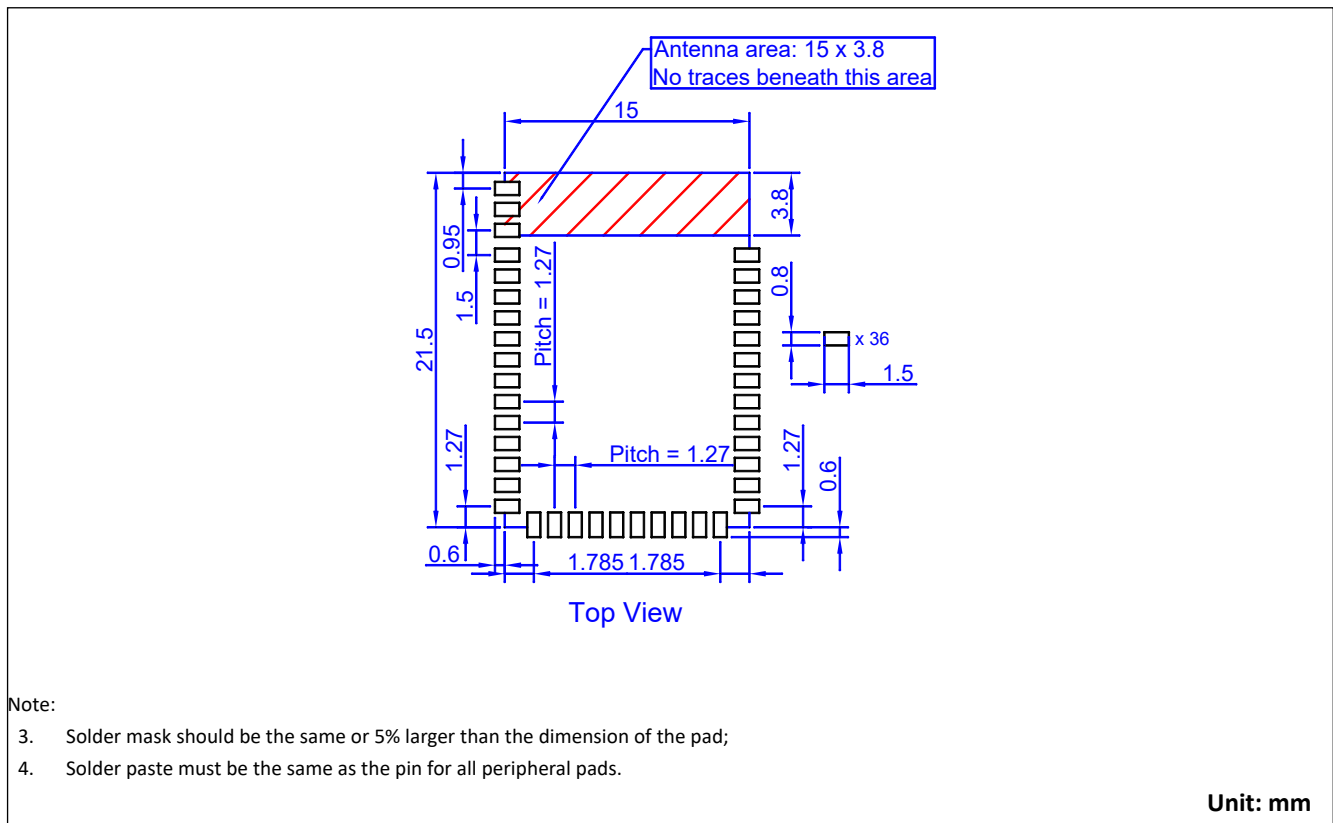


Figure 5-4. Recommended Module Footprint of BDE-MP26R_U and BDE-MP26R_N

6. Typical Reflow Profile

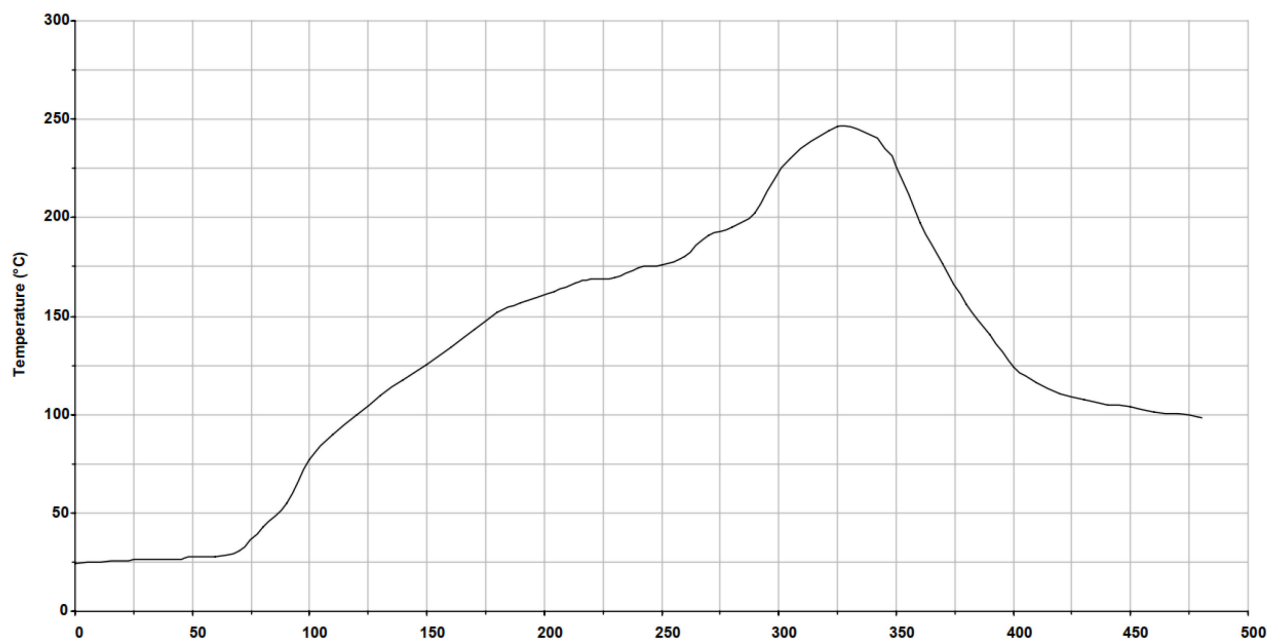


Figure 6-1. Typical Reflow Profile

Key features of the profile:

- Initial ramp = 1-2.5°C/sec to 175°C $\pm$ 25°C equilibrium
- Equilibrium time = 60 to 180 seconds
- Ramp to maximum temperature (245°C) = 3°C/sec max.
- Time above liquidus temperature (217°C): 45-90 seconds
- Device absolute maximum reflow temperature: 260°C

7. Certification

7.1. Regulatory Compliance

The module is certified for FCC, IC/ISED and ETSI/CE as listed in below table. More regions can be cover by request.

Table 7-1. Certification Information

Regulatory Body / Region	ID	MPN
FCC (USA)	2ABRU-MP26R	BDE-MP2652R7A32
IC/ISED (Canada)	25657-MP26R	BDE-MP2652R7U32
ETSI/CE (Europe)	NA	BDE-MP2652R7N32
		BDE-MP2652R7A0
		BDE-MP2652R7U0
		BDE-MP2652R7N0
		BDE-MP2652R7A32-IN
		BDE-MP2652R7U32-IN
		BDE-MP2652R7N32-IN
		BDE-MP2652R7A0-IN
		BDE-MP2652R7U0-IN
		BDE-MP2652R7N0-IN
		BDE-MP2674R10A32
		BDE-MP2674R10U32
		BDE-MP2674R10N32
		BDE-MP2674R10A0
		BDE-MP2674R10U0
		BDE-MP2674R10N0
		BDE-MP2674R10A32-IN
		BDE-MP2674R10U32-IN
		BDE-MP2674R10N32-IN
		BDE-MP2674R10A0-IN
		BDE-MP2674R10U0-IN
		BDE-MP2674R10N0-IN
		BDE-MP2651R3A32
		BDE-MP2651R3U32
		BDE-MP2651R3N32
		BDE-MP2651R3A0
		BDE-MP2651R3U0
		BDE-MP2651R3N0
		BDE-MP2651R3A32-IN

Regulatory Body / Region	ID	MPN
		BDE-MP2651R3U32-IN BDE-MP2651R3N32-IN BDE-MP2651R3A0-IN BDE-MP2651R3U0-IN BDE-MP2651R3N0-IN BDE-MP2652RA32 BDE-MP2652RU32 BDE-MP2652RN32 BDE-MP2652RA0 BDE-MP2652RU0 BDE-MP2652RN0 BDE-MP2652RA32-IN BDE-MP2652RU32-IN BDE-MP2652RN32-IN BDE-MP2652RA0-IN BDE-MP2652RU0-IN BDE-MP2652RN0-IN BDE-MP2642RA32 BDE-MP2642RU32 BDE-MP2642RN32 BDE-MP2642RA0 BDE-MP2642RU0 BDE-MP2642RN0 BDE-MP2642RA32-IN BDE-MP2642RU32-IN BDE-MP2642RN32-IN BDE-MP2642RA0-IN BDE-MP2642RU0-IN BDE-MP2642RN0-IN

7.2. Antenna

Table 7-2. Certified Antenna List

Manufacturer	Manufacturer Part Number	Antenna Type	Frequency Range (MHz)	Gain (dBi)	Note
BDE	BDE-ANT-MP26RA	PCB Trace Antenna	2400-2450	-0.84	Integrated
BDE	BDE-W25-19513-HRP	Whip Antenna	2400-2450	3.0	External

7.3. FCC Compliance

7.3.1. FCC Statement

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference, and,
- (2) This device must accept any interference received, including interference that may cause undesired operation.

7.3.2. FCC Caution

Any changes or modifications to this unit not expressly approved by BDE for compliance could void the user's authority to operate the equipment. The integrator will be responsible to satisfy SAR/RF Exposure requirements, when the module integrated into the host device.

7.3.3. Integration Instructions

List of applicable FCC rules

FCC Part 15.247

Specific operational use conditions

This transmitter/module and its antenna(s) must not be co-located or operating in conjunction with any transmitter. This information also extends to the host manufacturer's instruction manual.

Limited module procedures

Not applicable

Trace antenna designs

Not applicable

RF exposure considerations

This equipment complies with FCC RF radiation exposure limits set forth for an uncontrolled environment. This compliance to FCC radiation exposure limits for an uncontrolled environment, and minimum of 20cm separation between antenna and body. The host product manufacturer would provide the above information to end users in their end-product manuals.

Antennas

Refer to Table 7-2

Label and compliance information

The end product must carry a physical label or shall use e-labeling followed KDB784748D01 and KDB784748 stating "Contains Transmitter Module FCC ID: 2ABRU-MP26R".

Information on test modes and additional testing requirements

Contact BDE for more information.

Additional testing, Part 15 Subpart B disclaimer

The modular transmitter is only FCC authorized for the specific rule parts (FCC Part 15.247) listed on the grant, and that the host product manufacturer is responsible for compliance to any other FCC rules that apply to the host not covered by the modular transmitter grant of certification. The final host product still requires Part 15 Subpart B compliance testing with the modular transmitter installed when contains digital circuitry.

(OEM) Integrator has to assure compliance of the entire end-product that includes the module. For 15 B (§15.107 and if applicable §15.109) compliance, the host manufacturer is required to show compliance with 15 while the module is installed and operating.

Furthermore, the module should be transmitting and the evaluation should confirm that the module's intentional emissions (15C) are compliant (fundamental / out-of-band). Finally, the integrator has to apply the appropriate equipment authorization (e.g. Verification) for the new host device per definition in §15.101. Integrator is reminded to assure that these installation instructions will not be made available to the end-user of the final host device.

7.4. IC/ISED Compliance

7.4.1. IC Statement

This device contains license-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's license-exempt RSS(s). Operation is subject to the following two conditions:

- (1) This device may not cause interference, and,
- (2) This device must accept any interference, including interference that may cause undesired operation of the device.

L'émetteur/récepteur exempt de licence contenu dans le présent appareil est conforme aux CNR d'Innovation, Sciences et Développement économique Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :

- (1) L'appareil ne doit pas produire de brouillage;
- (2) L'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

7.4.2. IC Caution

Any changes or modifications to this unit not expressly approved by BDE for compliance could void the user's authority to operate the equipment. The integrator will be responsible to satisfy SAR/RF Exposure requirements, when the module integrated into the host device.

7.4.3. Integration Instructions

Label and compliance information

The final host device, into which this RF module is integrated has to be labeled with an auxiliary label stating the IC of the RF module, such as "Contains transmitter module IC: 25657-MP26R".

Informations sur l'étiquette et la conformité

Le périphérique hôte final, dans lequel ce module RF est intégré "doit être étiqueté avec une étiquette auxiliaire indiquant le CI du module RF, tel que "Contient le module émetteur IC: 25657-MP26R".

Radio Frequency Exposure Statement for IC

The device has been evaluated to meet general RF exposure requirements. The device can be used in mobile exposure conditions. The min separation distance is 20cm.

Déclaration d'exposition aux radiofréquences pour IC

L'appareil a été évalué pour répondre aux exigences générales en matière d'exposition aux RF. L'appareil peut être utilisé dans des conditions d'exposition mobiles. La distance de séparation minimale est de 20 cm. (TBD)

This radio transmitter [IC: 25657-MP26R] has been approved by Innovation, Science and Economic Development Canada to operate with the antenna types listed in Table 6, with the maximum permissible gain indicated. Antenna types not included in this list that have a gain greater than the maximum gain indicated for any type listed are strictly prohibited for use with this device.

Cet émetteur radio [IC: 25657-MP26R] a été approuvé par Innovation, Sciences et Développement économique Canada pour fonctionner avec les types d'antenne énumérés ci-dessous, avec le gain maximal admissible indiqué. Les types d'antenne non inclus dans cette liste qui ont un gain supérieur au gain maximum indiqué pour tout type répertorié sont strictement interdits pour une utilisation avec cet appareil.

7.5. ETSI/CE Compliance

The module is certified with required EU radio and EMC directives. See Table 7-1 for detailed standards the module complies with, or refer to UK Declaration of Conformity.

8. Ordering Information

Part Number	Core Chip	Size (mm)	Operation Temperature	Shipping Form	MOQ
BDE-MP2652R7A32	CC2652P74TORGZR	21.5 × 15 × 2.15	-40 to +85°C	Tape & Reel	1K
BDE-MP2652R7U32	CC2652P74TORGZR	21.5 × 15 × 2.15	-40 to +85°C	Tape & Reel	1K
BDE-MP2652R7N32	CC2652P74TORGZR	21.5 × 15 × 2.15	-40 to +85°C	Tape & Reel	1K
BDE-MP2652R7A0	CC2652P74TORGZR	21.5 × 15 × 2.15	-40 to +85°C	Tape & Reel	1K
BDE-MP2652R7U0	CC2652P74TORGZR	21.5 × 15 × 2.15	-40 to +85°C	Tape & Reel	1K
BDE-MP2652R7N0	CC2652P74TORGZR	21.5 × 15 × 2.15	-40 to +85°C	Tape & Reel	1K
BDE-MP2674R10A32	CC2674R106TORGZ	21.5 × 15 × 2.15	-40 to +85°C	Tape & Reel	1K
BDE-MP2674R10U32	CC2674R106TORGZ	21.5 × 15 × 2.15	-40 to +85°C	Tape & Reel	1K
BDE-MP2674R10N32	CC2674R106TORGZ	21.5 × 15 × 2.15	-40 to +85°C	Tape & Reel	1K
BDE-MP2674R10A0	CC2674R106TORGZ	21.5 × 15 × 2.15	-40 to +85°C	Tape & Reel	1K
BDE-MP2674R10U0	CC2674R106TORGZ	21.5 × 15 × 2.15	-40 to +85°C	Tape & Reel	1K
BDE-MP2674R10N0	CC2674R106TORGZ	21.5 × 15 × 2.15	-40 to +85°C	Tape & Reel	1K
BDE-MP2651R3A32	CC2651R31TORGZR	21.5 × 15 × 2.15	-40 to +85°C	Tape & Reel	1K
BDE-MP2651R3U32	CC2651R31TORGZR	21.5 × 15 × 2.15	-40 to +85°C	Tape & Reel	1K
BDE-MP2651R3N32	CC2651R31TORGZR	21.5 × 15 × 2.15	-40 to +85°C	Tape & Reel	1K
BDE-MP2651R3A0	CC2651R31TORGZR	21.5 × 15 × 2.15	-40 to +85°C	Tape & Reel	1K
BDE-MP2651R3U0	CC2651R31TORGZR	21.5 × 15 × 2.15	-40 to +85°C	Tape & Reel	1K
BDE-MP2651R3N0	CC2651R31TORGZR	21.5 × 15 × 2.15	-40 to +85°C	Tape & Reel	1K
BDE-MP2652RA32	CC2652R1FRGZ	21.5 × 15 × 2.15	-40 to +85°C	Tape & Reel	1K
BDE-MP2652RU32	CC2652R1FRGZ	21.5 × 15 × 2.15	-40 to +85°C	Tape & Reel	1K
BDE-MP2652RN32	CC2652R1FRGZ	21.5 × 15 × 2.15	-40 to +85°C	Tape & Reel	1K
BDE-MP2652RA0	CC2652R1FRGZ	21.5 × 15 × 2.15	-40 to +85°C	Tape & Reel	1K
BDE-MP2652RU0	CC2652R1FRGZ	21.5 × 15 × 2.15	-40 to +85°C	Tape & Reel	1K
BDE-MP2652RN0	CC2652R1FRGZ	21.5 × 15 × 2.15	-40 to +85°C	Tape & Reel	1K
BDE-MP2642RA32	CC2642R1FRGZ	21.5 × 15 × 2.15	-40 to +85°C	Tape & Reel	1K
BDE-MP2642RU32	CC2642R1FRGZ	21.5 × 15 × 2.15	-40 to +85°C	Tape & Reel	1K
BDE-MP2642RN32	CC2642R1FRGZ	21.5 × 15 × 2.15	-40 to +85°C	Tape & Reel	1K
BDE-MP2642RA0	CC2642R1FRGZ	21.5 × 15 × 2.15	-40 to +85°C	Tape & Reel	1K
BDE-MP2642RU0	CC2642R1FRGZ	21.5 × 15 × 2.15	-40 to +85°C	Tape & Reel	1K
BDE-MP2642RN0	CC2642R1FRGZ	21.5 × 15 × 2.15	-40 to +85°C	Tape & Reel	1K

Note: This module series supports extended industrial temperature grade which can operates from -40°C to 105°C. The part number should comes with “-IN” suffix. For example, the part number BDE-MP2652R7A32-IN is the extended industrial temperature grade version.

9. Revision History

Revision	Date	Description
V1.0	8-June-2023	Initial release

You can find the latest documentation from this [Link](#).

Important Notice and Disclaimer

The information contained herein is believed to be reliable. BDE makes no warranties regarding the information contained herein. BDE assumes no responsibility or liability whatsoever for any of the information contained herein. BDE assumes no responsibility or liability whatsoever for the use of the information contained herein. The information contained herein is provided "AS IS, WHERE IS" and with all faults, and the entire risk associated with such information is entirely with the user. All information contained herein is subject to change without notice. Customers should obtain and verify the latest relevant information before placing orders for BDE products. The information contained herein or any use of such information does not grant, explicitly or implicitly, to any party any patent rights, licenses, or any other intellectual property rights, whether with regard to such information itself or anything described by such information.

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FCC Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Caution: Any changes or modifications to this device not explicitly approved by manufacturer could void your authority to operate this equipment.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

RF Exposure Information

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator and your body.

ISED Statement

English: This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s). Operation is subject to the following two conditions:

(1) This device may not cause interference.

(2) This device must accept any interference, including interference that may cause undesired operation of the device.

The digital apparatus complies with Canadian CAN ICES-3 (B)/NMB-3(B).

French: Cet appareil contient des émetteurs/récepteurs exempts de licence qui sont conformes aux RSS exemptés de licence d'Innovation, Sciences et Développement économique Canada.

L'exploitation est soumise aux deux conditions suivantes :

(1) Cet appareil ne doit pas provoquer d'interférences.

(2) Cet appareil doit accepter toute interférence, y compris les interférences susceptibles de provoquer un fonctionnement indésirable de l'appareil.

L'appareil numérique du ciem conforme canadien peut - 3 (b) / nmb - 3 (b).

This device meets the exemption from the routine evaluation limits in section 6.6 of RSS 102 and compliance with RSS 102 RF exposure, users can obtain Canadian information on RF exposure and compliance.

cet appareil est conforme à l'exemption des limites d'évaluation courante dans la section 6.6 du cnr - 102 et conformément avec rss 102 de l'exposition aux rf, les utilisateurs peuvent obtenir des données canadiennes sur l'exposition aux champs rf et la conformité.

This equipment complies with Canada radiation exposure limits set forth for an uncontrolled environment.

Cet équipement est conforme aux limites d'exposition aux rayonnements du Canada établies pour un environnement non contrôlé.

This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

Cet équipement doit être installé et utilisé à une distance minimale de 20 cm entre le radiateur et votre corps.

This radio transmitter has been approved by Industry Canada to operate with the antenna types listed with the maximum permissible gain indicated. Antenna types not included in this list, having again greater than the maximum gain indicated for that type, are strictly prohibited for use with this device.

Le présent émetteur radio a été approuvé par Industrie Canada pour fonctionner avec les types d'antenne énumérés ci-dessous et ayant un gain admissible maximal. Les types d'antenne non inclus dans cette liste, et dont le gain est supérieur au gain maximal indiqué, sont strictement interdits pour l'exploitation de l'émetteur.