Radio((ontrolli
Wireless Modules

Ultra Low Power sub 1GHz
Multichannels Radio Transceiver

The **RC-CC1310-XXX** module is based on Texas Instruments CC1310F128 component. This device combines a flexible, very low power RF transceiver with a powerful 48 MHz Cortex M3 microcontroller in a platform supporting multiple physical layers and RF standard.

Module Information :

		Frequency	*Antenna Direction*
RC-CC1310 -	**XXX**	**434=434MHz**	**- H**
		868=868MHz	
		915=915MHz	
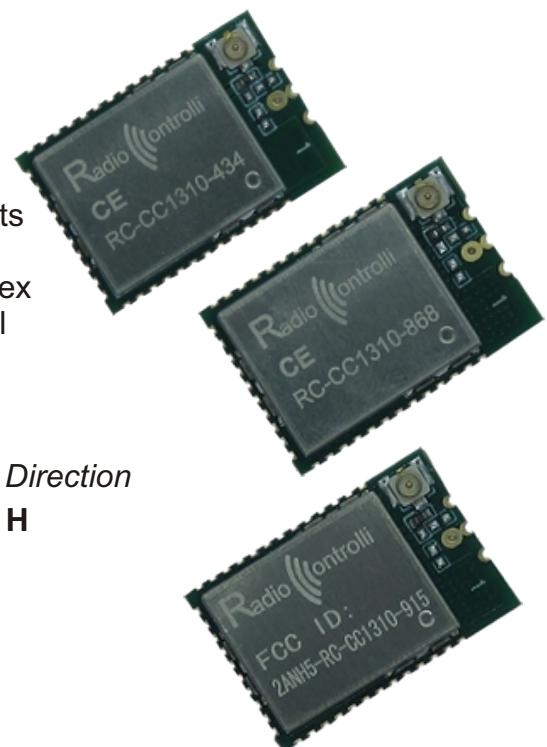
Sub-1Ghz technology is becoming one of the chief driving forces behind the **Internet of Things (Iot)**, in particular this type of module is ideal for this applications basically for the following reasons :

Ultra low power consumption, the consumption of this device is 5.5mA when receiving and 23.5mA when transmitting at +14dBm (13.4mA at +10dBm) in sleep mode the consumption is 0.6µA (microamps).

Long range operations, the sensitivity parameter is -110dBm at data rates of 50 kbps and down to -124dBm when the data rate is 0.625kbps.
Interference from other wireless communications can be overcome with 90dB of blocking.
The RF output power levels can reach up to +14dBm.
All this ensure a robust signaling for long range communications.

SimpleLink-Easylink compatibility,ultra-low power platform designed (from TI) to easily implement the long-range connectivity with low power consumption on the Internet of Things projects (IoT).

TI-15.4 Stack, IEEE802.15.4e/g Standard Based Star Networking Software Designed for long **r**ange & robust star networks.

6LoWPAN compatibility with mesh network stack for **Contiki.**

Applications :

- Low-Power Wireless Systems

- Smart Grid and Automatic Meter Reading

- Home and Building Automation

- Wireless Sensor Network

- 6LoWPAN systems

Feature :

- IEEE 802.15.4g mode switch support

- Ultra Low consumption technology

- Powerful ARM Cortex M3

- Supported by the open platform Contiki 6LoWPAN.

- Very Small size

www.radiocontrolli.com

Radio((Controlli

Wireless Modules

| RC-CC1310-XXX					
Parameter	Symbol	Min.	Typ.	Max.	Units
Operating Voltage	V_{CC}	1.8	3.00	3.8	VDC
Supply Current RX Mode	I_{CRX}		5.50		mA
Supply Current TX Mode +10dBm	I_{CTX1}		13.40		mA
Supply Current TX Mode +14dBm	I_{CTX2}		23.50		mA
Supply Current Standby Mode	I_{CSTB}		0,70		µA
Supply Current Shut Down Mode	I_{CSHU}		185		nA
Operative Frequency	F_{of}		433/868/915		MHz
Frequency Error	F_{pp}		±10		ppm
RF Power Output 50ohm (*)	P_{oo}	-10.0		+14.0	dBm
RF Sensibility 50kbps	S_{d}		-110.0		dBm
RF Sensibility Long Range Mode 625bps	S_{LR}		-124.0		dBm
Data Rate	D_{CC}	0,01		4.0	Mbit/s
Operative Temperature	T_{LR}	-30		+75	°C

(*) Programmable parameter.

MICROCONTROLLER:
- Power ARM Cortex - M3
- Up to 48MHz Clock Speed
- 128KB of On-System Programming Flash
- 8KB of SRAM for Cache (or as General-Purpose RAM)
- 20KB of Ultralow Leakege SRAM
- Support Over-the-Air Upgrade (OTA)

For more information and details, please refer to the CC1310 Texas Instruments datasheet.

Block Diagram

www.radiocontrolli.com

Radio**C**ontrolli

Wireless Modules
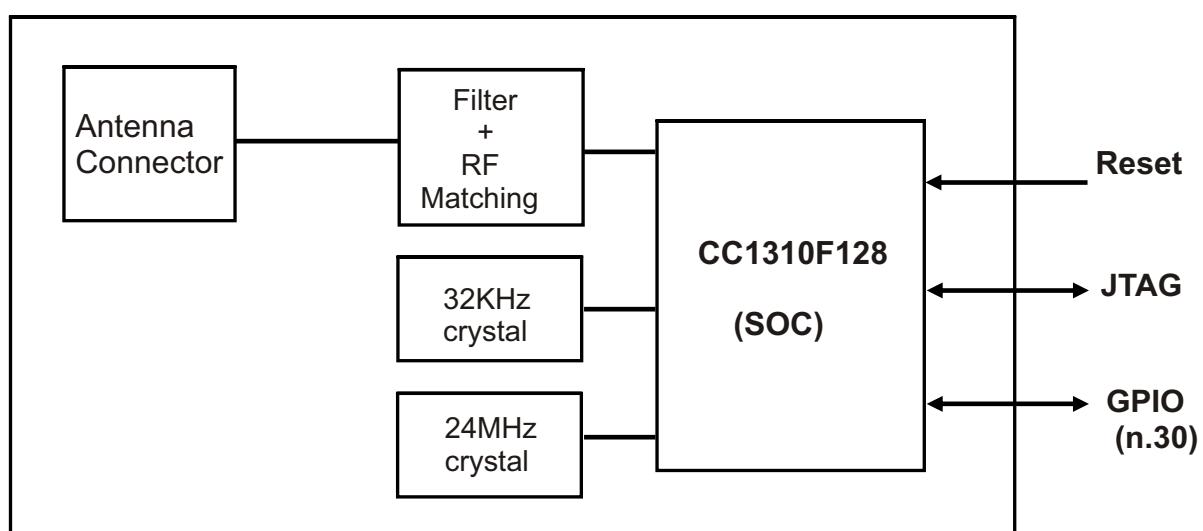
Reference Schematics

Mechanical Dimension

www.radiocontrolli.com

RadioControlli
Wireless Modules
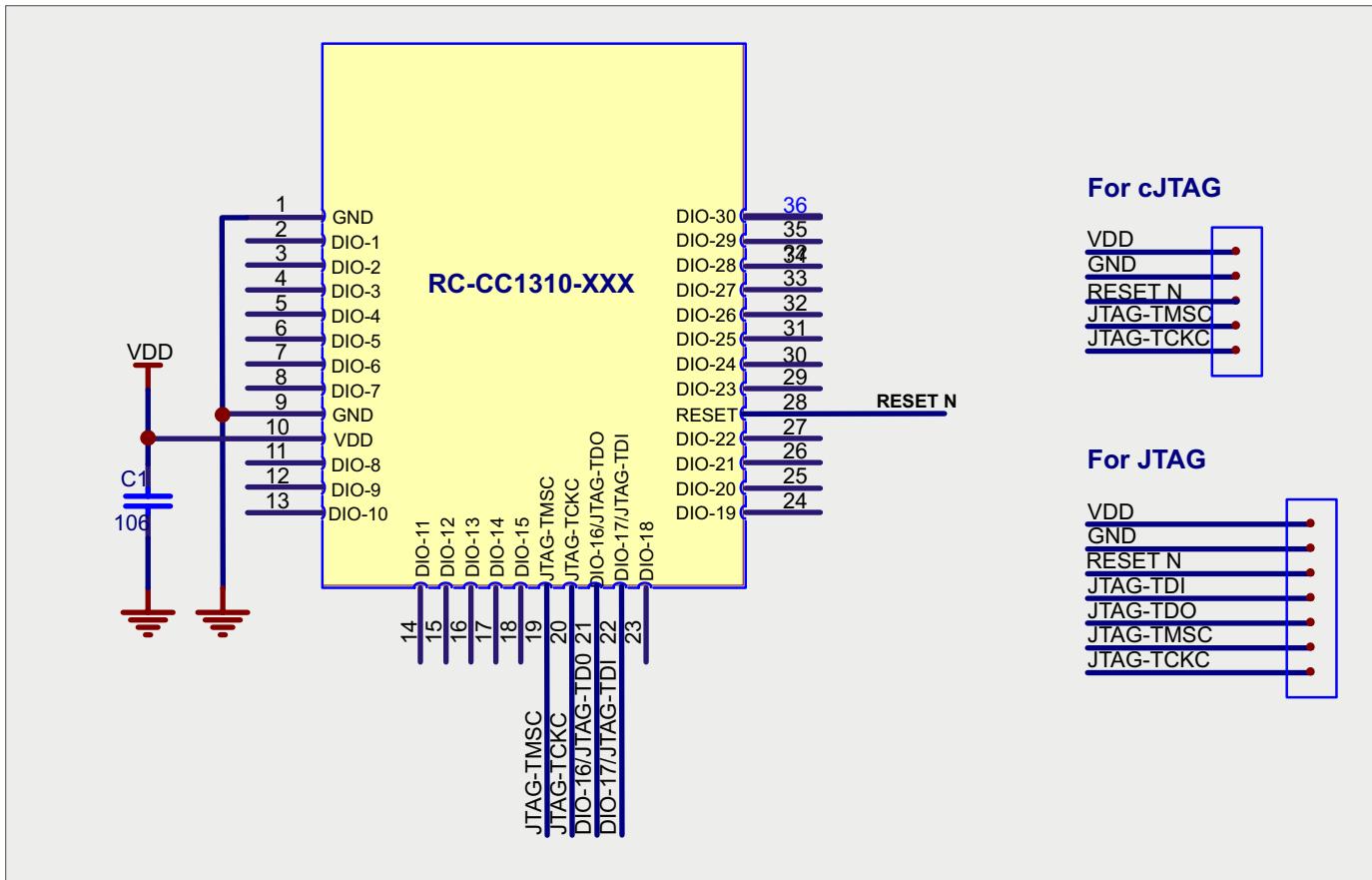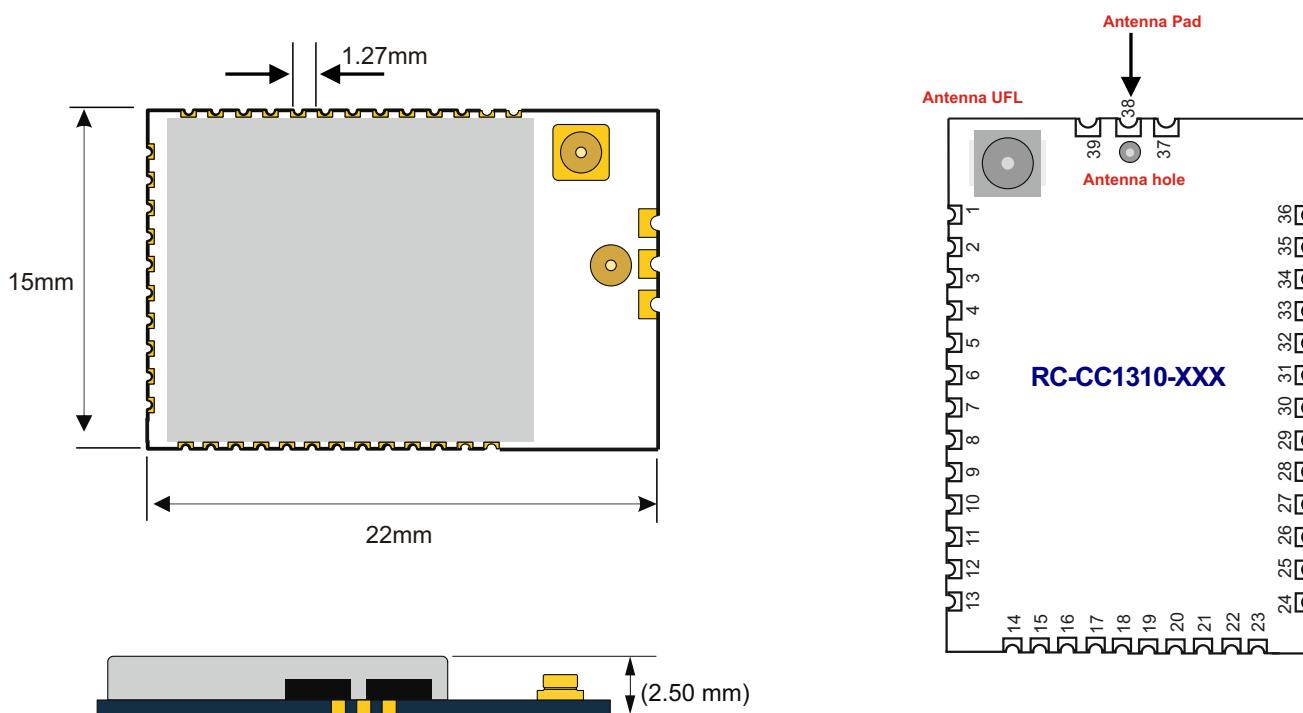
Terminal description RC-CC1310-XXX

Pads	Name	Description
1	GND	Ground
2	DIO-1	GPIO,Sensor Controller, High drive capability
3	DIO-2	GPIO, Sensor Controller, High drive capability
4	DIO-3	GPIO, Sensor Controller, High drive capability
5	DIO-4	GPIO, Sensor Controller, High drive capability
6	DIO-5	GPIO, Sensor Controller, High drive capability
7	DIO-6	GPIO, Sensor Controller, High drive capability
8	DIO-7	GPIO, Sensor Controller, High drive capability
9	GND	Ground
10	VDD	Power
11	DIO-8	GPIO
12	DIO-9	GPIO
13	DIO-10	GPIO
14	DIO-11	GPIO
15	DIO-12	GPIO
16	DIO-13	GPIO
17	DIO-14	GPIO
18	DIO-15	GPIO
19	JTAG-TMSC	JTAG TMSC, High drive capability
20	JTAG-TCKC	JTAG TCKC
21	DIO-16	GPIO,JTAG -TDO, High drive capability
22	DIO-17	GPIO,JTAG-TDI, High drive capability
23	DIO-18	GPIO
24	DIO-19	GPIO
25	DIO-20	GPIO
26	DIO-21	GPIO
27	DIO-22	GPIO
28	RESET-N	RESET, (Active low)
29	DIO-23	GPIO, Sensor Controller, Analog
30	DIO-24	GPIO, Sensor Controller, Analog
31	DIO-25	GPIO, Sensor Controller, Analog
32	DIO-26	GPIO, Sensor Controller, Analog
33	DIO-27	GPIO, Sensor Controller, Analog
34	DIO-28	GPIO, Sensor Controller, Analog
35	DIO-29	GPIO, Sensor Controller, Analog
36	DIO-30	GPIO, Sensor Controller, Analog
37	GND	Ground
38	Antenna	Antenna PAD
39	GND	Ground

Antenna Pad

Antenna UFL

Antenna hole
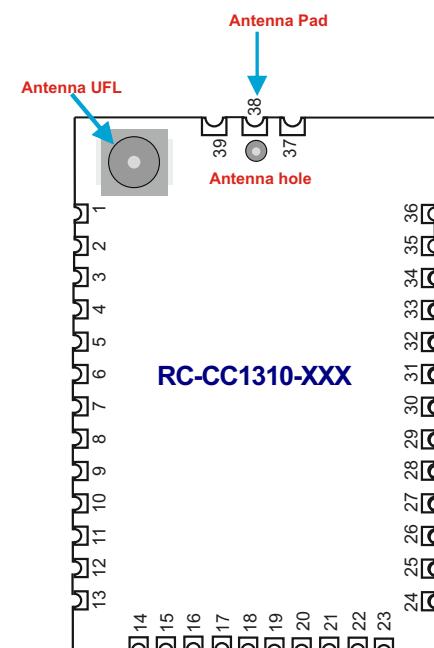
RC-CC1310-XXX

Type of Antenna connection

Chip selector

UFL connector

Antenna pad connector
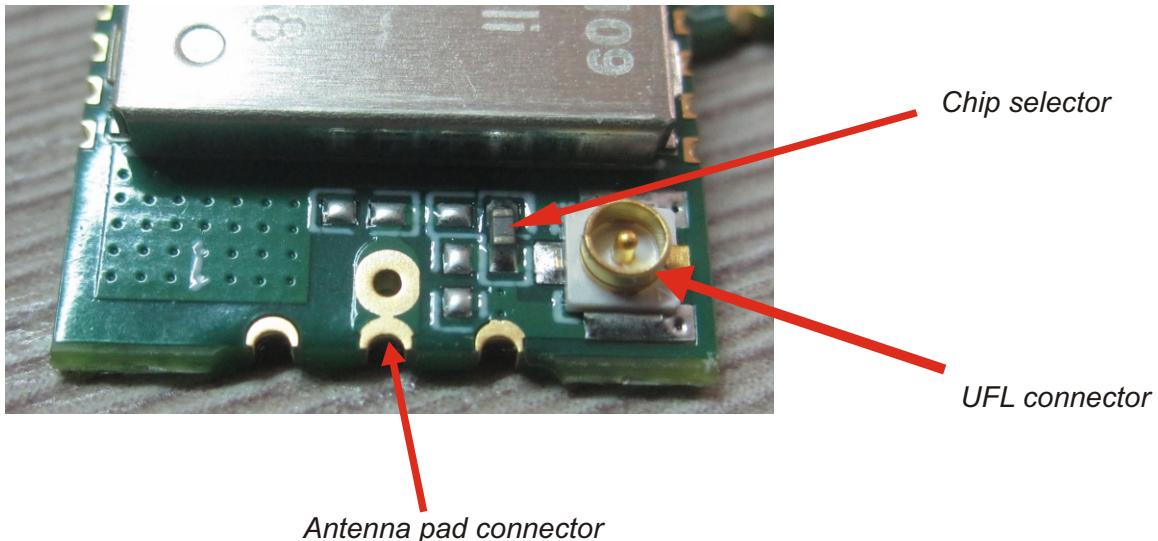
Difference between standard version and «H» version
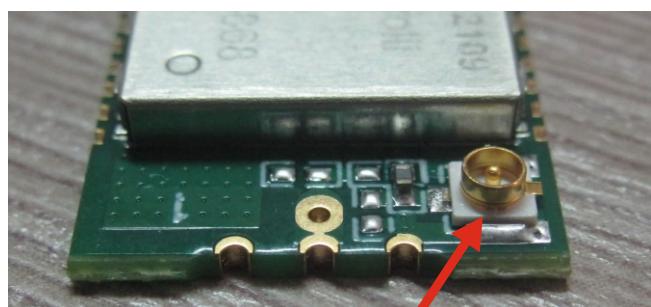
RC-CC1310-XXX

RC-CC1310-XXX-H

- With UFL Connector
- Chip direct on the UFL connector
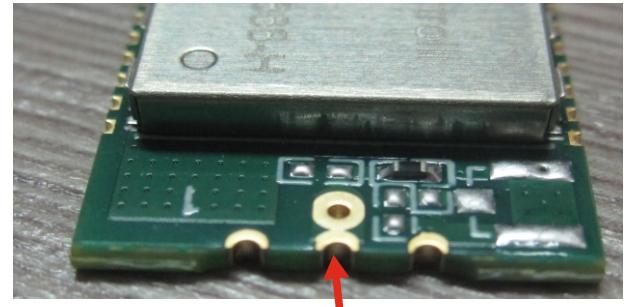
- Without UFL Connector
- Chip direct on pcb antenna (hole and pad)

RC-CC1310-XXX

RC-CC1310-XXX-H

Radio((Controlli

Wireless Modules

RC-CC1310-XXX Adapter board

To make immediate usable the RC-CC1310-XXX module with TI development systems has been realized the following board adapter.


Adapter board front
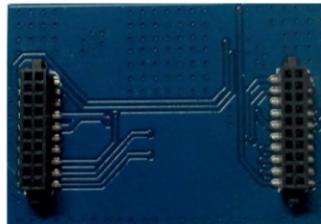
*Adapter board rear*

SMART RF06 Evaluation board (TI)


RC-CC1310-DK Evaluation kit

www.radiocontrolli.com

Radio**C**ontrolli
Wireless Modules

Recommended PCB Layout
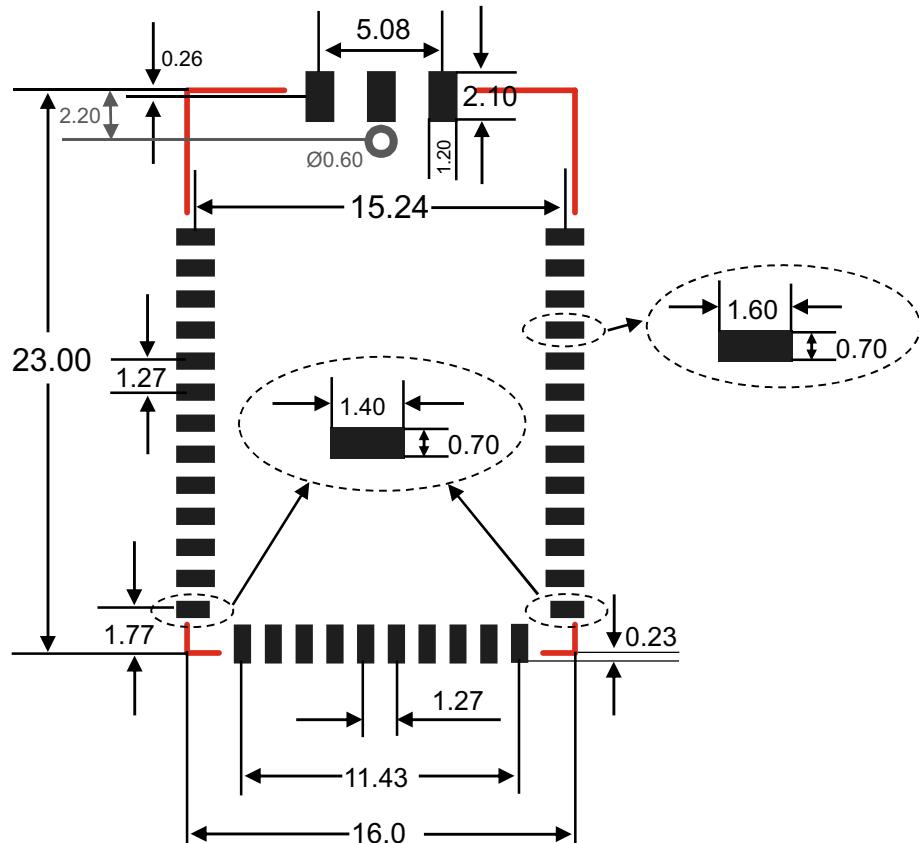
Recommended Reflow Profile for Lead Free Solder

www.radiocontrolli.com

Radio**C**ontrolli

Wireless Modules

REEL DIMENSIONS

Reel Diameter
(330mm)

Reel Width
(45mm)

TAPE DIMENSIONS

A0

K0

B0 W

Sprocket Holes

User Direction of Feed

P
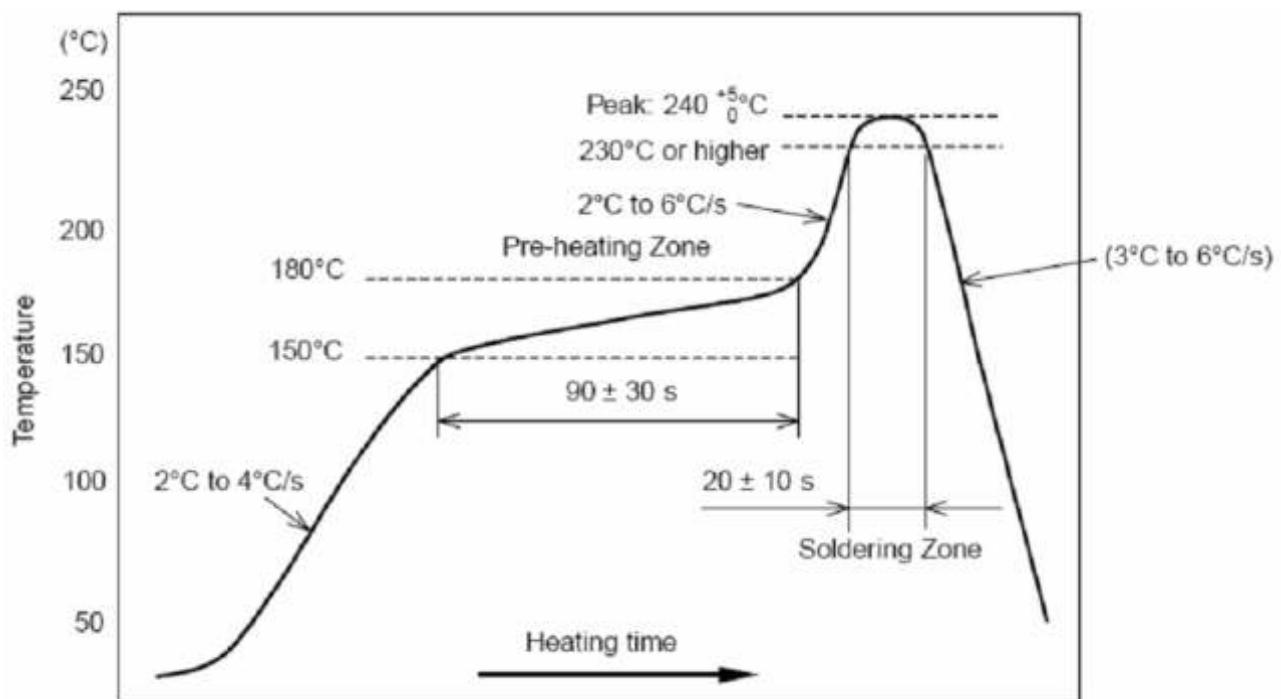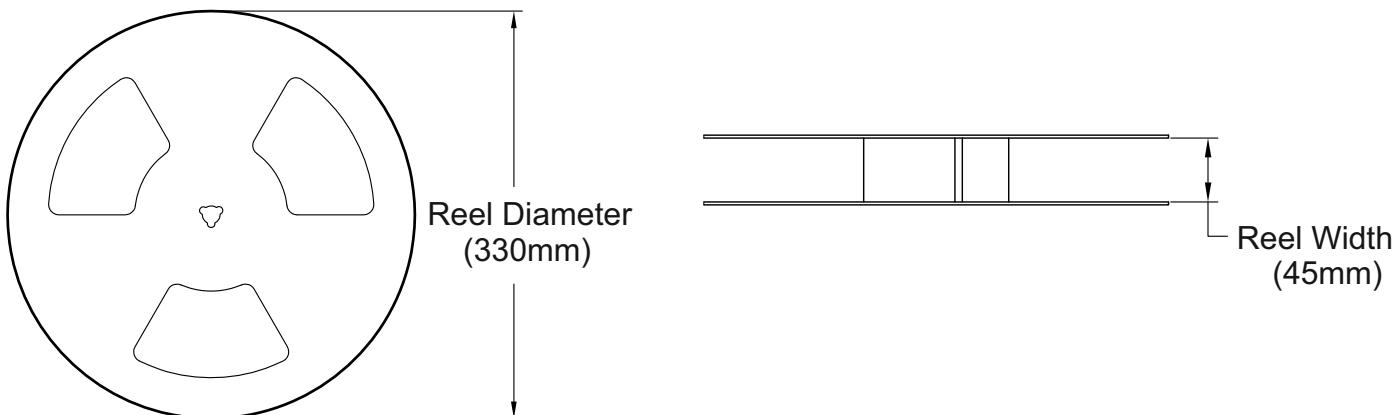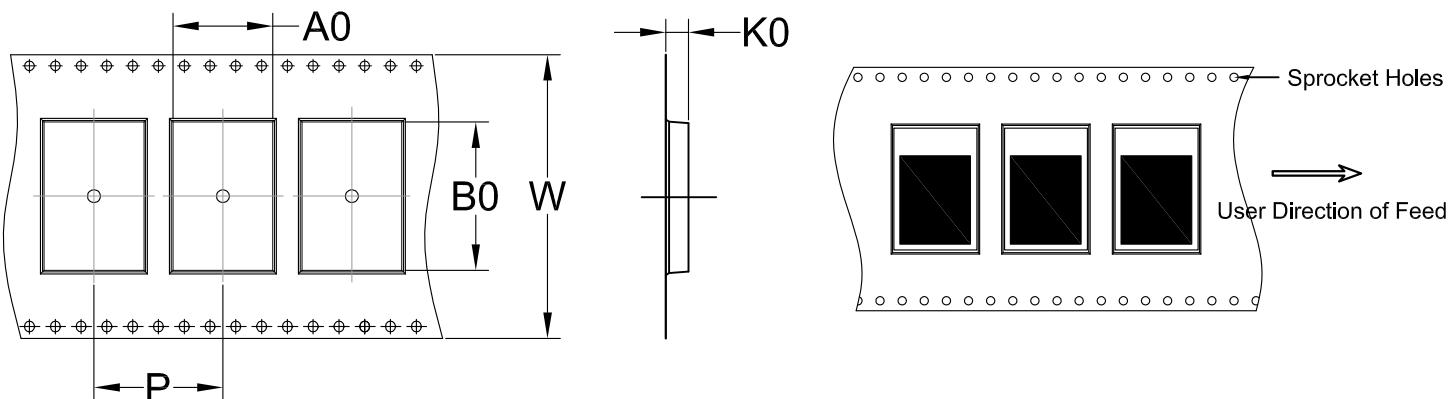
A0	Dimension designed to accommodate the component width	15.5mm	± 0.10mm
B0	Dimension designed to accommodate the component length	23.0mm	± 0.10mm
K0	Dimension designed to accommodate the component thickness	3.5mm	± 0.10mm
W	Overall width of the carrier tape	44.0mm	± 0.30mm
P	Pitch between successive cavity centers	20.0mm	± 0.10mm

www.radiocontrolli.com