



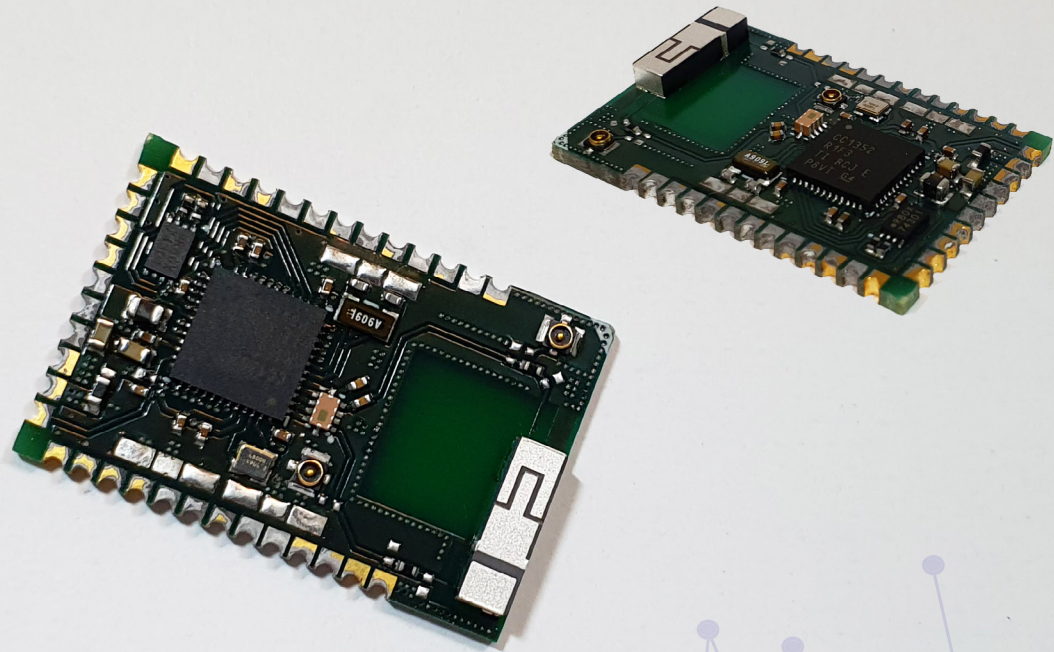
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**THE IDIOT COMPANY**

an intelligent data & internet of things company

**IDIOT\_CC1352R\_A** module



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## DESCRIPTION

The IDIOT\_CC1352R\_A is a module based on the TI CC1352R multiprotocol Sub-1 and 2.4-GHz wireless MCU. It has a ceramic antenna 868, 915Mhz and 2,4Ghz so no external antenna is needed.

Capable Wireless protocols M-Bus, IEEE 802.15.4g, IPv6-enabled smart objects (6LoWPAN), Thread, Zigbee®, KNX RF, Wi-SUN®, Bluetooth® 5 Low Energy, and proprietary systems, including the TI 15.4-Stack.

The TI CC1352R device is a member of the SimpleLink™ MCU platform of cost-effective, ultra-low power, 2.4-GHz and Sub-1 GHz RF devices. Very low active RF and microcontroller (MCU) currents, in addition to sub- $\mu$ A sleep current with up to 80KB of parity protected RAM retention, provide excellent battery lifetime and allow operation on small coin-cell batteries and in energy-harvesting applications.

For more information about the TI CC1352R: <http://www.ti.com/product/CC1352R>

## FEATURES

- Powerful 48-MHz Arm® Cortex®-M4F Processor
- 16Mbit flash memory
- 352KB of in-system Programmable Flash
- 256KB of ROM for protocols and library functions
- 8KB of Cache SRAM (Alternatively available as general-purpose RAM)
- 80KB of ultra-low leakage SRAM with parity
- (c)JTAG debugging
- Lowers total development cost and reduces time to market
- Supports 200+ nodes
- Network management, security, and frequency hopping
- Based on the IEEE 802.15.4 standard
- FCC/ETSI certification-ready
- Ensures successful transmissions: MAC layer acknowledgments, listen-before-talk and CSMA/CA

## ELECTRICAL SPECIFICATION OPERATING CONDITIONS

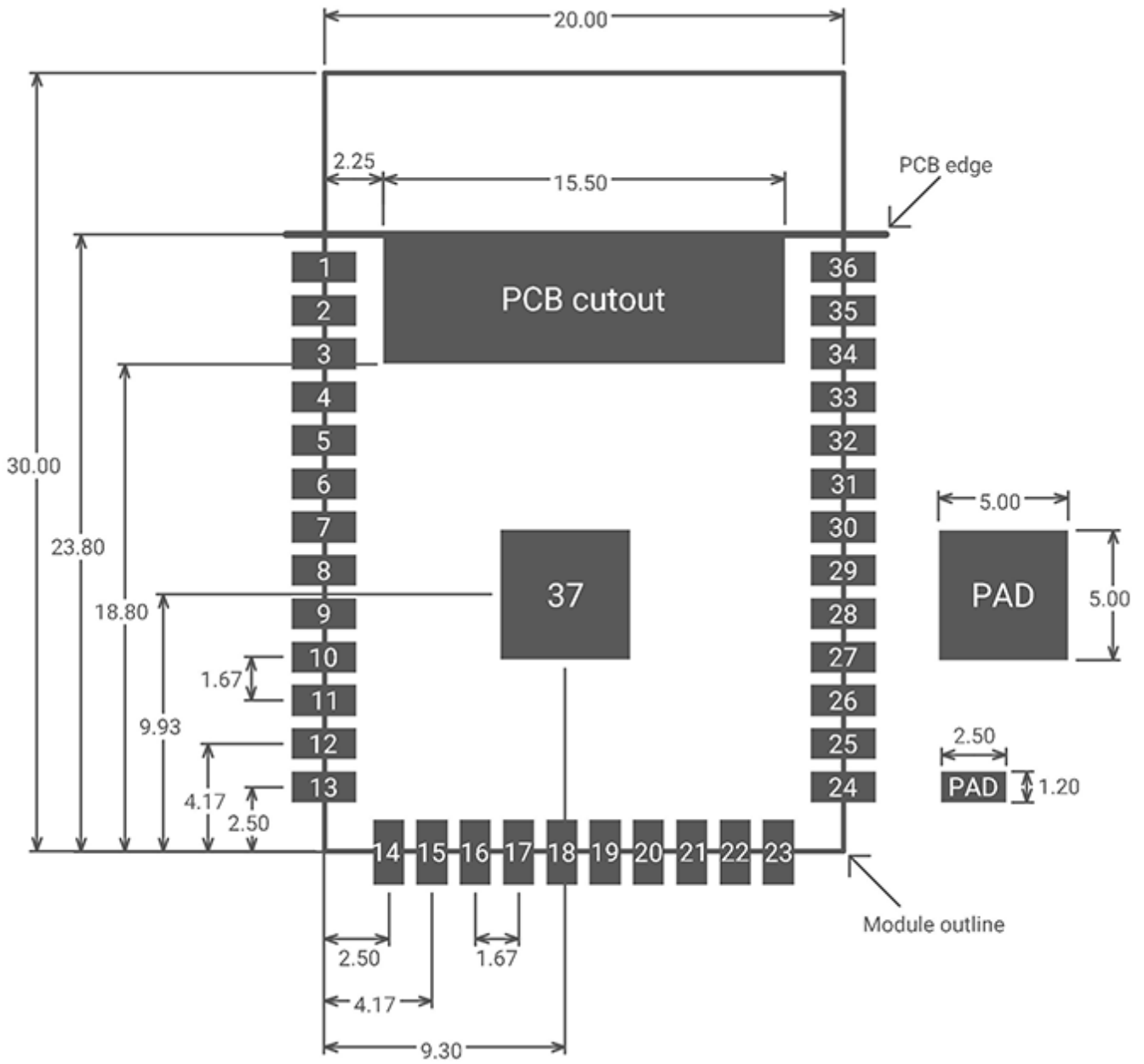
	MIN	TYP	MAX	UNIT
Operating supply voltage(VDD)	1,8		3,8	V
Operating supply voltage(VDD), boostmode*	2,1		3,8	V
Operating Current Reset and Shutdown		150		nA
Operating Current Standby without cache retention		0,99		uA
Operating Current Standby with cache retention		2,92		uA
Operating Current Idle		590		uA
Operating Current		2,89		mA
Radio receive current, 868 MHz		5,8		mA
Radio receive current, 2.44GHz(BLE)		6,9		mA
Radio transmit current Sub-1GHz PA 0dBm		8		mA
Radio transmit current Sub-1GHz PA 10dBm		14,3		mA
Radio transmit current Boost mode Sub-1GHz PA 14dBm*		24,9		mA
Radio transmit current, 2.4 GHzPA (BLE)		9,6		mA

(\*) +14 dBm RF output power normal operation is 10dBm

# MECHANICAL SPECIFICATION PINOUTS

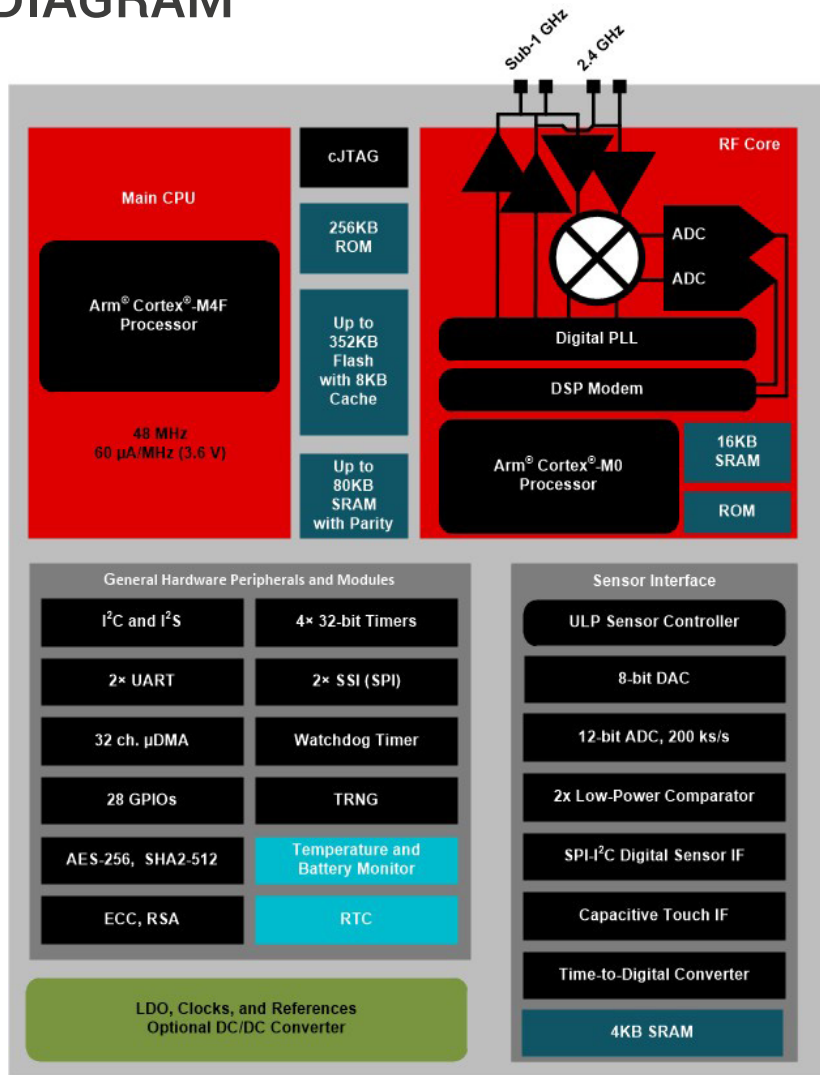
PIN	NAME	TYPE	DESCRIPTION
1	GND	Power	GND
2	GND	Power	GND
3	DIO_3	Digital	GPIO
4	DIO_4	Digital	GPIO
5	DIO_5	Digital	GPIO, high-drive capability
6	DIO_6	Digital	GPIO, high-drive capability
7	DIO_7	Digital	GPIO, high-drive capability
8	DIO_11	Digital	GPIO
9	DIO_12	Digital	GPIO
10	DIO_13	Digital	GPIO
11	DIO_14	Digital	GPIO
12	DIO_15	Digital	GPIO
13	JTAG_TMSC	Digital	JTAG_TMSC
14	JTAG_TCKC	Digital	JTAG TCKC
15	JTAG_TDO	Digital	GPIO, JTAG_TDO, high-drive capability
16	JTAG_TDI	Digital	GPIO, JTAG_TDO, high-drive capability
17	DIO_18	Digital	GPIO
18	DIO_19	Digital	GPIO
19	DIO_21	Digital	GPIO
20	DIO_22	Digital	GPIO
21	GND	Power	GND
22	VDD	Power	1.8-V to 3.8-V main chip supply
23	RESET_N	Digital	Reset, active low. No internal pullup resistor
24	DIO_24	Digital or Analog	GPIO, analog capability
25	DIO_25	Digital or Analog	GPIO, analog capability
26	DIO_26	Digital or Analog	GPIO, analog capability
27	DIO_27	Digital or Analog	GPIO, analog capability
28	DIO_28	Digital or Analog	GPIO, analog capability
29	DIO_29	Digital or Analog	GPIO, analog capability
30	DIO_30	Digital or Analog	GPIO, analog capability
31	GND	Power	GND
32	GND	Power	GND
33	GND	Power	GND
34	GND	Power	GND
35	GND	Power	GND
36	GND	Power	GND
37	GND	Power	GND

# FOOTPRINT AND PIN DIAGRAM

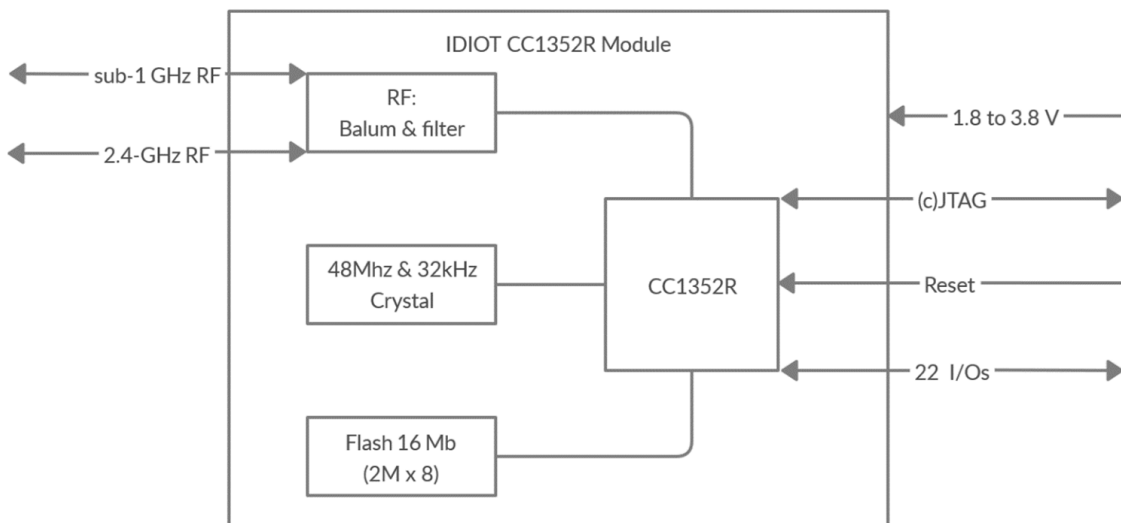


All measurements are in millimeters.

# CC1352R DIAGRAM



# IDIOT\_CC1352R\_A DIAGRAM



# ASSEMBLY INFORMATION

## Reflow Soldering Profile, Per IPC/JEDEC J-STD-020E

PROFILE FEATURE	SN-PB EUTECTIC ASSEMBLY	PB-FREE ASSEMBLY
<b>Preheat/Soak</b>		
Temperature Min (T <sub>sm</sub> )	100 °C	150 °C
Temperature Max (T <sub>sm</sub> )	150 °C	200 °C
Time (ts) from (T <sub>sm</sub> to T <sub>sm</sub> )	60-120 seconds	60-120 seconds
Ramp-up rate (TL to T <sub>p</sub> )	3 °C/second max.	3 °C/second max.
Liquidous temperature (TL)	183 °C	217 °C
Time (tL) maintained above TL	60-150 seconds	60-150 seconds
Time (tp)* within 5 °C of the specified Classification temperature (T <sub>c</sub> )	20* seconds	30* seconds
Ramp-down rate (T <sub>p</sub> to TL)	6 °C/second max.	6 °C/second max.
Time 25 °C to peak temperature	6 minutes max.	8 minutes max.

\* Tolerance for peak profile temperature (T<sub>p</sub>) is defined as a supplier minimum and a user maximum.

### Note 1:

All temperatures refer to the center of the package, measured on the package body surface that is facing up during assembly reflow (e.g., live-bug). If parts are reflowed in other than the normal live bug assembly reflow orientation (i.e., dead-bug), T<sub>p</sub> shall be within  $\pm 2$  °C of the live bug T<sub>p</sub> and still meet the T<sub>c</sub> requirements, otherwise, the profile shall be adjusted to achieve the latter. To accurately measure actual peak package body temperatures, refer to JEP140 for recommended thermocouple use.

### Note 2:

Reflow profiles in this document are for classification/preconditioning and are not meant to specify board assembly profiles. Actual board assembly profiles should be developed based on specific process needs and board designs and should not exceed the parameters in this table.

For example, if T<sub>c</sub> is 260 °C and time T<sub>p</sub> is 30 seconds, this means the following for the supplier and the user.

**For a supplier:** The peak temperature must be at least 260 °C. The time above 255 °C must be at least 30 seconds.

**For a user:** The peak temperature must not exceed 260 °C. The time above 255 °C must not exceed 30 seconds.

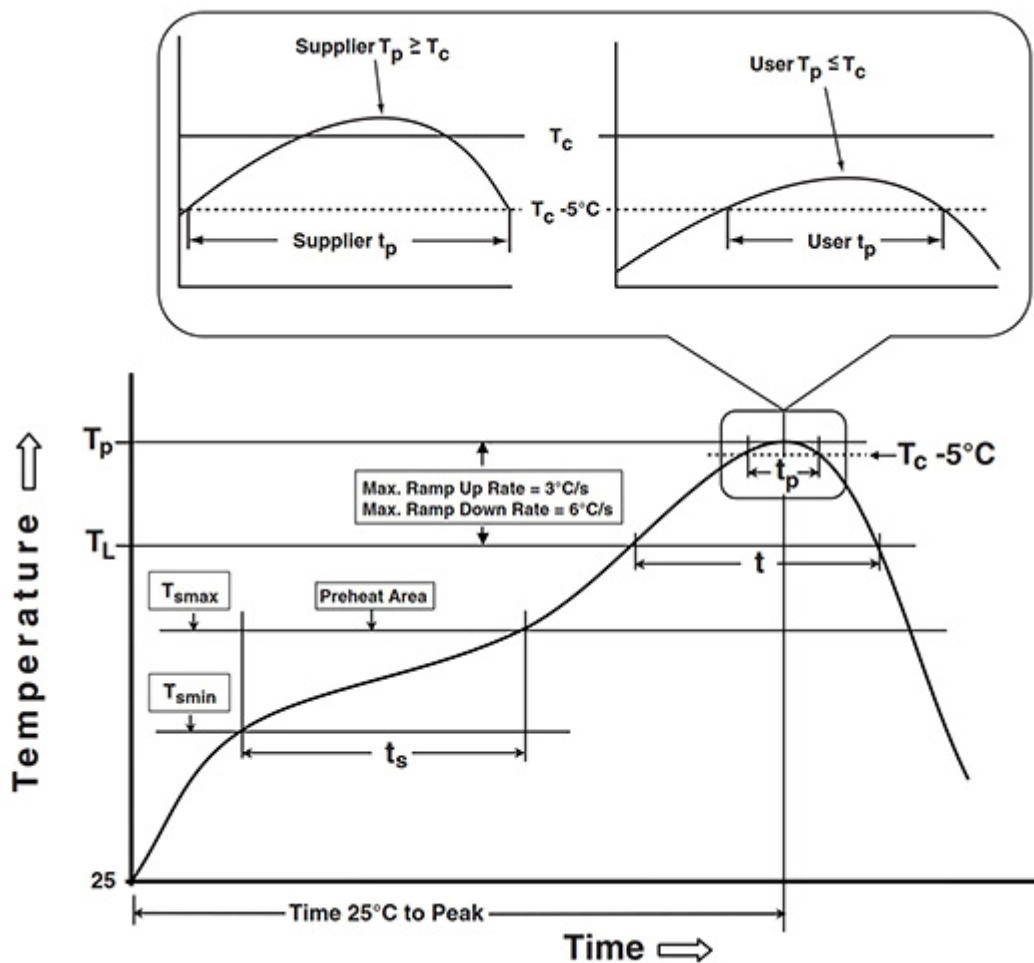
**Note 3:**

All components in the test load shall meet the classification profile requirements.

**Note 4:**

SMD packages classified to a given moisture sensitivity level by using Procedures or Criteria defined within any previous version of J-STD-020, JESD22-A112 (rescinded), IPC-SM-786 (rescinded) do not need to be reclassified to the current revision unless a change in classification level or a higher peak classification temperature is desired.

## CLASSIFICATION PROFILE (NOT TO SCALE)



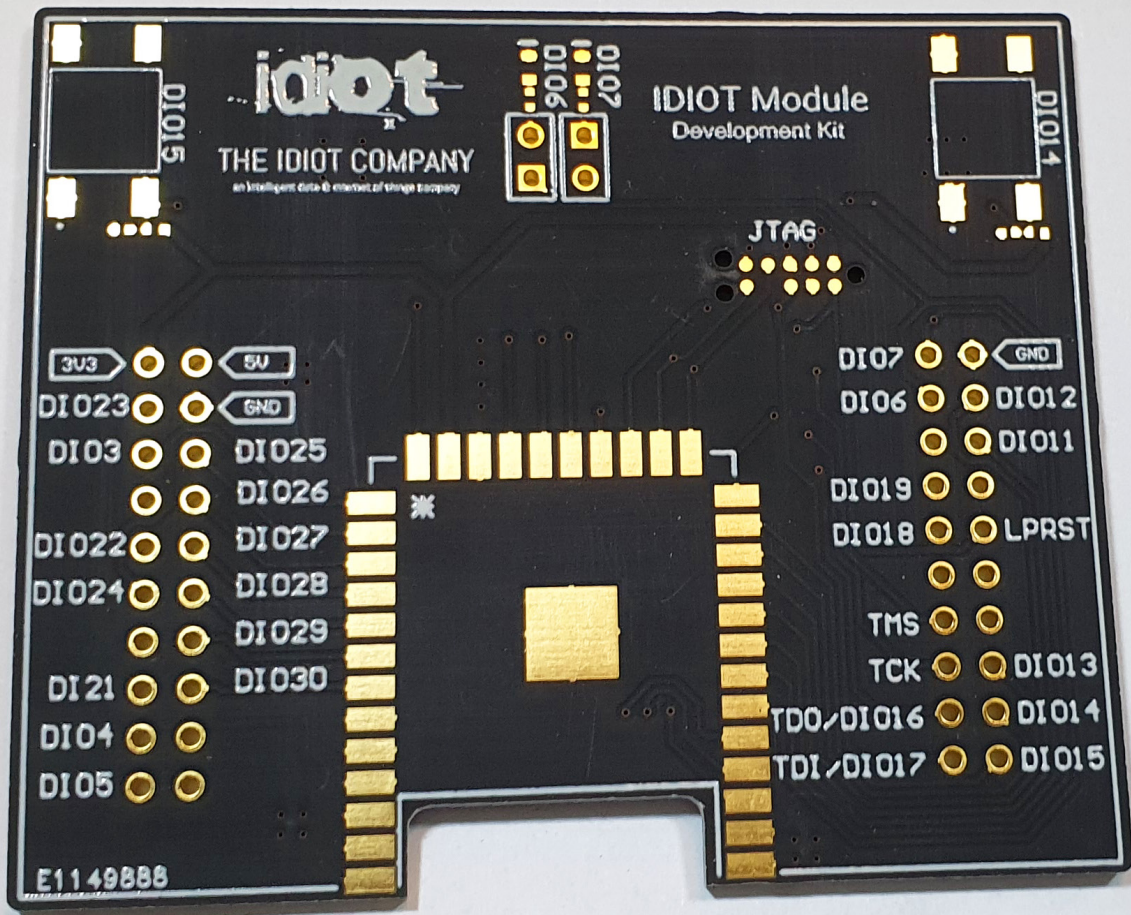
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# IDIOT\_CC1352R\_A MODULE DEVELOPMENT KIT

The module development kit is a easy way to start development with the IDIOT\_CC1352R\_A module.

TI Boosterpack compatible for quick prototyping with TI reference designs.



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