AIROC™ Wi-Fi Cloud Connectivity Manager (CCM) module

Turnkey, secure solution for IoT applications

The AIROC™ IFW56810-00 Wi-Fi 4 Cloud Connectivity Manager (CCM) module is a ready-to-use hardware and firmware solution that contains all the necessary expertise in wireless, networking, cloud, and security. This module is designed to simplify the process of implementing IoT projects and ensure their success. The hardware is built using Infineon's industry-leading security technology, which includes a pre-provisioned and secure MCU along with the most reliable Wi-Fi technology used in the IoT industry.

The AIROC™ Wi-Fi 4 CCM module is effortless to use and does not require any programming or software development using an SDK. It comes pre-programmed with tested and secure Infineon firmware, which is signed and verified. The module can be kept up-to-date with future connectivity and security enhancements using over-the-air (OTA) firmware updates. The firmware shortens the time-to-market and eliminates the learning curve associated with IoT projects by providing a configurable, ready-to-use networking and cloud management solution that can be easily integrated into customer systems using a simple command set.

Features

- Cloud management
  - Powered by AWS IoT ExpressLink
  - AWS over-the-air update support
  - AWS host over-the-air update (HOTA) support
- Networking
  - Full network stack offload from host: TCP/IP, TLS, DNS, HTTP, and MQTT
  - Fully documented
  - Command set for simple configuration from host processor
- Wireless
  - Built on industry-leading Infineon Wi-Fi for long range, robust connectivity
  - Wi-Fi 4 (802.11n)
  - Up to 65 Mbps PHY Data Rate
  - Integrated antenna
  - Soft AP or Bluetooth® LE onboarding to Wi-Fi access point
- Security
  - WPA3, WPA/WPA2 (personal)
  - TLS 1.2
  - Arm® platform security architecture level 2 certified
    - Secure enclave and secure boot
  - Only operates with Infineon signed firmware
  - Unique device ID, Certificate for safe, convenient provisioning
  - Ongoing security updates
- Module
  - Certified for US, Canada, EU only
  - 36.0 mm (L) x 18 mm (W) x 2.8 mm (H)
  - LGA module, 145p
- General features
  - Turnkey solution requiring no development on module
  - UART host interface
  - -30°C to +85°C operating temperature

Features

- Applications
  - Internet of Things (IoT)
  - Telematics
  - Point-of-sales
  - Medical and industrial networks
  - Home/building automation applications
  - Wireless gateways

Note: While all the communication between the IFW56810-00 modules and the AWS cloud is encrypted during transmission (using TLS 1.2 protocol) and at rest, the serial interface (UART) between the host processor and the module is not encrypted. If sensitive data needs to be transmitted to and from the IFW56810-00 module, and an unauthorized person can be assumed to gain physical control of the device, Infineon recommends the host processor and the corresponding cloud application implement a suitable additional end-to-end message encryption scheme.

Table of contents

1 Overview

1.1 Functional block diagram

The AIROC™ IFW56810-00 module, which has an integrated antenna, has all the necessary components to connect a host processor to the cloud. It has been approved for use in the US, Canada, and the EU only. An external flash must be connected via QSPI, but no additional RF or clocking circuitry is needed. Connecting to a host is simple and can be accomplished using an industry-standard UART, requiring only five host interface signals (UART TXD, UART RXD, EVENT (MSG), WAKE (INT), and RST), as well as power and ground. Infineon's IEEE 802.11n single band 2.4-GHz Wi-Fi technology, widely used in the IoT, is used to achieve Wi-Fi performance, and Bluetooth® LE is also supported for onboarding to Wi-Fi networks.

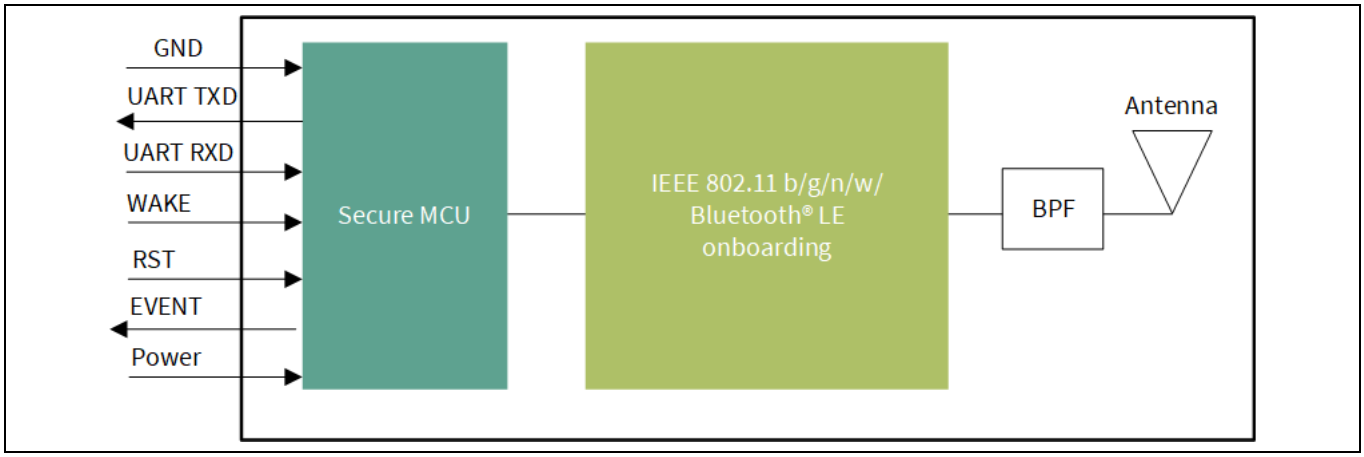


Figure 1 IFW56810-00 module showing host interface signals

1.1.1 General features

Table 1 Module features

Features	Description
Product description	IEEE 802.11 b/g/n wireless LAN and Bluetooth® IoT module
Host interface	UART
Dimension	36.0 mm (L) x 18 mm (W) x 2.8 mm (H)
Form factor	LGA module, 145p
Antenna	Internal PCB antenna
Weight	2.3 g

1.1.2 Wi-Fi features

Table 2 Wi-Fi specification

Features	Description	Min	Typ	Max	Unit
WLAN standard	IEEE 802.11b/g/n, Wi-Fi complaintt				
Frequency range	WLAN: 2.4-GHz band				
Modulation	DSSS DBPSK(1 Mbps), DQPSK(2 Mbps), CCK(11/5.5 Mbps) OFDM BPSK(9/6 Mbps), QPSK(18/12 Mbps), DBPSK(1 Mbps), DQPSK(2 Mbps), CCK(11/5.5 Mbps), 16-QAM(36/24 Mbps), 64-QAM (72.2/54/48 Mbps)				
Output power (Board level limit)*	2.4G 11b (11 Mbps) @EVM< 35%	17	19	21	dBm
	11g (54 Mbps) @EVM< -25 dB	16	18	20	dBm
	11n (HT20 MCS7) @EVM< -27 dB	15.5	17.5	19.5	dBm
Receiver sensitivity	2.4G 11b (1 Mbps)	–	–97	–93	dBm
	11g (6 Mbps)	–	–91	–87	dBm
	11b (11 Mbps)	–	–89	–85	dBm
	11g (54 Mbps)	–	–76	–72	dBm
	11n (HT20 MCS0)	–	–91	–87	dBm
	11n (HT20 MCS7)	–	–73	–69	dBm
Data rate	802.11b: 1, 2, 5.5, 11 Mbps 802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps 802.11n: MCS0~7 HT20 65 Mbps				
Security	• WPA and WPA2- (Personal) support for powerful encryption and authentication • WPA3 • AES and TKIP acceleration hardware for faster data encryption and 802.11i compatibility • Cisco compatible extension- (CCX, CCX 2.0, CCX 3.0, CCX 4.0, CCX5.0) certified • Wi-Fi Protected Setup (WPS) • WEP • WMM / WMM-SA • CKIP (software)				

1.1.3 Bluetooth® features

Table 3 Bluetooth® specification

Features	Description	Min	Typ	Max	Unit
Bluetooth® standard	Bluetooth® LE 5.2	–	–	–	–
Frequency range	2400~2483.5 MHz	–	–	–	–
Modulation	GFSK	–	–	–	–
Output power	8 dBm+/-3 dBm (max settings)	–	–	–	–
Receiver sensitivity	GFSK	–	–91	–76	dBm

1.1.4 Operating conditions

Table 4 Operating specification

Features	Description
Operating conditions	
Voltage	VBAT: 3.2 V~4.8 V (3.6 V typical) VDD: 1.7 V~3.6 V
Operating temperature	–30°C to 85°C (optimal RF performance guarantee –30°C to 80°C)
Operating humidity	less than 85% RH
Storage temperature	–40°C to 90°C
Storage humidity	less than 60% RH
ESD protection	
Human body model	±1 kV per MIL-STD-883H method 3015.8
Charged device model	±300 V per JEDEC EIA/JESD22-C101E

2 Pin information

2.1 Pin map

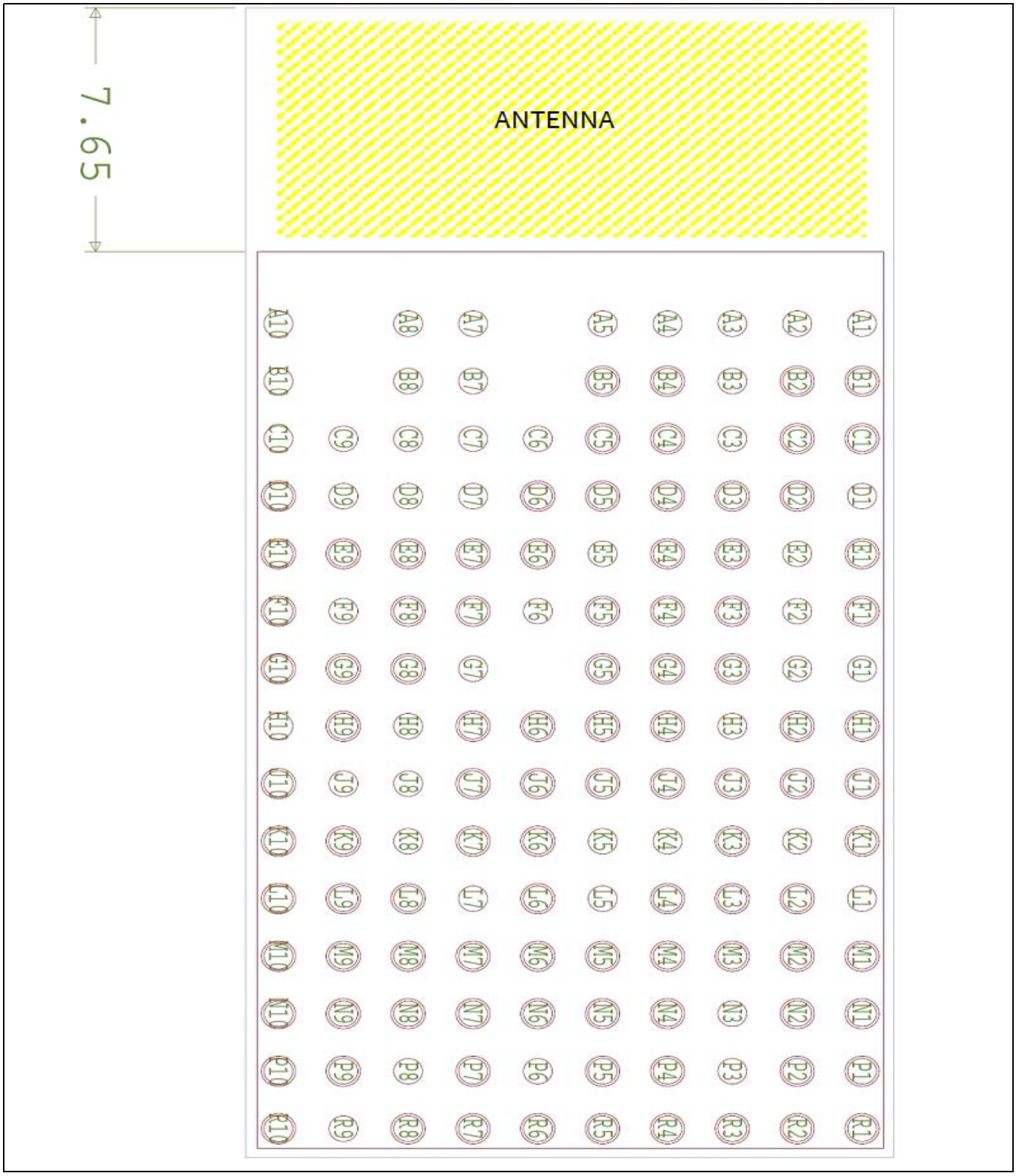


Figure 2 Top view pin map

2.2 Pin table

Table 5 Pin table

Pin No.	Definition	Basic description	Voltage	Type
G3	Reserved	Reserved for debug use only	VDDIO_WL	I/O
D3	Reserved	Reserved for debug use only	VDDIO_WL	I/O
E3	Reserved	Reserved for debug use only	VDDIO_WL	I/O
F3	Reserved	Reserved for debug use only	VDDIO_WL	I/O
D5	Reserved	Reserved for debug use only	VDDIO_WL	I/O
B1	Reserved	Reserved for debug use only	VDDIO_WL	I/O
D2	Reserved	Reserved for debug use only	VDDIO_WL	I/O
C2	Reserved	Reserved for debug use only	VDDIO_WL	I/O
B2	Reserved	Reserved for debug use only	VDDIO_WL	I/O
N5	Reserved	Reserved for debug use only	–	I/O
N4	Reserved	Reserved for debug use only	–	I/O
A1	GND_A1	Power	–	GND
A10	GND_A10	Power	–	GND
A2	GND_A2	Power	–	GND
A3	GND_A3	Power	–	GND
A4	GND_A4	Power	–	GND
A5	GND_A5	Power	–	GND
A7	GND_A7	Power	–	GND
A8	GND_A8	Power	–	GND
B10	GND_B10	Power	–	GND
B3	GND_B3	Power	–	GND
B7	GND_B7	Power	–	GND
B8	GND_B8	Power	–	GND
C10	GND_C10	Power	–	GND
C3	GND_C3	Power	–	GND
C6	GND_C6	Power	–	GND
C7	GND_C7	Power	–	GND
C8	GND_C8	Power	–	GND
C9	GND_C9	Power	–	GND
D1	GND_D1	Power	–	GND
D7	GND_D7	Power	–	GND
D8	GND_D8	Power	–	GND
D9	GND_D9	Power	–	GND
E2	GND_E2	Power	–	GND
E5	GND_E5	Power	–	GND
F2	GND_F2	Power	–	GND
F6	GND_F6	Power	–	GND
F9	GND_F9	Power	–	GND

Table 5 Pin table *(continued)*

Pin No.	Definition	Basic description	Voltage	Type
G1	GND_G1	Power	–	GND
G2	GND_G2	Power	–	GND
G7	GND_G7	Power	–	GND
H10	GND_H10	Power	–	GND
H3	GND_H3	Power	–	GND
H8	GND_H8	Power	–	GND
J8	GND_J8	Power	–	GND
J9	GND_J9	Power	–	GND
K2	GND_K2	Power	–	GND
K4	GND_K4	Power	–	GND
K5	GND_K5	Power	–	GND
K8	GND_K8	Power	–	GND
L1	GND_L1	Power	–	GND
L5	GND_L5	Power	–	GND
L7	GND_L7	Power	–	GND
N3	GND_N3	Power	–	GND
P3	GND_P3	Power	–	GND
P6	GND_P6	Power	–	GND
P8	GND_P8	Power	–	GND
R9	GND_R9	Power	–	GND
K6	P0_2	UART_RX	VBACKUP	Input
J7	P0_3	UART_TX	VBACKUP	Output
K7	Reserved	Reserved for debug use only	VBACKUP	I/O
J6	P0_5	Reserved for debug use only	VBACKUP	I/O
M2	P1_0	EVENT (MSG)	VDDD	Output
M3	P1_1	WAKE (INT)	VDDD	Input
K3	Reserved	Reserved for debug use only	VDDD	I/O
L3	Reserved	Reserved for debug use only	VDDD	I/O
L2	Reserved	Reserved for debug use only	VDDD	I/O
J3	Reserved	Reserved for debug use only	VDDD	I/O
R7	Reserved	Reserved for debug use only	VDDA	I/O
R6	Reserved	Reserved for debug use only	VDDA	I/O
P7	Reserved	Reserved for debug use only	VDDA	I/O
L6	Reserved	Reserved for debug use only	VDDA	I/O
N7	Reserved	Reserved for debug use only	VDDA	I/O
M7	Reserved	Reserved for debug use only	VDDA	I/O
M6	Reserved	Reserved for debug use only	VDDA	I/O
R4	Reserved	Reserved for debug use only	VDDD	I/O
L4	Reserved	Reserved for debug use only	VDDD	I/O
R5	P11_2	QSPI_CS - chip select	VDDD	Output

Table 5 Pin table *(continued)*

Pin No.	Definition	Basic description	Voltage	Type
N6	P11_3	QSPI_IO3 - data line 3	VDDD	I/O
M4	P11_4	QSPI_IO2 - data line 2	VDDD	I/O
P4	P11_5	QSPI_IO1 - data line 1	VDDD	I/O
P5	P11_6	QSPI_IO0 - data line 0	VDDD	I/O
M5	P11_7	QSPI_SCK - clock	VDDD	Output
R2	Reserved	Reserved for debug use only	VDDD	I/O
R1	Reserved	Reserved for debug use only	VDDD	I/O
N1	Reserved	Reserved for debug use only	VDDD	I/O
P1	Reserved	Reserved for debug use only	VDDD	I/O
P2	Reserved	Reserved for debug use only	VDDD	I/O
N2	Reserved	Reserved for debug use only	VDDD	I/O
C4	Reserved	Reserved for debug use only	VDDD	I/O
F4	Reserved	Reserved for debug use only	VDDD	I/O
E4	Reserved	Reserved for debug use only	VDDD	I/O
F5	Reserved	Reserved for debug use only	VDDD	I/O
D4	Reserved	Reserved for debug use only	VDDD	I/O
B5	Reserved	Reserved for debug use only	VDDD	I/O
B4	Reserved	Reserved for debug use only	VDDD	I/O
C5	Reserved	Reserved for debug use only	VDDD	I/O
F7	Reserved	Reserved for debug use only	VDDD	I/O
E7	Reserved	Reserved for debug use only	VDDD	I/O
E8	Reserved	Reserved for debug use only	VDDD	I/O
G8	Reserved	Reserved for debug use only	VDDD	I/O
F8	Reserved	Reserved for debug use only	VDDD	I/O
E9	Reserved	Reserved for debug use only	VDDD	I/O
E10	Reserved	Reserved for debug use only	VDDD	I/O
D10	Reserved	Reserved for debug use only	VDDD	I/O
F10	Reserved	Reserved for debug use only	VDDD	I/O
H9	Reserved	Reserved for debug use only	VDDD	I/O
G9	Reserved	Reserved for debug use only	VDDD	I/O
G10	Reserved	Reserved for debug use only	VDDD	I/O
J10	Reserved	Reserved for debug use only	VDDD	I/O
K9	Reserved	Reserved for debug use only	VDDD	I/O
L8	Reserved	Reserved for debug use only	VDDD	I/O
K10	Reserved	Reserved for debug use only	VDDD	I/O
L9	Reserved	Reserved for debug use only	VDDD	I/O
M8	Reserved	Reserved for debug use only	VDDD	I/O
L10	Reserved	Reserved for debug use only	VDDD	I/O
M9	Reserved	Reserved for debug use only	VDDD	I/O
P9	Reserved	Reserved for debug use only	VDDA	I/O

Table 5 Pin table *(continued)*

Pin No.	Definition	Basic description	Voltage	Type
N9	Reserved	Reserved for debug use only	VDDA	I/O
M10	Reserved	Reserved for debug use only	VDDA	I/O
N8	Reserved	Reserved for debug use only	VDDA	I/O
P10	Reserved	Reserved for debug use only	VDDA	I/O
N10	Reserved	Reserved for debug use only	VDDA	I/O
R10	Reserved	Reserved for debug use only	VDDA	I/O
H4	Reserved	Reserved for debug use only	–	I/O
G5	Reserved	Reserved for debug use only	–	I/O
H5	Reserved	Reserved for debug use only	–	I/O
G4	Reserved	Reserved for debug use only	–	I/O
H7	Reserved	Reserved for debug use only	–	I/O
H6	Reserved	Reserved for debug use only	–	I/O
J4	Reserved	Reserved for debug use only	3.3 V	I/O
J5	Reserved	Reserved for debug use only	3.3 V	I/O
M1	VBACKUP	VBACKUP is the supply to the backup domain. The backup domain includes the 32-kHz WCO, RTC, and backup registers. It can generate a wake-up interrupt to the chip via the RTC timers or an external input. It can also generate an output to wakeup external circuitry. It is connected to VDDD when not used as a separate battery backup domain. VBACKUP provides the supply for port 0. min. is 1.4 V in backup mode	–	PWR
K1	VDD_NS	Power supply for PSoC™ 64 Buck regulator	VDDD	PWR
H2	VDD_USB	Power supply for PSoC™ 64 USB	3.3 V	PWR
R8	VDDA	Power supply for PSoC™ 64 P9,P10 (analog peripherals)	1.7~3.6 V	PWR
R3	VDDD	Power supply for PSoC™ 64 P1, P5, P6, P7, P8, P11, P12, XRES.	1.7~3.6 V	PWR
H1	VDDIO_WL	Power supply for CYW43439 digital I/O. Connect it to VDDIOR.	VDDIOR	PWR
J1	VDDIOR	Power supply for PSoC™ 64 P2, P3, P4. Connect it to VDDIO_WL	1.8 V	PWR
D6	Reserved	Reserved for debug use only	VDDIO_WL	I/O
E6	Reserved	Reserved for debug use only	VDDIO_WL	I/O
C1	Reserved	Reserved for debug use only	VDDIO_WL	I/O
F1	WLAN_VBAT	Main power supply for CYW43439	3.2~4.8 V	PWR
E1	WLAN_VBAT	Main power supply for CYW43439	3.2~4.8 V	PWR
J2	XRES_L	External reset I/O pin (pulled up by a 4.7 KΩ resistor internally)	VDDD	Input

Note
1. “Reserved for debug use only” can be left floating.

3 Electrical characteristics

3.1 Absolute maximum ratings

Table 6 Absolute maximum ratings

Symbol	Parameter	Min	Max	Unit
WLAN_VBAT	Power supply for CYW43439 PMU	–0.5	6	V
VDDD, VDDIOR, VD D_NS, VDDA, VDD_ USB, VBACKUP	Power supply for PSoC™ 64	–0.5	4	V
VDDIO_WL	Power supply for CYW43439 digital I/O	–0.5	3.9	V

3.2 Recommended operating condition

Table 7 Recommended operating condition

Symbol	Parameter	Min	Typ	Max	Unit
WLAN_VBAT	Power supply for CYW43439 PMU	3.2	3.6	4.8	V
VDDD [2], VDD_NS,VD DA	Power Supply for PSoC™ 64	1.7	3.3	3.6	V
VDDIO_WL, VDDIOR	IO Voltage for WLAN/Bluetooth® and PSoC™ 64 [3]	1.7	1.8	1.9	V
VBACKUP	Power supply to the PSoC™ 64 backup domain	1.4	3.3	3.6	V

Notes
2. To program the eFuse, VDDD must be at 2.5 V ± 5%, at 14 mA.
3. Performance not guarantee if VDDIO_WL, VDDIOR > 1.9 V.

3.3 GPIO DC characteristics

Table 8 GPIO DC characteristics

Symbol	Parameter	Condition	Min	Max	Unit
V_{IH}	Input HIGH voltage	CMOS Input	0.7 × VDD	–	V
V_{IL}	Input LOW voltage	CMOS Input	–	0.3 × VDD	V
V_{IH}	Input HIGH voltage	LVTTL input, VDD < 2.7 V	0.7 × VDD	–	V
V_{IL}	Input LOW voltage	LVTTL input, VDD < 2.7 V	–	0.3 × VDD	V
V_{IH}	Input HIGH voltage	LVTTL input, VDD ≥ 2.7 V	2	–	V
V_{IL}	Input LOW voltage	LVTTL input, VDD ≥ 2.7 V	–	0.8	V
V_{OH}	Output HIGH voltage	IOH = 8 mA	VDD-0.5	–	V
V_{OL}	Output LOW voltage	IOL = 8 mA	–	0.4	V

For more details, see **32-bit PSoC™ 6 Arm® Cortex®-M4 / M0+**

4 Power measurement

Table 9 Power measurement

Symbol	Parameter	Mode	Operating voltage	Max	Avg
WLAN_VBAT	Power supply for CYW43439 PMU	Active	3.6	40 mA	13 mA
		Sleep		TBD	TBD
		Deep Sleep		TBD	TBD
VDDD[4], VDD_NS, VDDA	Power supply for PSoC™ 64	Active	3.3	14 mA	14 mA
		Sleep		TBD	TBD
		Deep Sleep		TBD	TBD
VDDIO_WL, VDDIOR	IO voltage for WLAN/Bluetooth® and PSoC™ 64 [5]	Active	1.8	746 µA	745 µA
		Sleep		TBD	TBD
		Deep Sleep		TBD	TBD
VBACKUP	Power supply to the PSoC™ 64 backup domain	Active	3.3	19 nA	44 nA
		Sleep		TBD	TBD
		Deep Sleep		TBD	TBD

Notes
4. All results are run to take three minutes then record the test average and maximum value.
5. DUT in CCM.

5 Connection diagram

5.1 QSPI External flash connection to module diagram

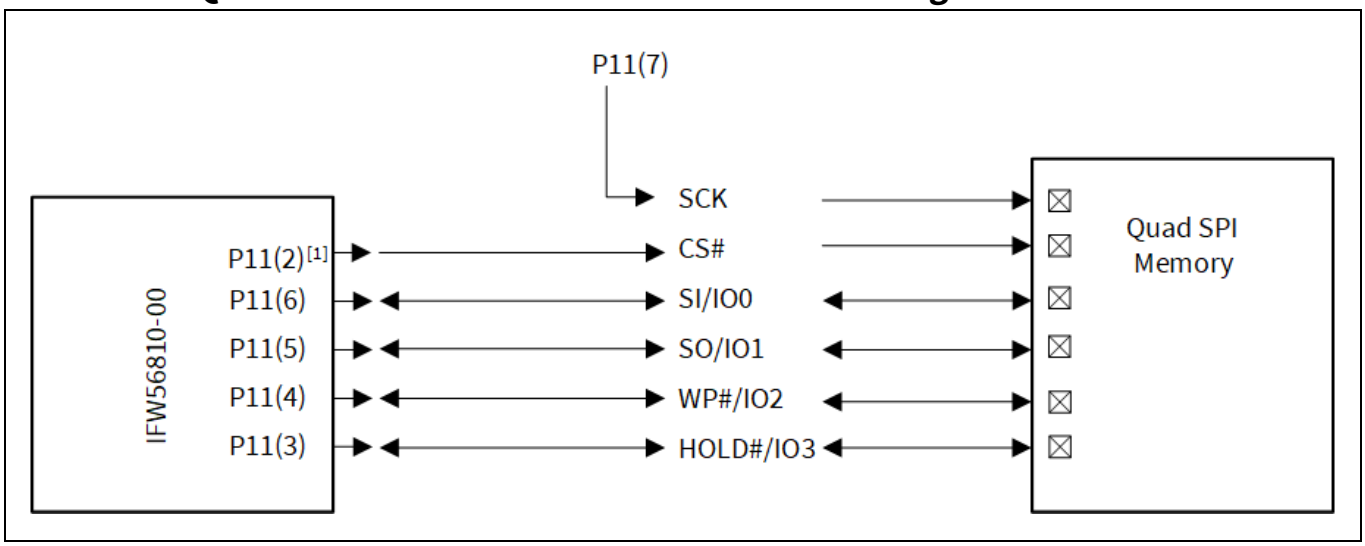


Figure 3 QSPI external flash connection to module diagram

5.2 Power connection diagram

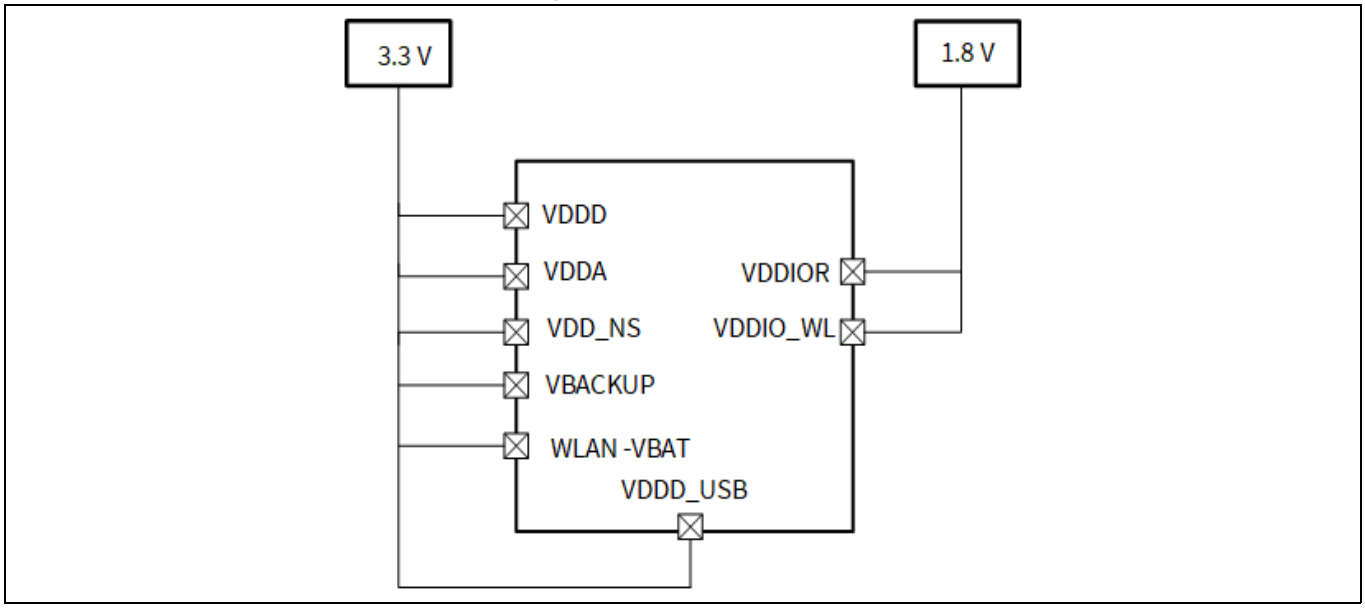


Figure 4 Power connection diagram

6 Mechanical information

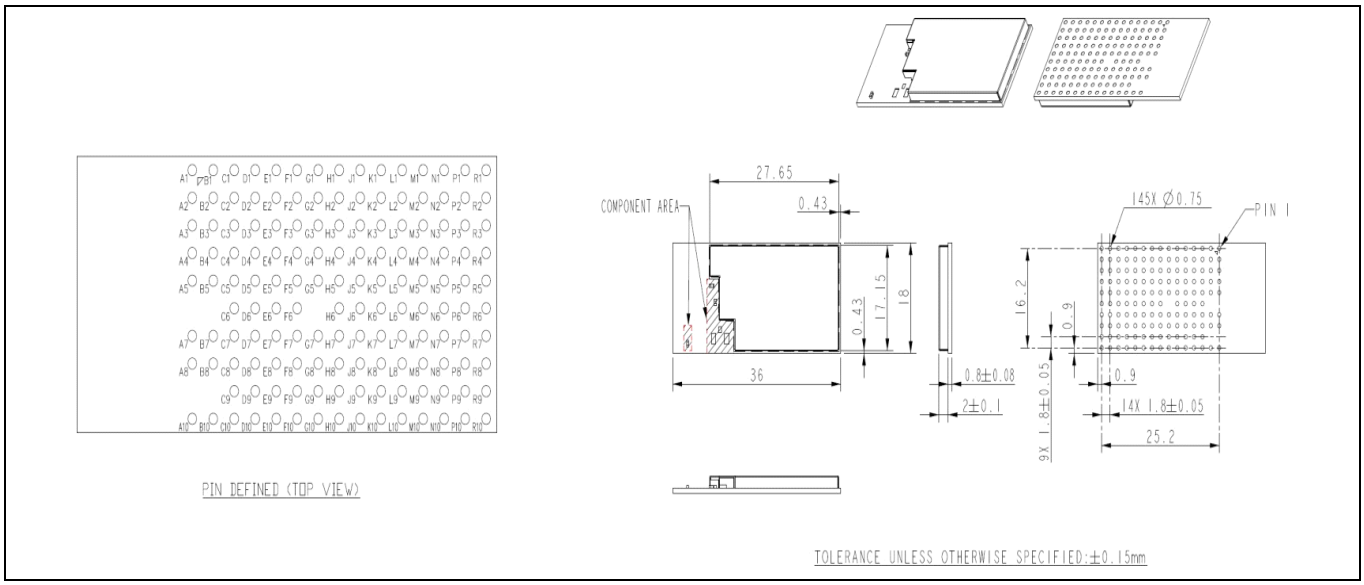


Figure 5 CCM top view PCB layout footprint (unit in mm, diameter = 0.75 mm solder mask defined)

Note
6. Keep out distance of the antenna is > 10 mm for non-conductive materials and 20 mm for conductive.

7 Surface-mount technology (SMT) process suggestion

7.1 Production rule

7.1.1 Footprint and stencil aperture recommendation

Footprint: The footprint shares the same center as pin pad land. Following are the rules to define the size.

- Rectangle type:
  - Outermost layer:
    - Footprint length = 1 × (pin pad land length)
    - Footprint width = 1 × (pin pad land width)
  - Others: the same size as the pin pad
- Round type:
  - Outermost layer: Increase the pin pad size by about 10% in diameter
    - Footprint diameter = 1.1 × (pin pad land diameter)
  - Others: the same size as the pin pad
- Stamp hole:
  - Outermost layer: Increase the pin pad size by about 10% in length & width
    - Footprint length = 2 × (pin pad land length)
    - Footprint width = 1 × (pin pad land width)
  - Others: the same size as the pin pad
- Stencil aperture suggestion
- The Pad is the same size as the footprint
- Stencil thickness suggestion:
- Normal type product thickness: 0.1 mm~0.12 mm
- Maximum warpage: 0.1 mm
- SOM type product thickness: 0.12 mm~0.15 mm (use step-up / step-down stencil)

7.2 Reflow soldering profile

Table 10 SnPb Eutectic process - Classification temperature (T_C)

Package thickness	Volume mm^3 < 350	Volume mm^3 ≥ 350
< 2.5 mm	240 + 0/-5°C	225 + 0/-5°C
≥ 2.5 mm	225 + 0/-5°C	225+ 0/-5°C

Table 11 PB-Free process - Classification temperature (T_C)

Package thickness	Volume mm^3 < 350	Volume mm^3 350 - 2000	Volume mm^3 >2000
< 1.6 mm	260°C[7]	260°C[7]	260°C[7]
1.6 mm - 2.5 mm	260°C[7]	250°C[7]	245°C[7]
>2.5 mm	250°C[7]	245°C[7]	245°C[7]

Note
7. Tolerance: The device manufacturer/supplier shall assure process compatibility up to and including the stated classification temperature at the rated MSL level 3.

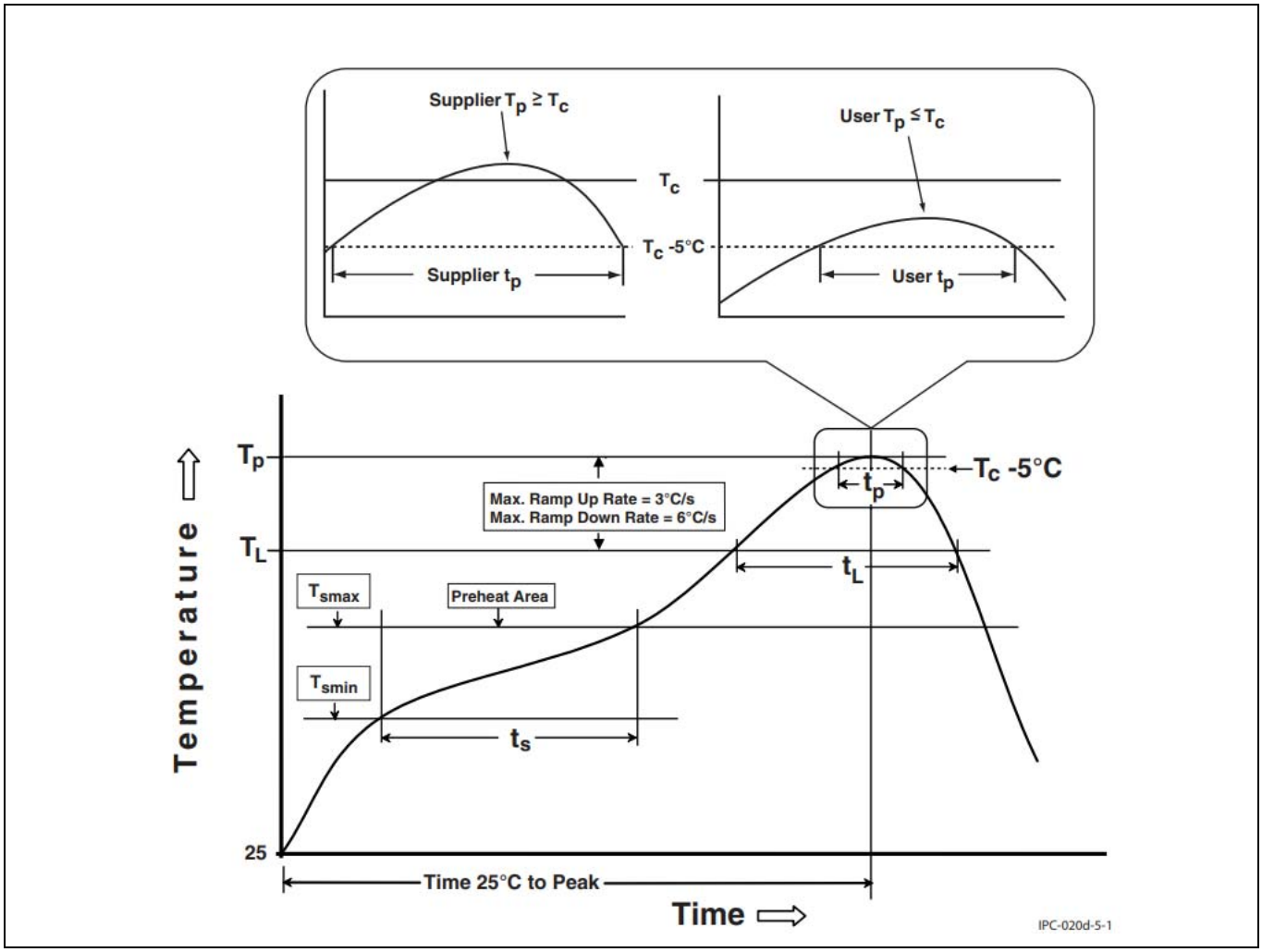


Figure 6 Reflow soldering profile

Table 12 Classification reflow profile

Profile feature	Sn-Pb Eutectic assembly	Pb-Free assembly
Preheat/Soak Temperature Min (T_{smin}) Temperature Max (T_{smax}) Time (t_S) from T_{smin} to T_{smax})	 100°C 150°C 60-120 s	 150°C 200°C 60-120 s
Ramp-up rate (T_L to T_P)	3/s max.	3/s max.
Liquidous temperature (T_L) Time (t_L) maintained above T_L	183°C 60-150 s	217°C 60-150 s
Time (t_P)[8] within 5°C of the specified classification temperature (T_C)[8], see **Reflow soldering profile**	20[8] s	30[8] s
Ramp-down rate (T_P to T_L)	6°C/s max.	6°C/s max.
Time 25°C to peak temperature	6 minutes max.	8 minutes max.

Note
8. Tolerance for peak profile temperature (T_P) is defined as a supplier minimum and a user maximum.

7.3 Solder down module USE

- Shelf life in a Moisture Barrier Bag (MBB): 12 months at <30°C and <60% relative humidity (RH)
- Opened MBB: After the dry pack (MBB) is opened, all soldered-down modules within that bag must complete solder reflow processing, including rework, prior to the floor life (168 hours); if not, they need dry baking to reset the floor life
- General consideration for baking: The oven used for baking shall be vented and capable of maintaining the required temperatures at less than 5% RH
  - High temperature carriers (Tray): Solder down module shipped in high temperature carriers can be baked in the carriers at 125°C
  - Low temperature carriers (Tape and Reel): Solder down module shipped in low temperature carriers may not be baked at any temperature higher than 60°C
- Baking condition:
  - High temperature carriers
    - Exceeding floor life >72 hours: bake at 125°C for 8 hours
    - Exceeding floor life ≤72 hours: bake at 125°C for 6 hours
  - Low temperature carriers
    - Exceeding floor life >72 hours: bake at 60°C ≤5% RH for 72 hours or 65°C ≤5% RH for 48 hours
    - Exceeding floor life ≤72 hours: bake at 60°C ≤5% RH for 48 hours
    - If a higher bake temperature is required, the soldered-down module must be removed from the low temperature carriers, transferred to thermally safe carriers, baked, and then returned to the low temperature carriers
- Recommend to baking oven with N2 supplied
- Recommend to reflow oven with N2 supplied
- Baked required with 24 hours at 125 +/-5°C before rework process for two modules, one is new module and two is board with module
- Store at ≤10% RH with vacuum packing
- If the SMT process needs twice the amount of reflow:
  - Process flow: (1) Bottom side SMT and reflow and (2) Top side SMT and reflow
    - Case 1: Solder down module mounted on the top side. When the bottom side processes for more than 72 hours, baking is required
    - Case 2: Solder down the module mounted on the bottom side and follow the normal bake rule before processing

Note: Window time: from last bake end to next reflow start that has 168 hours space.

7.4 Repair

- Tool and material:
  - Soldering station
  - Soldering braid
  - Iron
  - Stencil fixture for module
  - Soldering paste
- Stencil opening size:
  - Stencil thickness: 0.1 mm (100 µm)
  - Stencil pad size opening: Footprint 100%
- Repair steps:
  - Before repair, the product needs to be baked for 2 hours (at 125°C)
  - Use soldering station to de-mount the module
  - Use soldering braid and Iron to clean solder of pads
  - Use stencil fixture and soldering paste to paste on the pads
  - Put the module on the main board
  - Use soldering station to mount the module
  - Retest the product

8 Tape and reel information

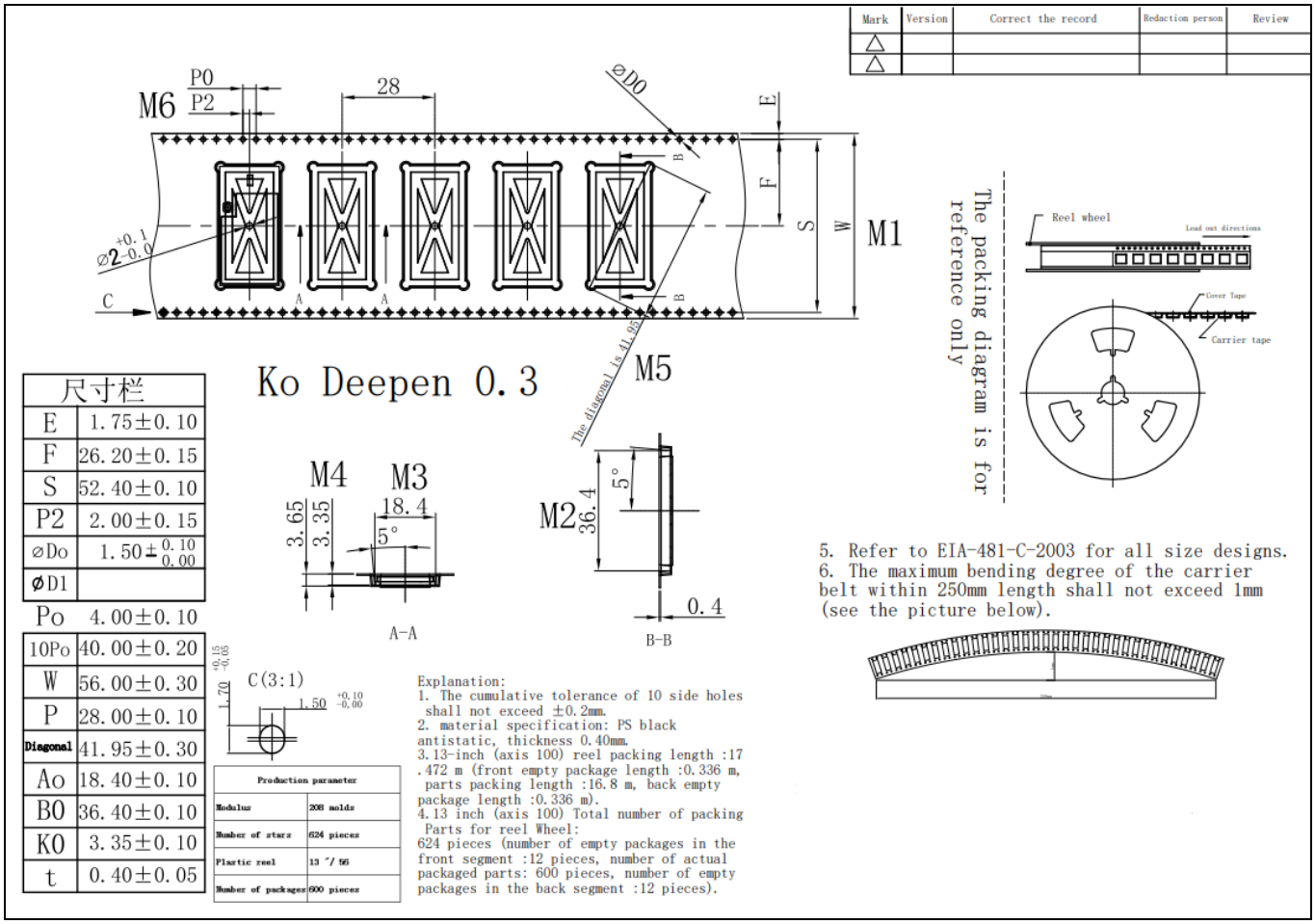
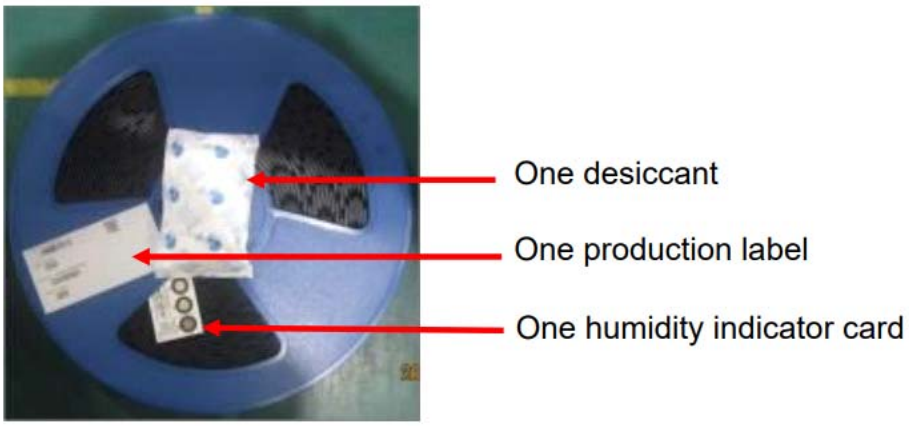


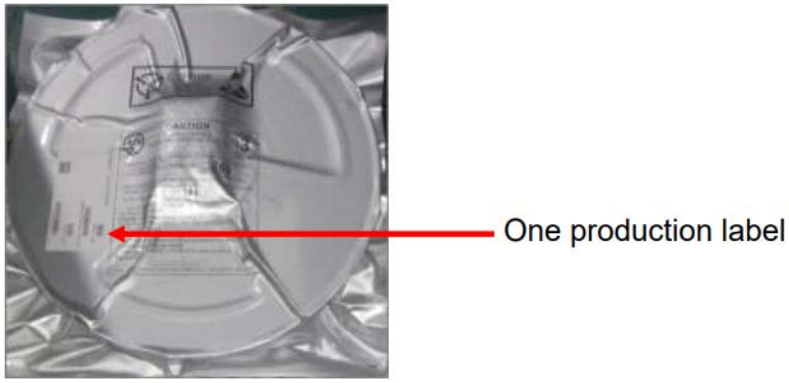
Figure 7 Tape and reel information

9 Packing information

1. One reel can pack 600 pieces modules, 1800 pieces/carton.
2. One production label is pasted on the reel, one desiccant, and one humidity indicator card are put on the reel.

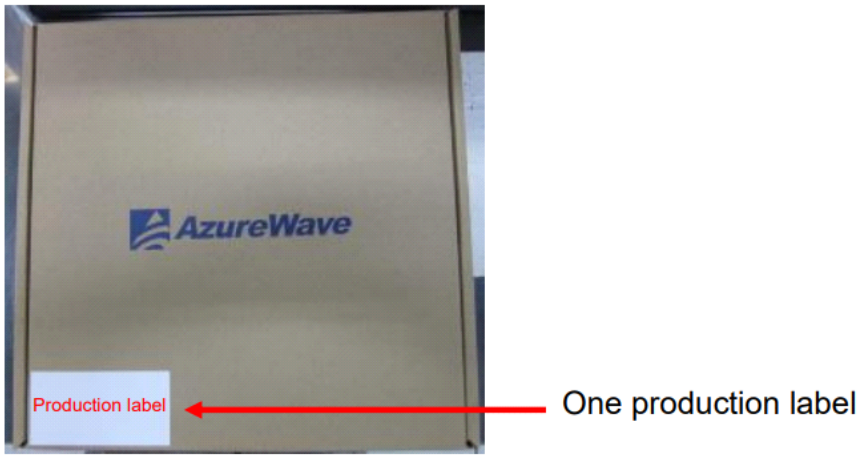


3. One reel is put into the anti-static moisture barrier bag, and then one label is pasted on the bag.



4. A bag is put into the anti-static pink bubble wrap.

5. A bubble wrap is put into the inner box and then one label is pasted on the inner box.



6. 1 carton = 3 boxes.

7. Sealing the carton.

10 Ordering information

Table 13 Ordering information

Part number	Package	Description
IFW56810-00	36.0 mm x 18 mm x 2.8 mm	Wi-Fi 4 module

Note: Contact **Infineon support** for the part number availability.

References

[1] **AIROC™ CCM kit webpage**
[2] **AN234322 - Getting started with AIROC™ IFW56810-00 Single-band Wi-Fi 4 Cloud Connectivity Manager**

Revision history

Document revision	Date	Description of changes
**	2022-09-19	Initial release
*A	2023-05-22	Updated sections **Overview**, **Pin information**, **Electrical characteristics**, **Mechanical information** and **Ordering information**. Added sections **Connection diagram**, **Surface-mount technology (SMT) process suggestion**, and **Tape and reel information**.

Trademarks
All referenced product or service names and trademarks are the property of their respective owners.

Edition 2023-05-22
Published by

Infineon Technologies AG
81726 Munich, Germany

Do you have a question about this document?
Email:
erratum@infineon.com

Document reference
002-34335 Rev. *A

IMPORTANT NOTICE
The information given in this document shall in no event be regarded as a guarantee of conditions or characteristics ("Beschaffenheitsgarantie").

With respect to any examples, hints or any typical values stated herein and/or any information regarding the application of the product, Infineon Technologies hereby disclaims any and all warranties and liabilities of any kind, including without limitation warranties of non-infringement of intellectual property rights of any third party.

In addition, any information given in this document is subject to customer's compliance with its obligations stated in this document and any applicable legal requirements, norms and standards concerning customer's products and any use of the product of Infineon Technologies in customer's applications.

The data contained in this document is exclusively intended for technically trained staff. It is the responsibility of customer's technical departments to evaluate the suitability of the product for the intended application and the completeness of the product information given in this document with respect to such application.

WARNINGS
Due to technical requirements products may contain dangerous substances. For information on the types in question please contact your nearest Infineon Technologies office.

Except as otherwise explicitly approved by Infineon Technologies in a written document signed by authorized representatives of Infineon Technologies, Infineon Technologies' products may not be used in any applications where a failure of the product or any consequences of the use thereof can reasonably be expected to result in personal injury.