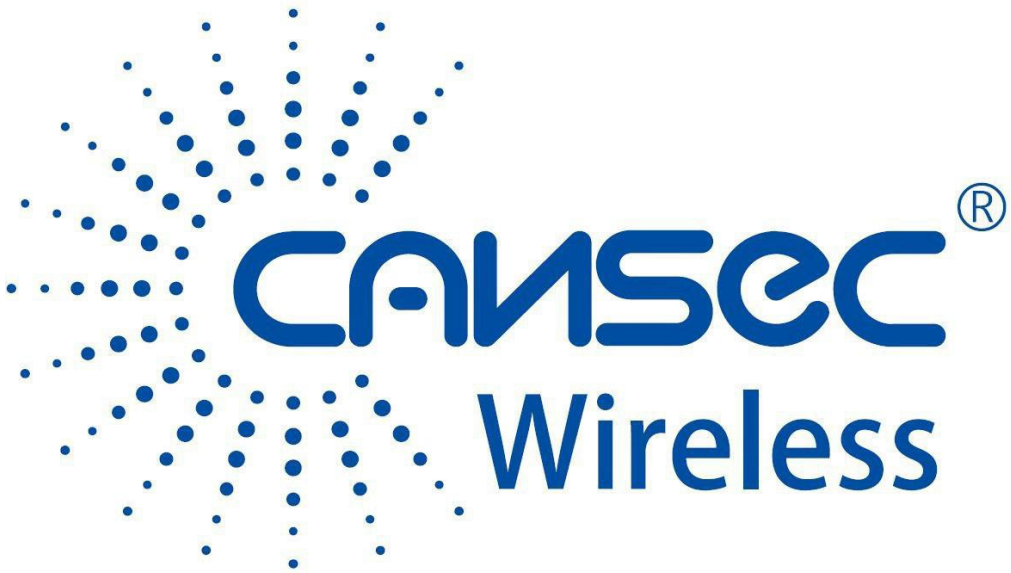


TA3551NA/UA-A Module
Datasheet V1.0

Beijing Jia An Electronics Technology Co., Ltd.

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History

Date	Version	Description	Draft	Approval
2026-07-23	V1.0	Release	ZHY	WW

Features

Microcontroller

• Powerful 160MHz Arm® Cortex®-M33 processor with FPU, TrustZone®, and AI acceleration
• High-speed quad-SPI and octal-SPI for XiP flash with on-the-fly decryption
• Flexible configuration of low-latency TCM (up to 32KB) and Cache (32KB or 64KB) for improved code execution performance
• Over 1MB embedded SRAM including 128KB TCM for Wi-Fi, BLE, networking, and application data

Peripherals

• flexible multiplexing options
• 8 × general-purpose timers and pulse-width
modulation (PWM)
• 2 × universal asynchronous receiver-transmitter(UART)
• 2 × Serial Peripheral Interface (SPI)
• 2 × inter-integrated circuit (I2C)
• Inter-IC sound (I2S)
• Pulse density modulation (PDM)
• Secure digital and multimedia card (SD/MMC)
• Secure digital input output (SDIO) 2.0
• Controller area network (CAN) 2.0
• 8-channel, 12-bit analog-to-digital converter (ADC)

System Services

• Direct memory access (DMA)
• One-time-programmable memory (OTP)
• Real-time clock (RTC) and watchdog timer (WDT)

Radio

• Wi-Fi 6 (802.11ax)
– 2.4GHz and 5GHz, single-stream 20MHz
channels with application throughput up to
20Mbps (UDP)
– Compatible with IEEE 802.11 b/g/n/ax
• Orthogonal frequency-division multiple
access (OFDMA)
• Target wake time (TWT)
• Trigger frames
• Basic service set (BSS) color
– Integrated PA for a complete WLAN system with up to 20dBm output power at 1 DSSS
– Role support: STA, softAP with up to four
stations, Wi-Fi direct, multi-role AP + STA
– Support for personal and enterprise Wi-Fi
security: WPA and WPA2 PSK, WPA2 Enterprise, WPA3 personal or enterprise
– Wi-Fi TX Power:
– • 20dBm at 1 DSSS
• 16dBm at 54 OFDM
– Wi-Fi RX Sensitivity:
• –98.6dBm at 1 DSSS
• –77.2dBm at 54 OFDM
• Bluetooth® low energy
– Bluetooth low energy 5.4 certified stack
– Supports long-range and high-speed PHYs (up to 2Mbps)

Security Features

• ARM TrustZone
• Hardware security module supporting all of the following:
– ECC, RSA, AES, SHA2/3, MD5, CRC 16/32, and TRNG
– Secure key storage
• Initial secure programming
• Secure boot
• Software IP and cloning protection
• Debug security through JTAG and debug port lock
• OTP with the ability to program root-of-trust public key
• Secure over-the-air (OTA) updates
• Anti-rollback protection

Power Management

• Voltage supply:2.5V-3.6V(DC)

Key Benefits

• Complete software development kit with opensource
TCP/IP and TLS stacks
• Operating temperature: –20°C to +70°C
• Support for 3-wire PTA coexistence interface for use with external 2.4GHz radios (for example Thread or Zigbee®)
• Antenna selection capability

Applications

- Building Automation
- Appliances
- Grid Infrastructure
- Medical
- Retail automation and payment
- Connected peripherals and printers
- Factory automation and control
- Asset tracking

Description

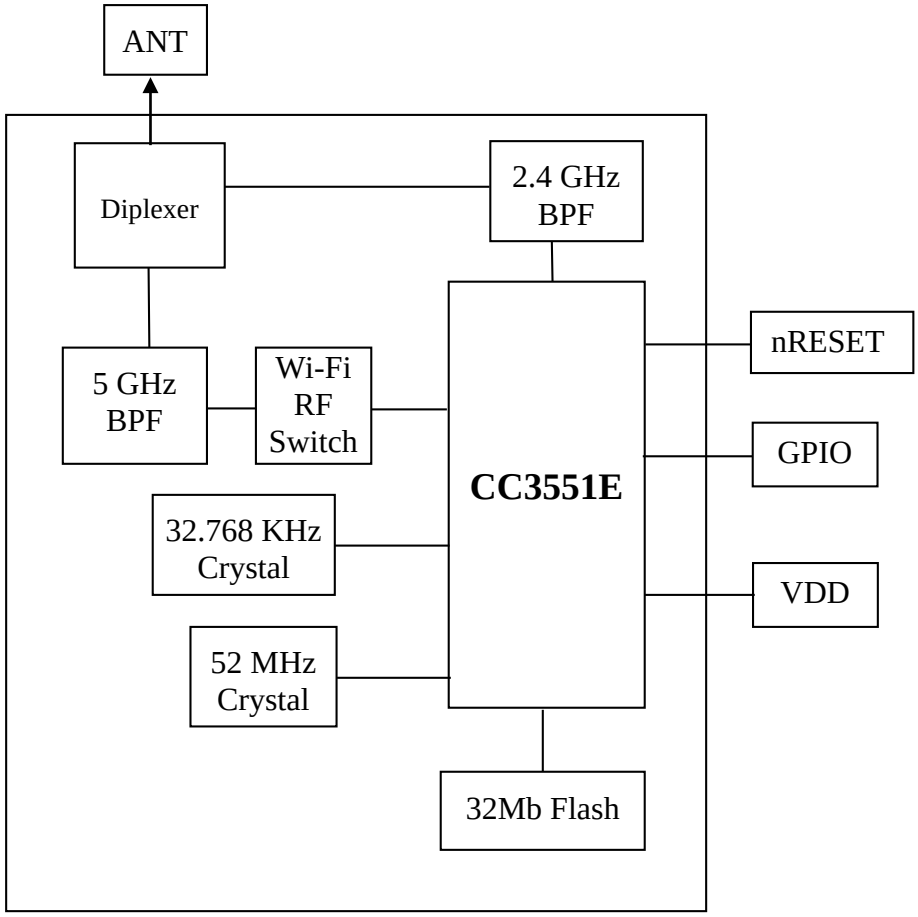
The TA3551 is designed based on CC3551EN.

The device is an ultra-low power System on Chip (SoC) with affordability and reliability,enabling engineers to connect more applications with confidence. It is a single-chip Wi-Fi 6 and Bluetooth Low Energy 5.4 wireless microcontrollers (MCUs).

The device offers the latest standards from Wi-Fi and BLE while maintaining compatibility with Wi-Fi 4(802.11 b/g/n) and Wi-Fi 5 (802.11 ac). As such, it's based on proven technology. These devices are an excellent choice to use in cost-sensitive embedded applications with RTOS software.

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Block Diagram



Module Name Information

TA - 3551 - NA - A

Module Type: Things Air	Chip Type : CC3551EN	Antenna Type: UA: UFL Connector NA: No Antenna	PCB Version

Specifications

2.4G Mode

Parameter		Min	Typ	Max	Unit
Operating Voltage		2.5	3.3	3.6	V
Operating Temperature		-20	-	+70	℃
Current Consumption	Sleep Mode	-	18	-	uA
	Receive mode (MCU active)	-	77	-	mA
	Transmit Mode(CW) (at +18 dBm ,+3.3V)	-	342	-	mA
TX Power (CW)		-	18.5	20.5	dBm
RX Sensitivity (at 1 DSSS)		-	-98.7	-	dBm

5G Mode

Parameter		Min	Typ	Max	Unit
Operating Voltage		2.5	3.3	3.6	V
Operating Temperature		-20	-	+70	℃
Current Consumption	Sleep Mode	-	18	-	uA
	Receive mode (MCU active)	-	97	-	
	Transmit Mode(CW) (at +18 dBm ,+3.3V)	-	348	-	
TX Power (CW)		-	18.0	20.0	dBm
RX Sensitivity (at 6 OFDM)		-	-93.7	-	dBm

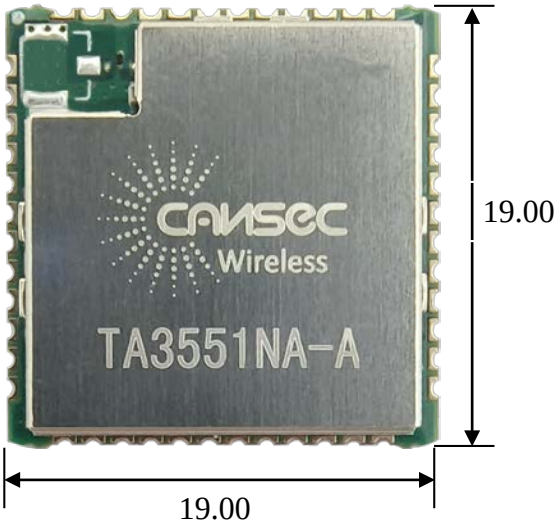
BLE Mode

Parameter		Min	Typ	Max	Unit
Operating Voltage		2.5	3.3	3.6	V
Operating Temperature		-20	-	+70	℃
Current Consumption	Sleep Mode	-	18	-	uA
	Receive mode (MCU active)	-	64	-	mA
	Transmit Mode(CW) (at +10 dBm ,+3.3V)	-	111	-	mA
TX Power (CW)		-	18.0	20.0	dBm
RX Sensitivity (125kbps)		-	-104.4	-	dBm

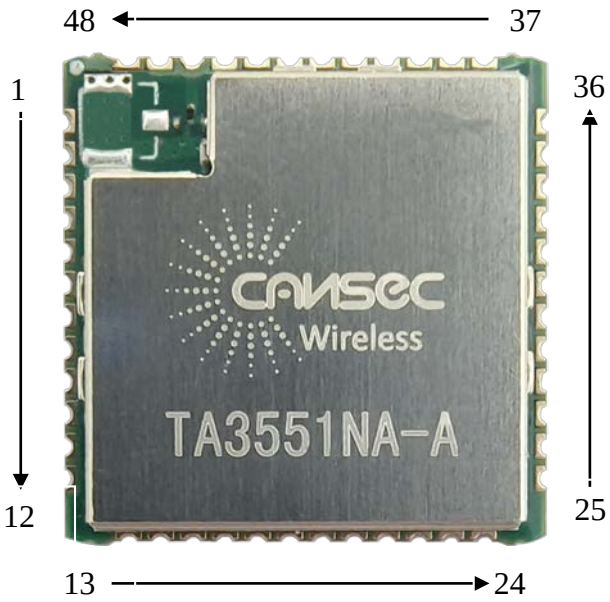
Mechanical Drawing

TA3551NA-A

Unit: mm
H：3.2mm



Terminal Description

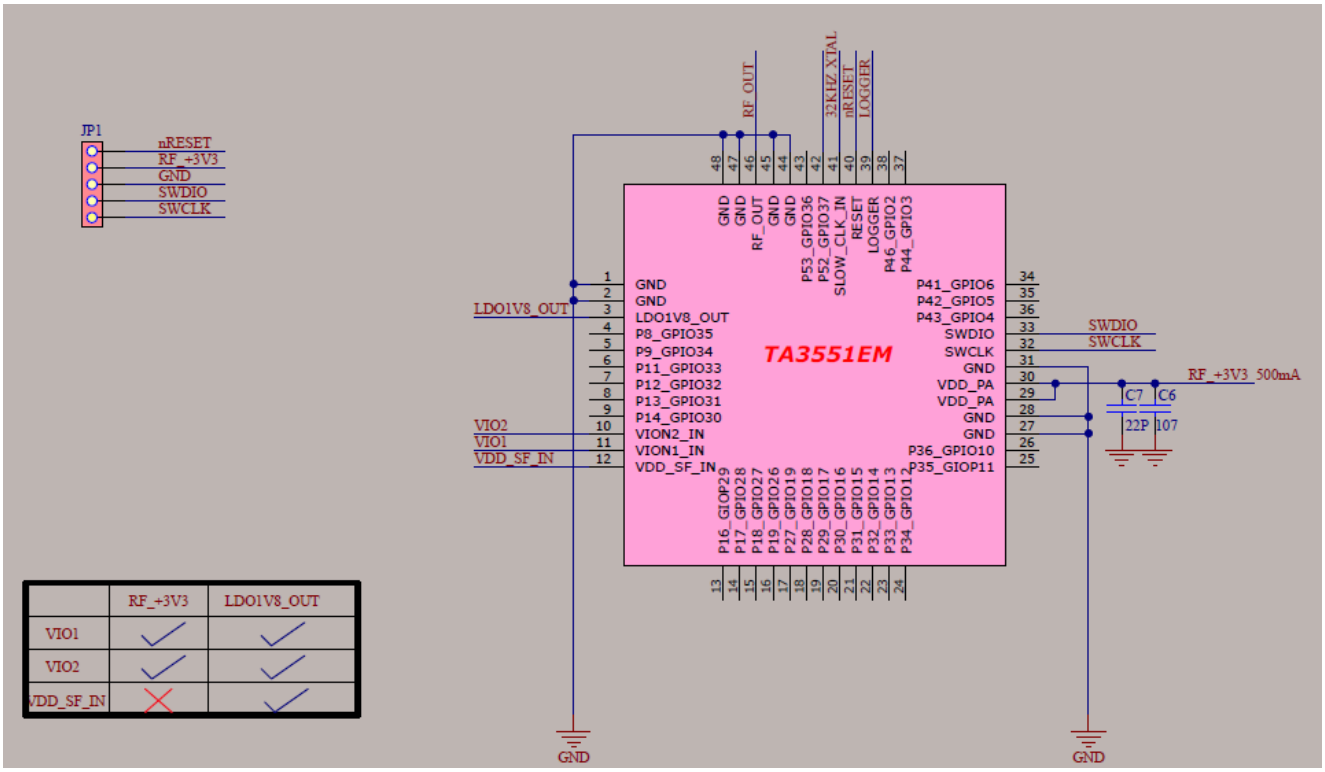


Pad Number	**Name**	**Pin Type**	**Description**(Reference application)
1	GND	Ground Pin	Connect to GND
2	GND	Ground Pin	Connect to GND
3	LDO1V8	+1V8_OUT	Max:200mA For VIO1_IN VIO2_IN VDD_SF_IN
4	P8-GPIO35	Digital I/O	I2S Data1， GPT0_1
5	P9-GPIO34	Digital I/O	DCAN RX
6	P11-GPIO33	Digital I/O	I2C0 CLK， PDM Data0
7	P12-GPIO32	Digital I/O	I2C0 data， PDM BCLK
8	P13-GPIO31	Digital I/O	I2S Data1
9	P14-GPIO30	Digital I/O	GPT1_1, I2S Data0, DCAN TX
10	VIO2_IN	Power Pin	+3V3/+1V8 reference voltage selection SPIO I2C0 I2S GPTO
11	VIO1_IN	Power Pin	+3V3/+1V8 reference voltage selection UART0 UART1 I2CS SPI1 GPT1 ADC
12	VDD_SF_IN	Power Pin	+1V8 reference voltage selection PSRAM Flash
13	P16-GPIO29	Digital I/O	SPI0 PICO
14	P17-GPIO28	Digital I/O	SPI0 POCI
15	P18-GPIO27	Digital I/O	SPI0 CLK
16	P19-GPIO26	Digital I/O	SPI0 CS
17	P27-GPIO19	Digital I/O	UART0 CTS
18	P28-GPIO18	Digital I/O	UART0 RX
19	P29-GPIO17	Digital I/O	UART0 TX
20	P30-GPIO16	Digital I/O	UART0 RTS
21	P31-GPIO15	Digital I/O	SPI1 POCI
22	P32-GPIO14	Digital I/O	SPI1 CLK
23	P33-GPIO13	Digital I/O	SPI1 PICO
24	P34-GPIO12	Digital I/O	SPI1 CS
25	P35-GPIO11	Digital I/O	I2C1 CLK
26	P36-GPIO10	Digital I/O	I2C1 Data
27	GND	Ground Pin	Connect to GND
28	GND	Ground Pin	Connect to GND
29	VDD_PA	Power Pin	RF analog power supply
30	VDD_PA	Power Pin	RF analog power supply
31	GND	Ground Pin	Connect to GND
32	SWCLK	Digital I/O	GPIO, clock signal

Pad Number	**Name**	**Pin Type**	**Description**(Reference application)
33	SWDIO	Digital I/O	GPIO, data transmission
34	P41-GPIO6	Digital I/O	ADC2
35	P42-GPIO5	Digital I/O	ADC3
36	P43-GPIO4	Digital I/O	ADC4
37	P44-GPIO3	Digital I/O	ADC5
38	P46-GPIO2	Digital I/O	GPT1_3
39	LOGGER	Digital Pin	Tracer (UART TX Debug Logger)
40	nReset	Digital input	Reset signal，active low.Intemal pullup
41	P51-GPIO0	Digital Pin	SLOW_CLK_IN
42	P52-GPIO37	NC	
43	P53-GPIO36	NC	
44	GND	Ground Pin	Connect to GND
45	GND	Ground Pin	Connect to GND
46	RF_OUT	Simulated I/O	BLE2.4-GHzt/WLAN 5-GHz RF Port **※This pin only has a signal in the NA version. If it is UA, this pin is in an OPEN state.**
47	GND	Ground Pin	Connect to GND
48	GND	Ground Pin	Connect to GND

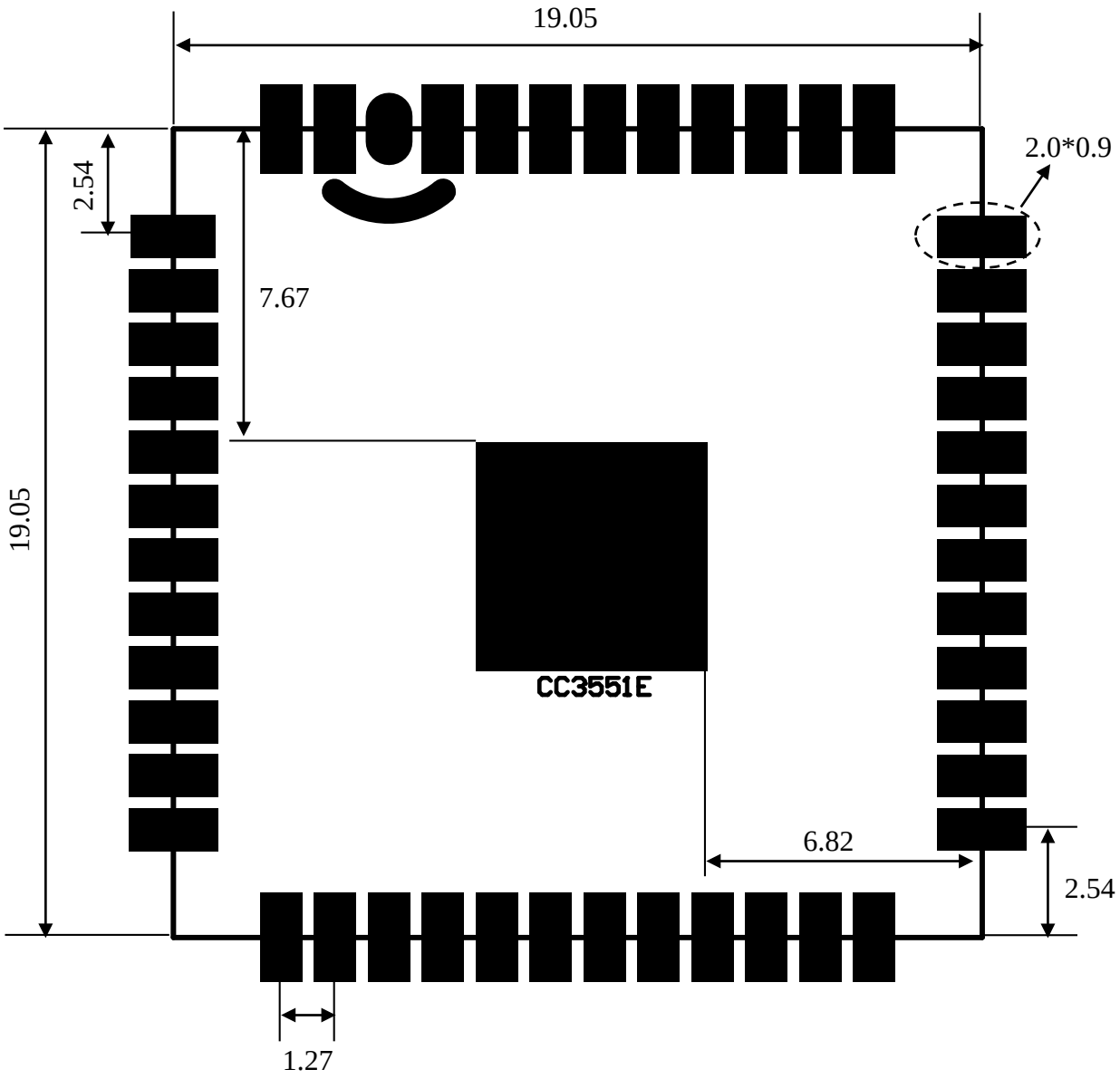
Reference Schematics

VCC Wide Supply Voltage Range: 2.5V to 3.6V



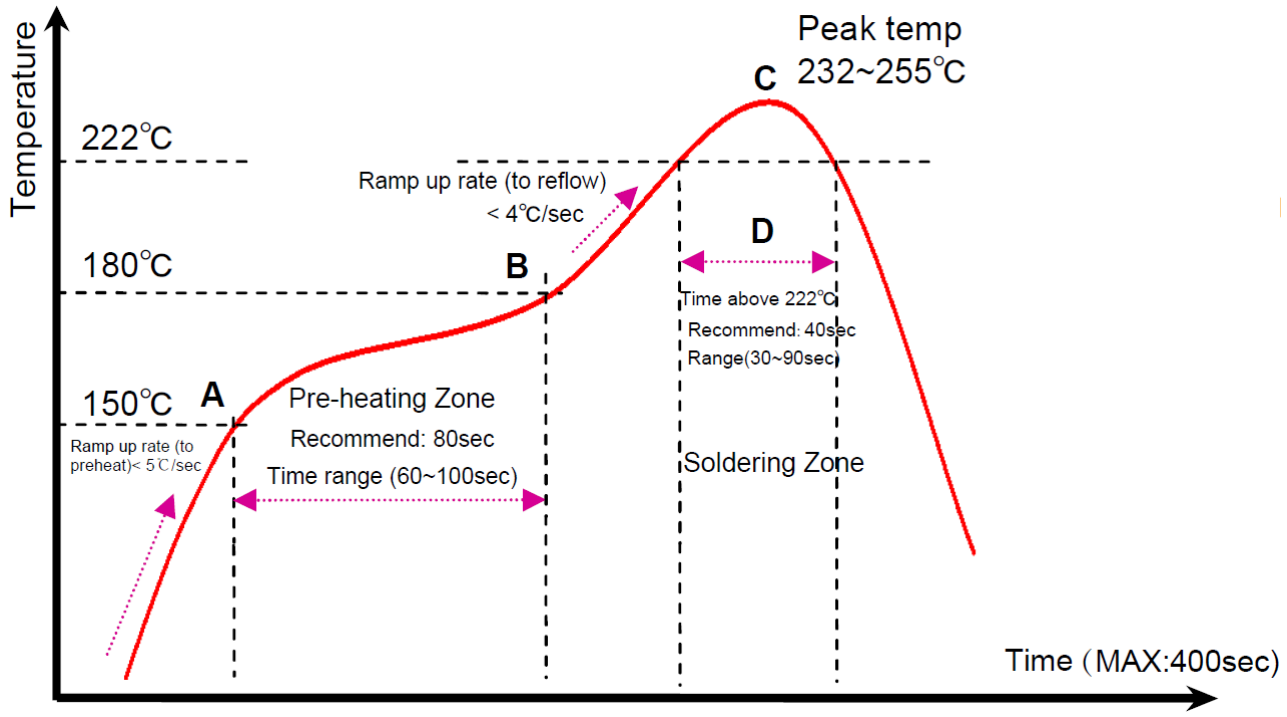
Recommended PCB Layout for Package

Unit：mm

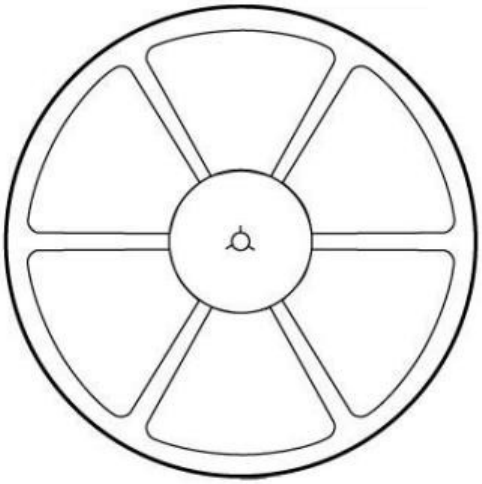


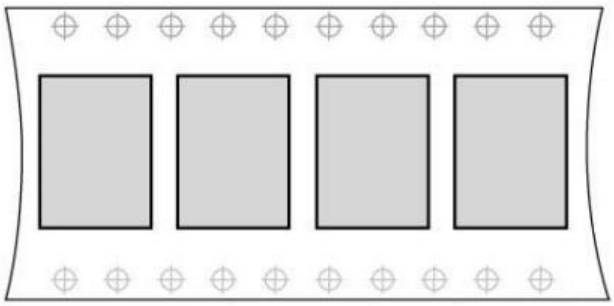
※ The CC3551E on bottom area shall without any wiring or ground.

Recommended Reflow Profile for Lead Free Solder



Package





- Tape and Reel
- Helical antenna version Module exception
- Note： For package, we have three package types: Reel, Tray, Simple way for choosing, depend on customer's request or quantity request

Contact Details





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