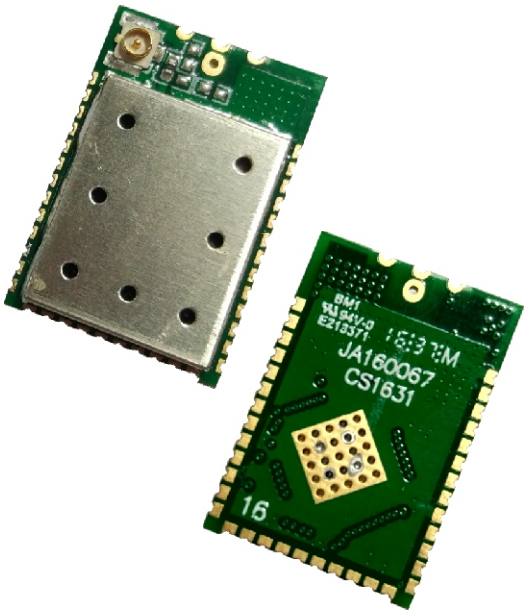
Radiocontrolli
Wireless Modules

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
RC-CC1310	**-**	**XXX**	**434=434MHz**
			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 range & 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

Technical Characteristics

Characteristics	MIN	TYP	MAX	UNIT
Supply Voltage	1.8	3	3.8	VDC
Supply Current RX mode		5.5		mA
Supply Current TX mode ---> +10dBm		13.4		mA
Supply Current TX mode ---> +14dBm		23.5		mA
Supply Current Standby Mode		0.7		µA
Supply Current Shut Down Mode		185		nA
Operative Frequency		434/868/915		MHz
Frequency error		± 10		ppm
RF Power Output 50ohm (*)	-10		+14	dBm
RF Sensitivity 50kbps		- 110		dBm
RF Sensitivity long range mode 625bps		- 124		
Data Rate (*)	0,01		4	Mbit/s
Operative Temperature	-30		+75	°C

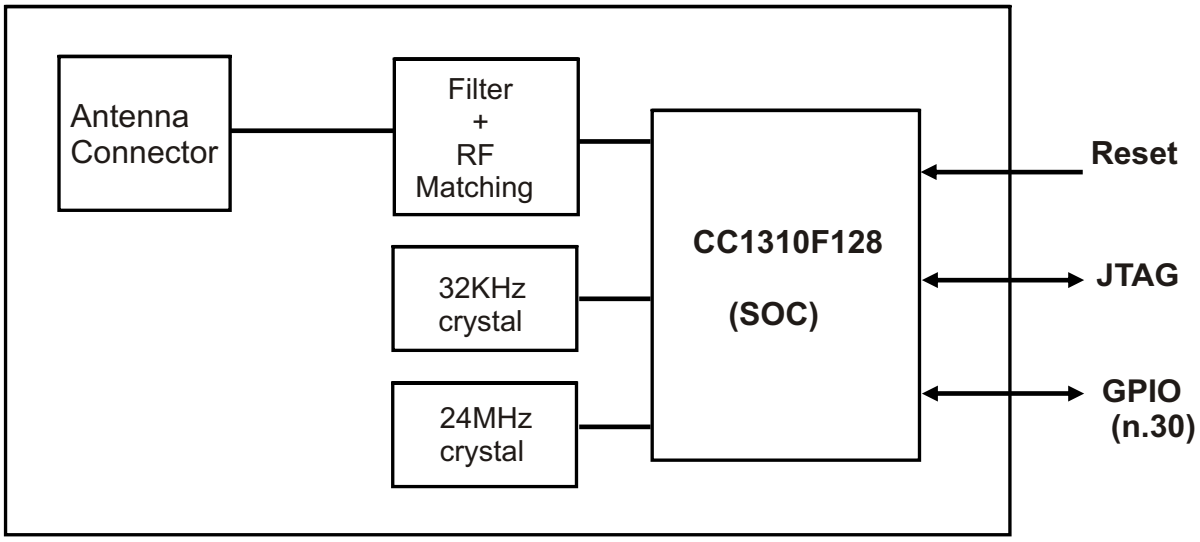
(*) Programmable parameter.

MICROCONTROLLER:

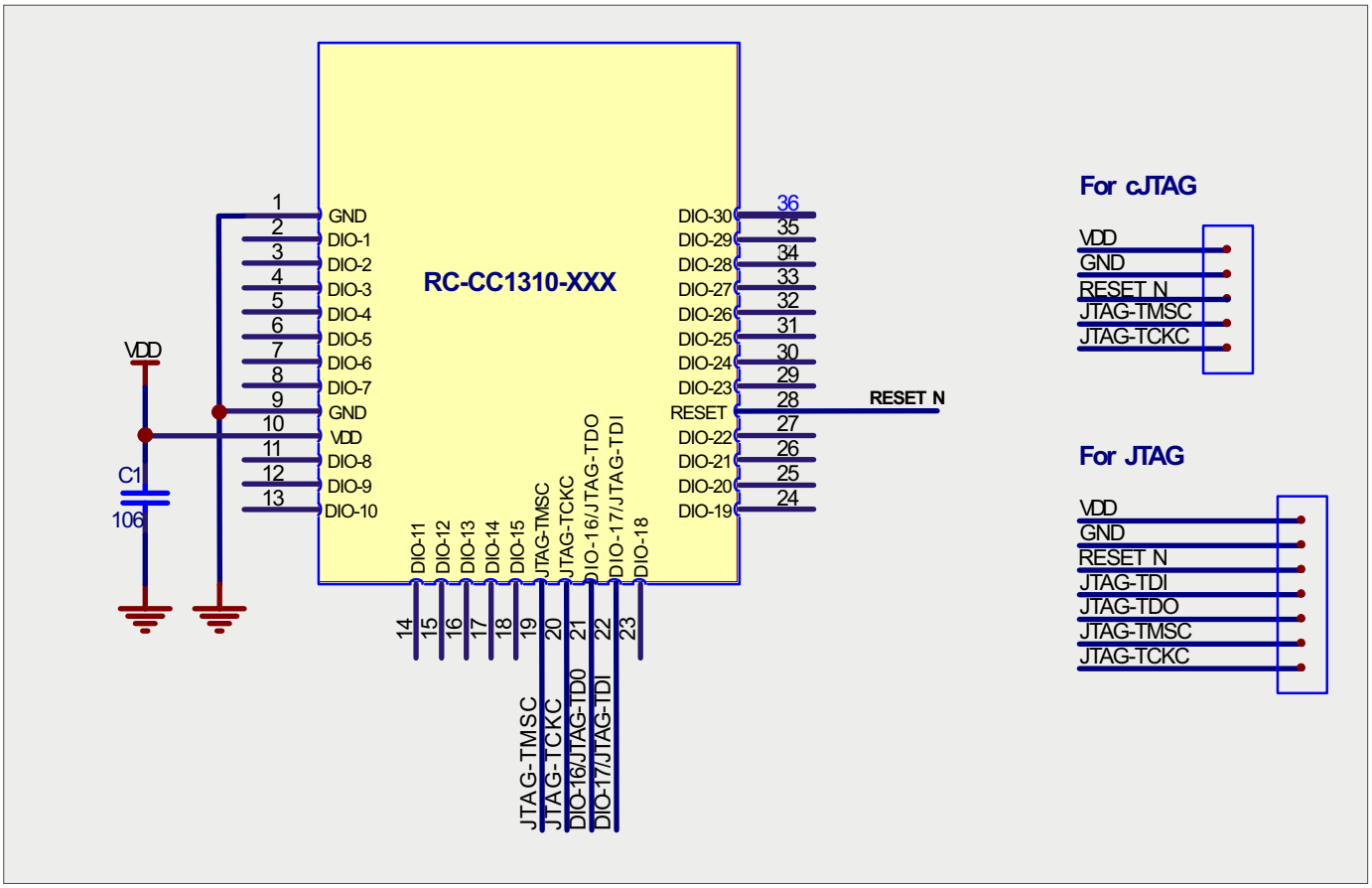
- Power ARM Cortex - M3
- Up to 48MHz Clock Speed
- 128KB of On-System Programming Flash
- 8KB of SRAM for Cache (or as General-Purpose RAM)
- 20KB of Ultralow Leakege SRAM
- Support Over-the-Air Upgrade (OTA)

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

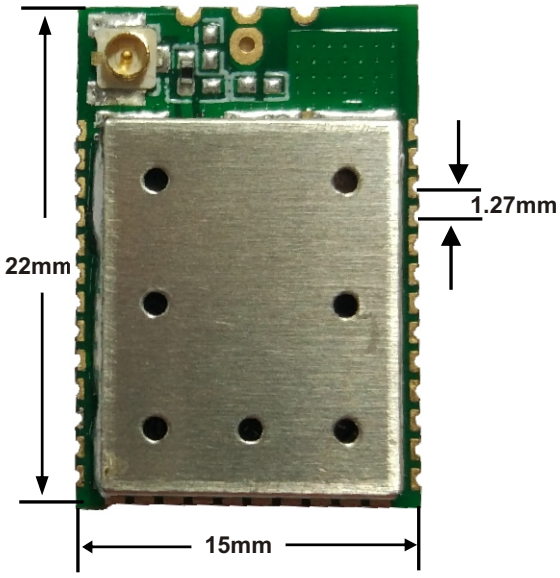
Block Diagram

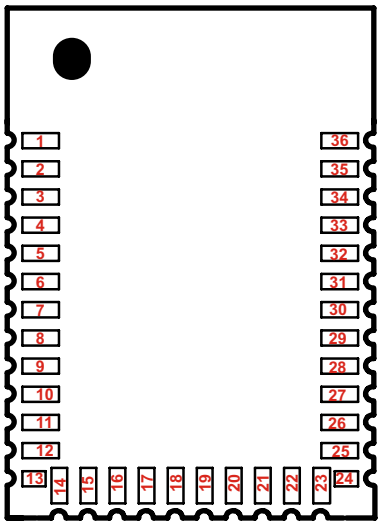


Reference Schematics



Mechanical dimensions



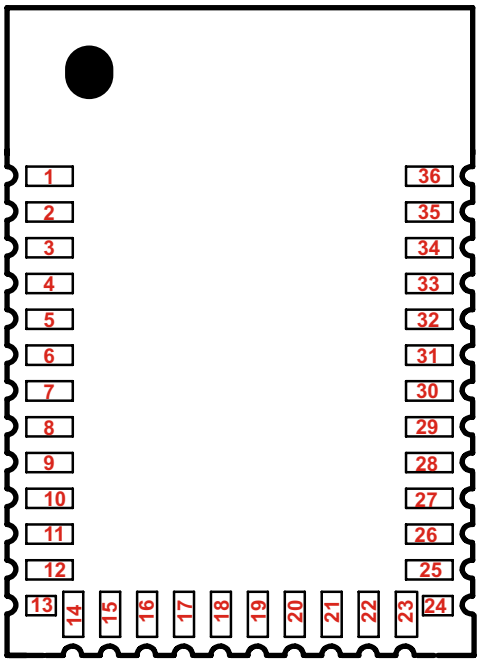


Pin out device

Thickness = 2,5mm

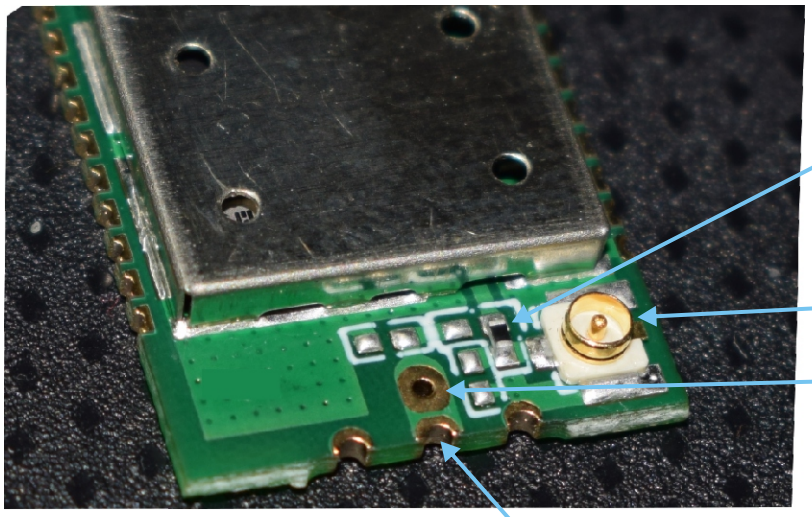
Terminal description RC-CC1310-XXX

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 ,No internal pull up)
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



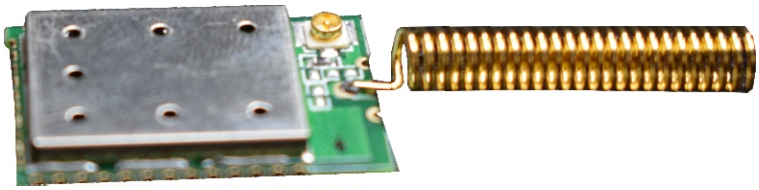
Pin out device

Antenna Connection

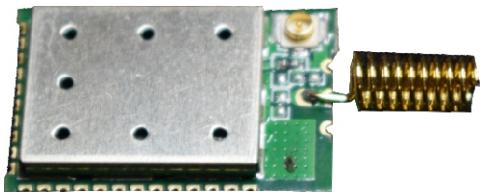


Type of Antenna connection

Connection using a SMT connector



Connection using hole (433.92MHz spiral Antenna)

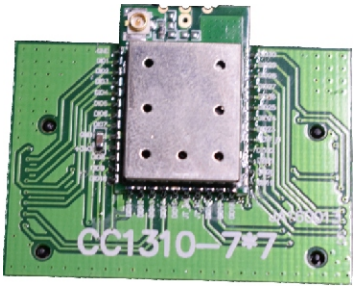


Connection using hole (868.35MHz spiral Antenna)

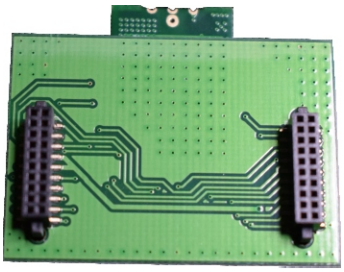
You can use the Antenna Pad Connector if you want connect this device to a pcb antenna.

RC-CC1310-XXX Adapter board

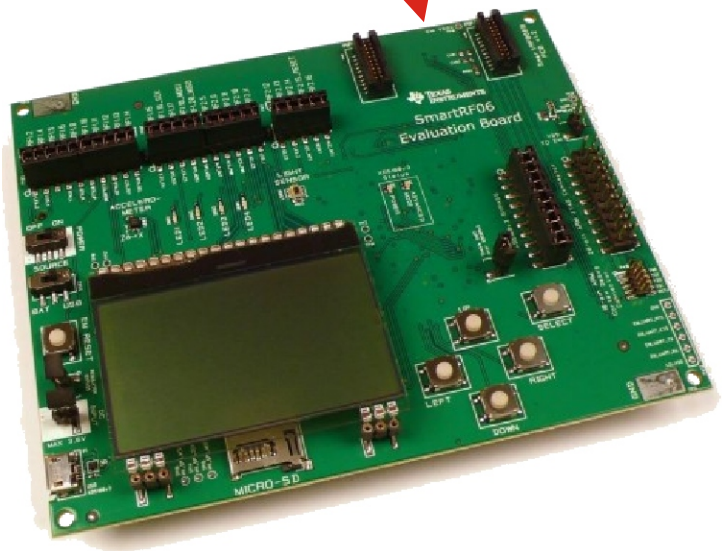
To make immediate usable the RC-CC1310-XXX module with TI development systems has been realized the following board adapter.



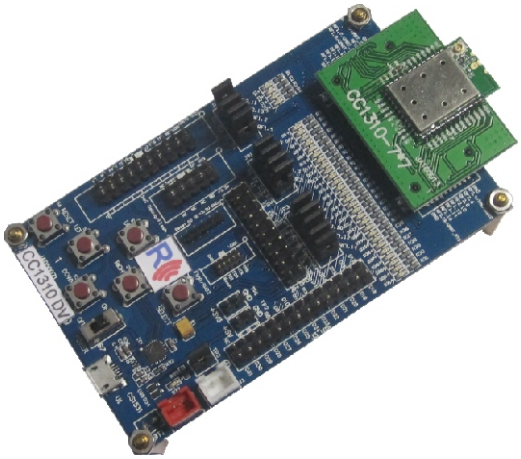
Adapter board front



Adapter board rear

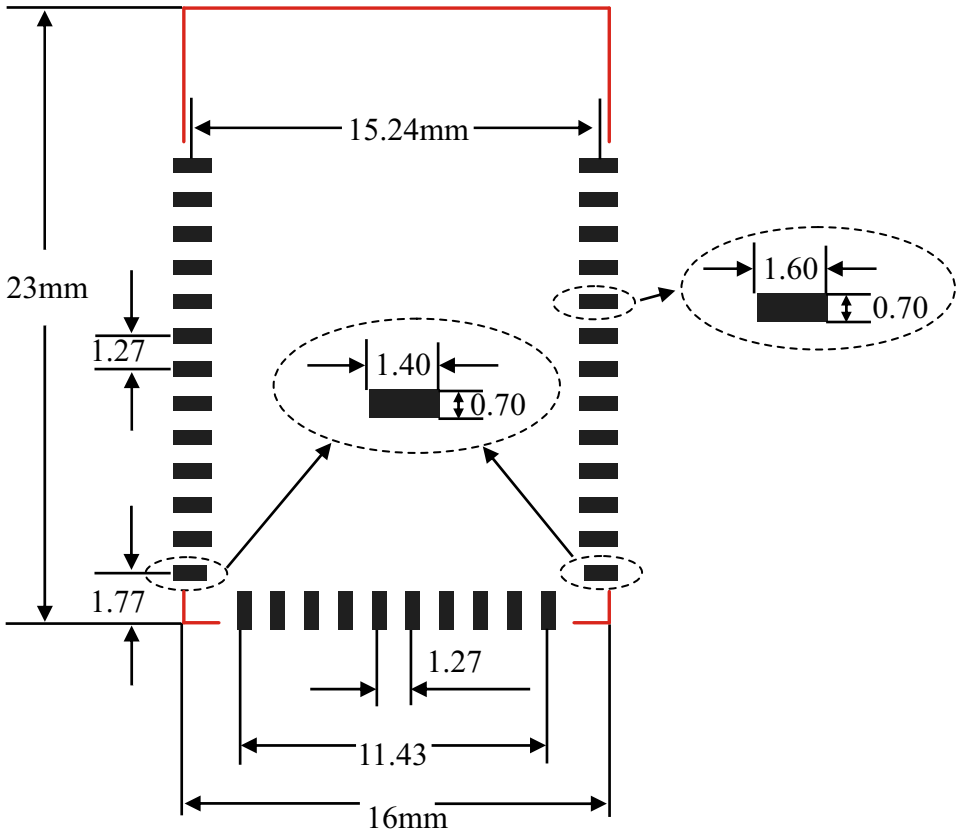


SMART RF06 Evaluation board (TI)

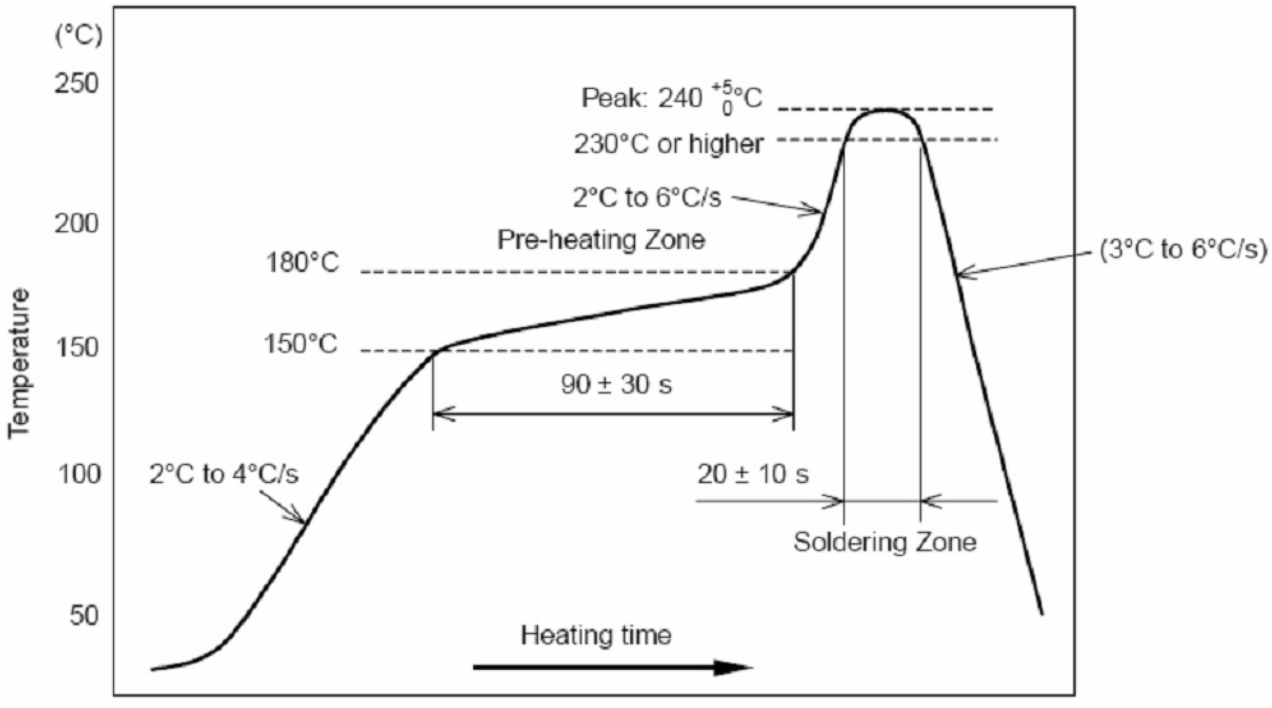


RC-CC1310-DK Evaluation kit

Recommended PCB Layout



Recommended Reflow Profile for Lead Free Solder



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