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Comchips

KX6128
Module Data sheet

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Website: www.comchips.com

Customer Approval

Company _____

Title _____

Signature _____

Date _____

FTY _____

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Version Update Record

Version approval	Date	Revision Content	Editorialstaff
V1.0	2021/7/23	The first version	

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1 Overview

1.1 Introduction

KX6128 is a highly integrated module, it puts a wireless LAN MAC, a 1T1R capability of the wireless LAN baseband, and wireless LAN RF set together. This module provides a complete solution for integrated WLAN devices with high throughput performance.Supports all IEEE 802.11b and 802.11g data rates, providing support for traditional data rates, powerful interference detection and suppression offers to prevent interference from Bluetooth, cordless phones and microwave ovens. It has synchronous and asynchronous control loop between antennas, antenna diversity function and adaptive transmission power control function to obtain better performance of the analog part of the transceiver.

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1.2 Features

- CMOS MAC, Baseband PHY, and RF in a single chip for IEEE 802.11b/g/n compatible WLAN
- Complete 802.11n solution for 2.4GHz band
- 72.2Mbps receive PHY rate and 72.2Mbps transmit PHY rate using 20MHz bandwidth
- 150Mbps receive PHY rate and 150Mbps transmit PHY rate using 40MHz bandwidth
- GSPI interface for configurable endian for WLAN
- Frame aggregation for increased MAC efficiency (A-MSDU, A-MPDU)
- Low latency immediate High-Throughput Block Acknowledgement (HT-BA)
- Channel management and co-existence
- One Transmit and one Receive path (1T1R)
- 20MHz and 40MHz bandwidth transmission
- DSSS with DBPSK and DQPSK, CCK modulation with long and short preamble
- OFDM with BPSK, QPSK, 16QAM, and 64QAM modulation. Convolutional Coding Rate: 1/2, 2/3, 3/4,and 5/6
- Maximum data rate 54Mbps in 802.11g and 150Mbps in 802.11n

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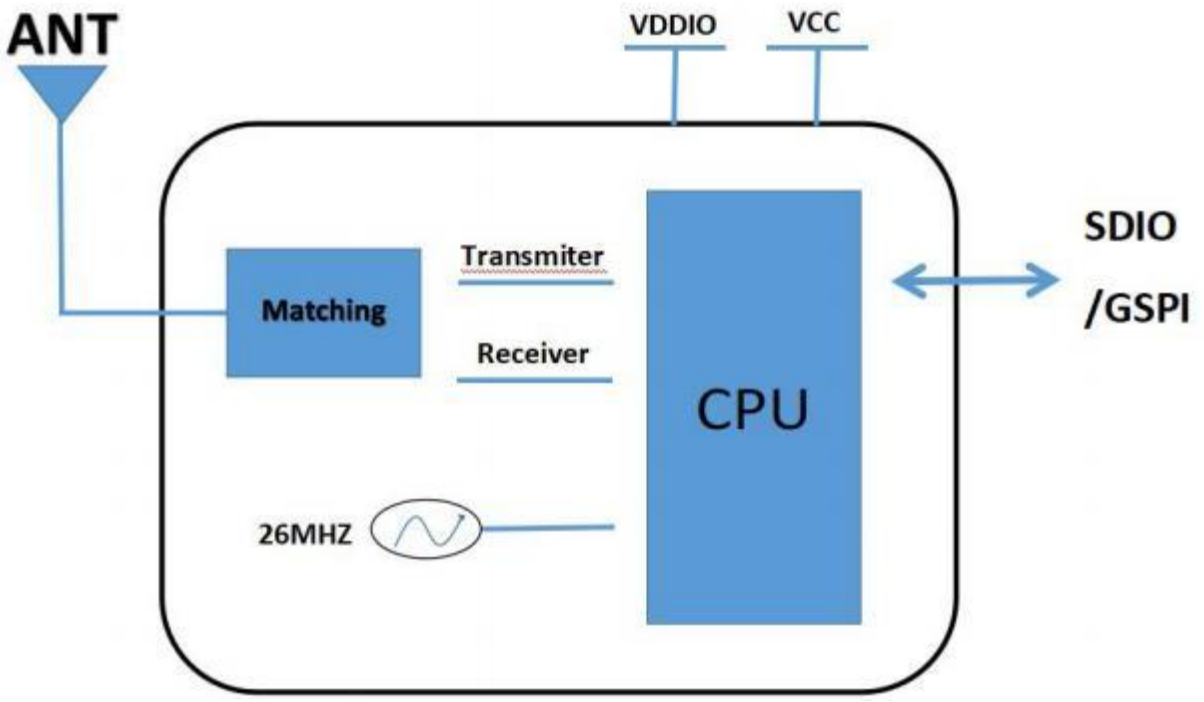
1.3 Block Diagra



1.4 General Specification

Model Name	KX6128
Product Description	Support WIFI:IEEE802.11 11b/g/n
Dimension	L x W x H: 12 x 12 x 1.6mm
Wi-Fi Interface	Support:GSPI/SDIO
BT interface	N/C
Operating temperature	0 to +70° C
Storage temperature	-55°C to 125°C
RoHS	All hardware components are fully compliant with EU RoHS directive

1.5 DC Characteristics

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(1) Power Supply Characteristics

Symbol	Parameter	Minimum	Typical	Maximum	Units
VDD33	3.3V Power Supply Voltage	3.0	3.3	3.6	V
IDD33	3.3V Rating Current	/	/	600	mA

(2) Digital IO Pin DC Characteristics

Symbol	Parameter		Minimum	Typical	Maximum	Units
VDDIO(pin#22)	3.3V I/O Power Voltage	V_{IH}	2.0	3.3	3.6	V
		V_{IL}	--	0	0.9	V
		V_{OH}	2.97	--	3.3	V
		V_{OL}	0	--	0.33	V
	1.8V I/O Power Voltage	V_{IH}	1.7	1.8	2.0	V
		V_{IL}	--	0	0.8	V
		V_{OH}	1.62	--	1.8	V
		V_{OL}	0	--	0.18	V
CS(PIN#12)	Chip select	V_{IH}	2.0	3.3	3.6	V
		V_{IL}	--	0	0.9	V
WL_HOST_WAKE (PIN#13)	WLAN wake-up HOST	V_{OH}	2.97	--	3.3	V
		V_{OL}	0	--	0.33	V

2 RF Specifications

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Features	Description
WLAN Standard	WLAN 11b/g/n
Frequency Range	2.400 ~ 2.483 GHz
Operating Channel	11: (Ch. 1-11) – United States 13: (Ch. 1-13) – Europe 14: (Ch. 1-14) – Japan
Network Architecture	Ad-hoc mode (Peer-to-Peer) Infrastructure mode Scatter Net
Security	WPA,WPA-PSK,WPA2,WPA2-PSK,WEP64bit&128bit,IEEE802.11x, IEEE 802.11i
OS Support	Windows XP/Win7/Linux/Android

2.4G Transmitter Specifications

TX Rate	TX Power	TX Power Tolerance	EVM
802.1 1b @ 11 Mbps	17dBm	±2dBm	≤-13dB
802.11g@54Mbps	14dBm	±2dBm	≤-25dB
802.11n@HT20_MCS7	13dBrn	±2dBm	≤-28dB
802.11n@HT40_MCS7	13dBrn	±2dBm	≤-28dB

2.4G Receiver Specifications

RX Rate	Min Input Level(Typ)	Max Input Level(Typ)	PER
802.1 1b @ 11 Mbps	-85dBm	-85dBm	8%
802.11g@54Mbps	-68dBm	-68dBm	10%
802.11n@HT20_MCS7	-66dBrn	-66dBrn	10%
802.11n@HT40_MCS7	-65dBrn	-65dBrn	10%

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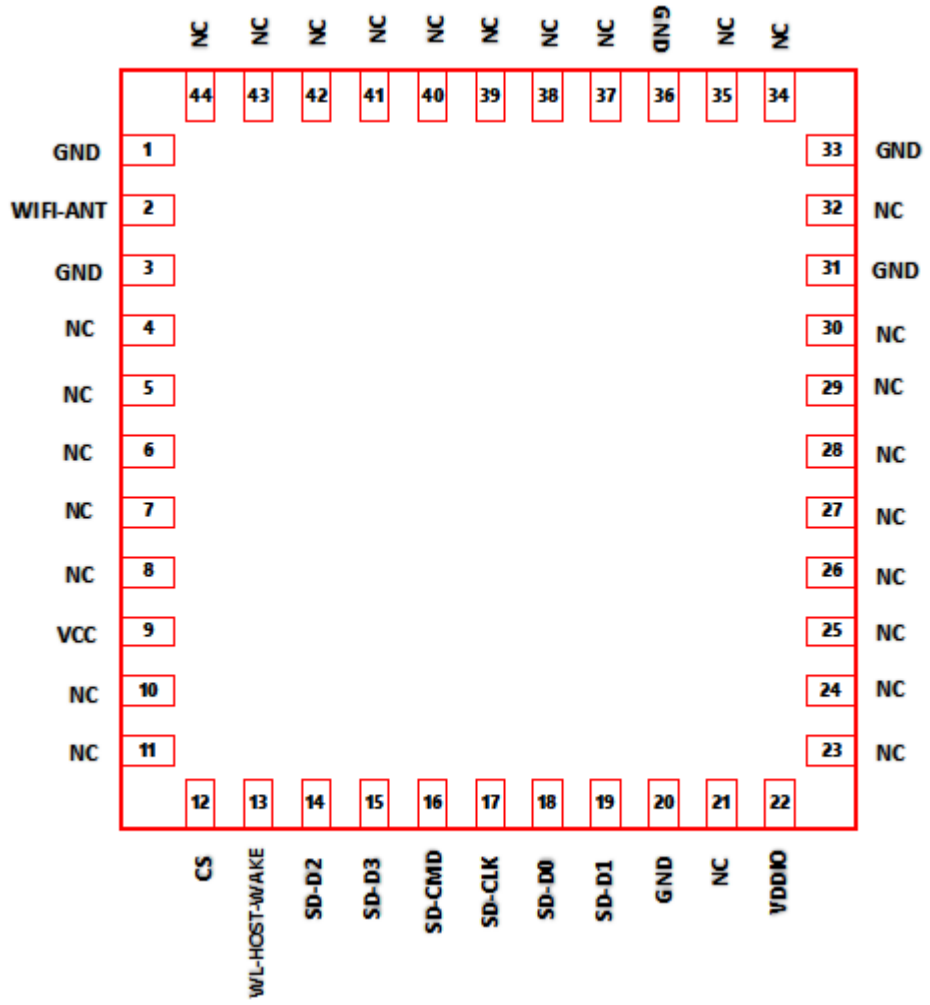
3 Pin Assignments

3.1 Pin Outline



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3.2 Pin Definition

Pin	Function	Description
1	GND	GND
2	WIFI_ANT	RF RX&TX Signal
3	GND	GND
4-8	NC	NC
9	VDD33	Power supply for system（3.3V±0.3V）
10-11	NC	NC
12	CS	Chip select，Activity high；Internal pull high to 3.3V at 100K Ω
13	WL_HOST_WAKE	For WLAN wake-up HOST, Internal pull high to 3.3V at 100KΩ
14	SD_D2	SDIO Data Line 2
15	SD_D3	SDIO Data Line 3
16	SD_CMD	SDIO Command Input
17	SD_CLK	SDIO Clock Input
18	SD_D0	SDIO Data Line 0
19	SD_D1	SDIO Data Line 1
20	GND	GND
21	NC	NC
22	VDDIO	VDD for SDIO Pin, the power supply is same as the signal level of SDIO bus (3.3V ~ 1.8V)
23-30	NC	NC
31	GND	GND
32	NC	NC
33	GND	GND
34-35	NC	NC
36	GND	GND
37-44	NC	NC

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4 Dimensions

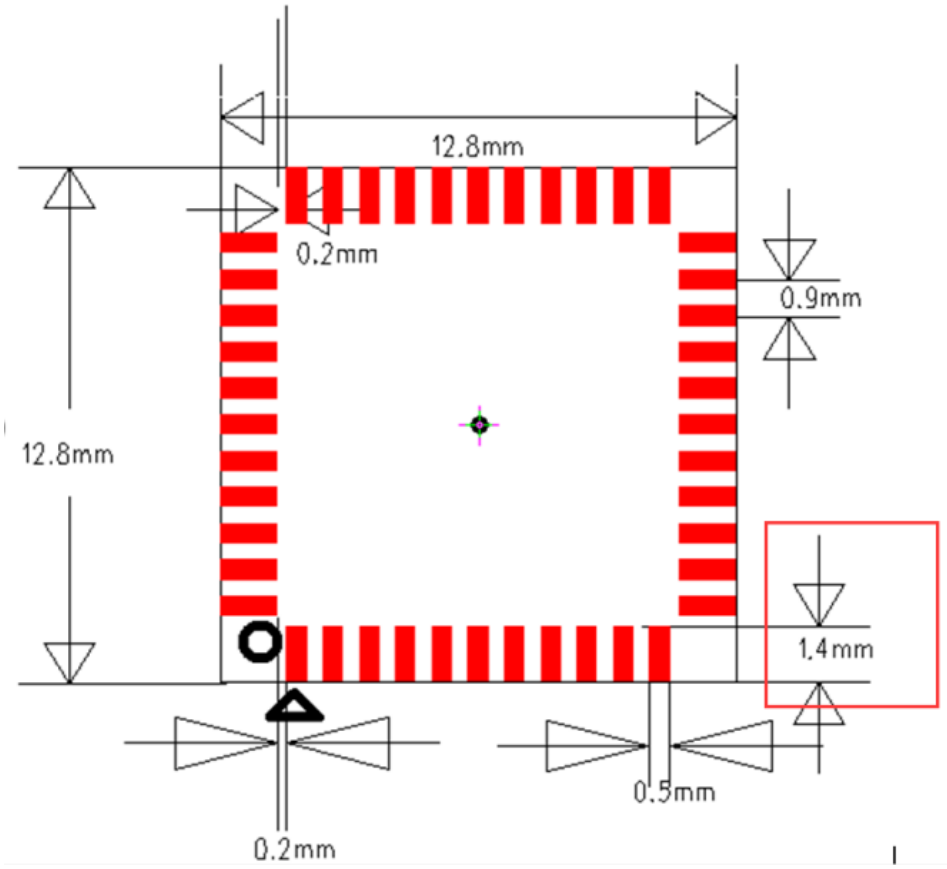
4.1Module Picture

L x W：12 x 12.2 (±0.2) mm

4.2 Module Physical Dimensions

(Unit: mm)

< TOP VIEW >



5 Reference Design

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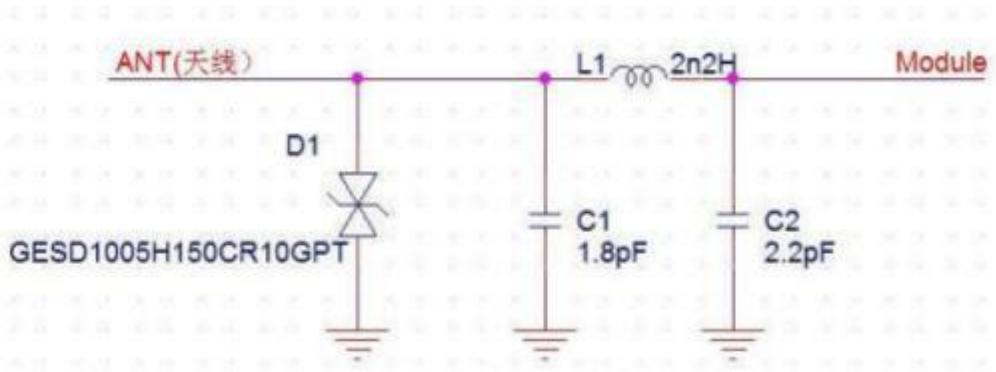
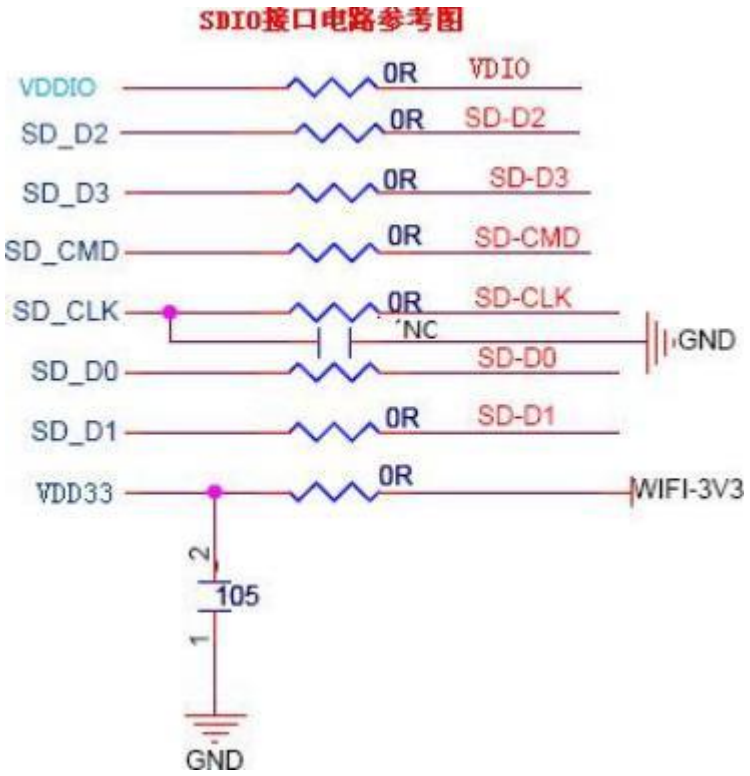
5.1 Circuit reference pictures



5.2 SDIO interface Circuit reference pictures



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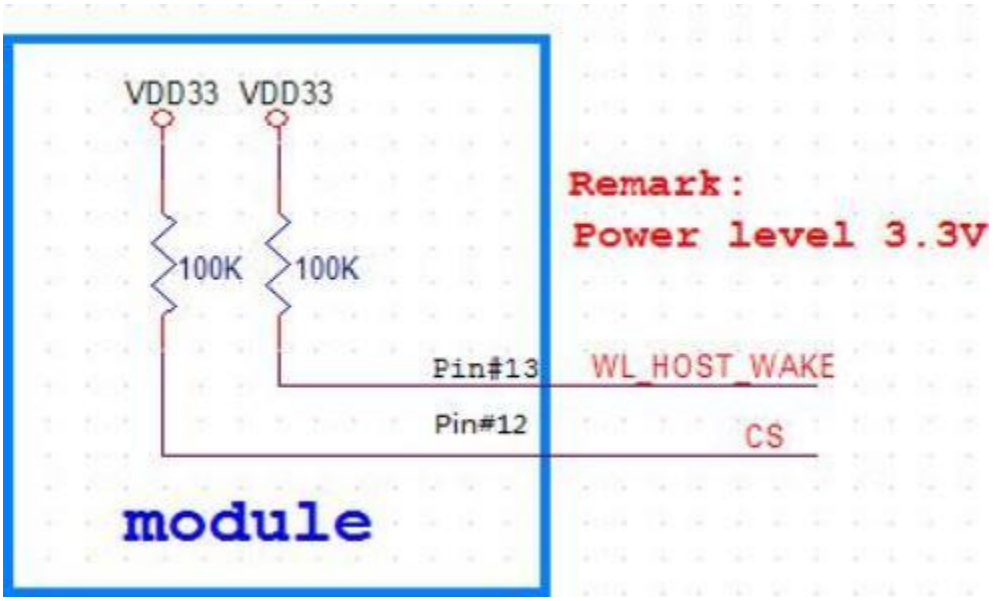
5.3 CS WAKE Reference circuits.



6 The Key Material List

No.	Parts	Specification	Manufacturer	Note
1	Chipset	RTL8189FTV-VC-CG	Realtek Semiconductor Corp	
2	PCB	8189FTV-M-V1.0	Shenzhen xiangyu circuit co., LTD	
3	PCB	8189FTV-M-V1.0	Shenzhen Kexiang Precision Circuit Technology Co., LTD	
4	Crystal oscillator	3225 40MHZ 12PF +/-10PPM -20+85℃ 川晶	hefei jing wei Electronics Co. Ltd	
5	Crystal oscillator	3225 40MHZ 12PF +/-10PPM -20+85℃ 川晶	ZhejiangLanjingxin Microelectronics Co., LTD	

7 Recommended Reflow Profile

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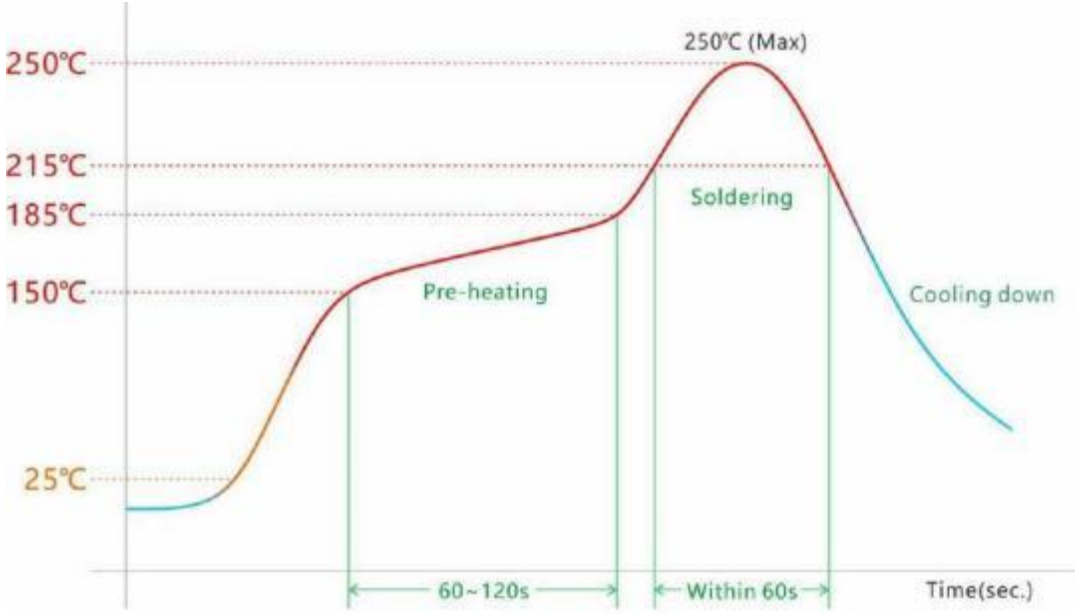
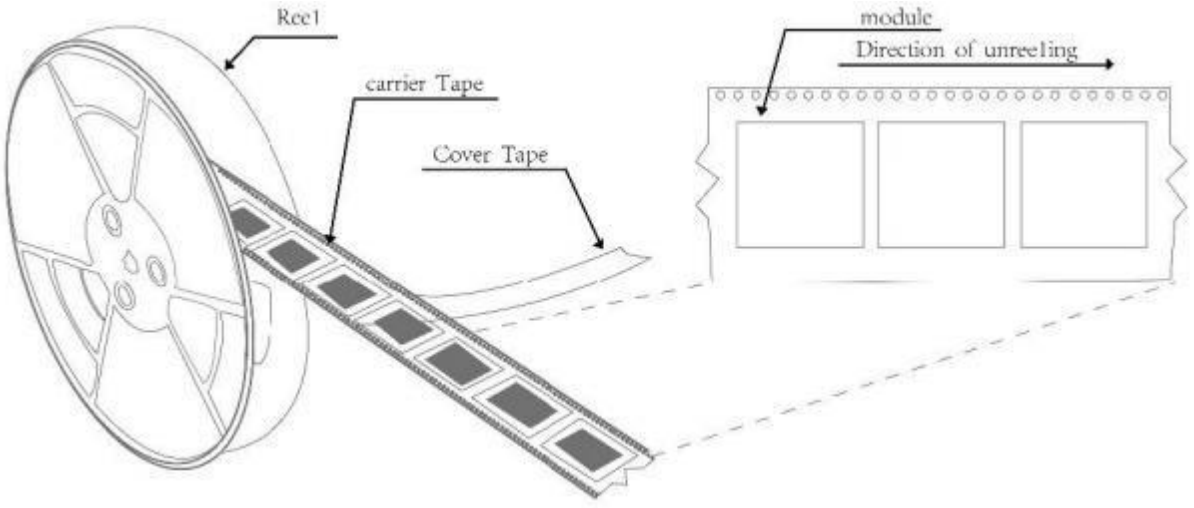
Referred to IPC/JEDEC standard.
Peak Temperature : <250° C
Number of Times : ≤2 times



Package Information

8.1Reel

A roll of 2000pcs



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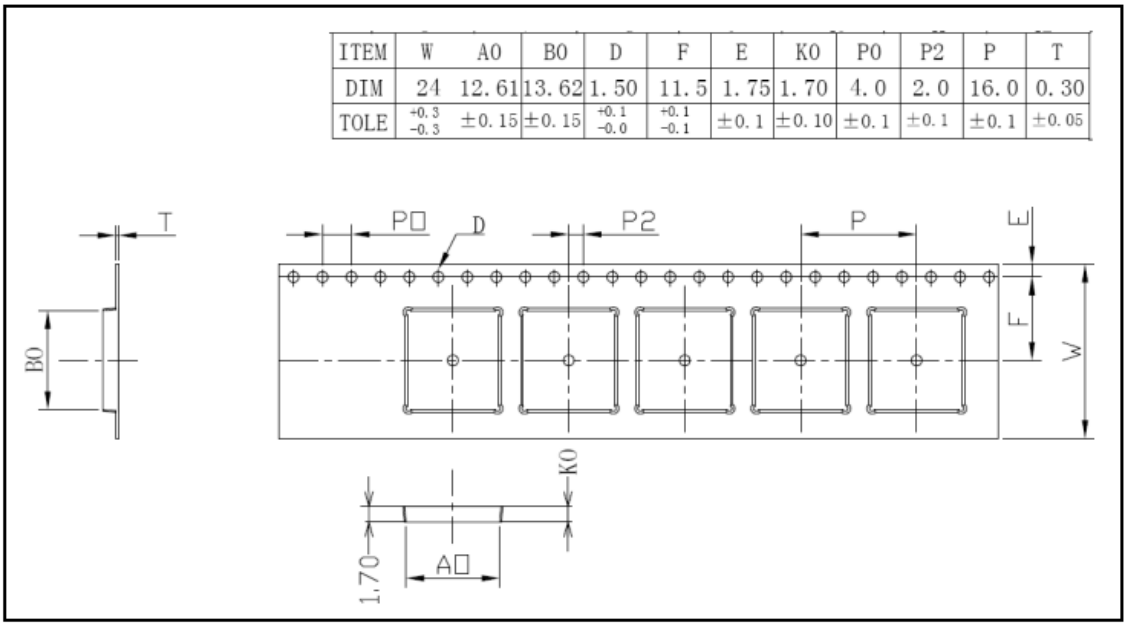
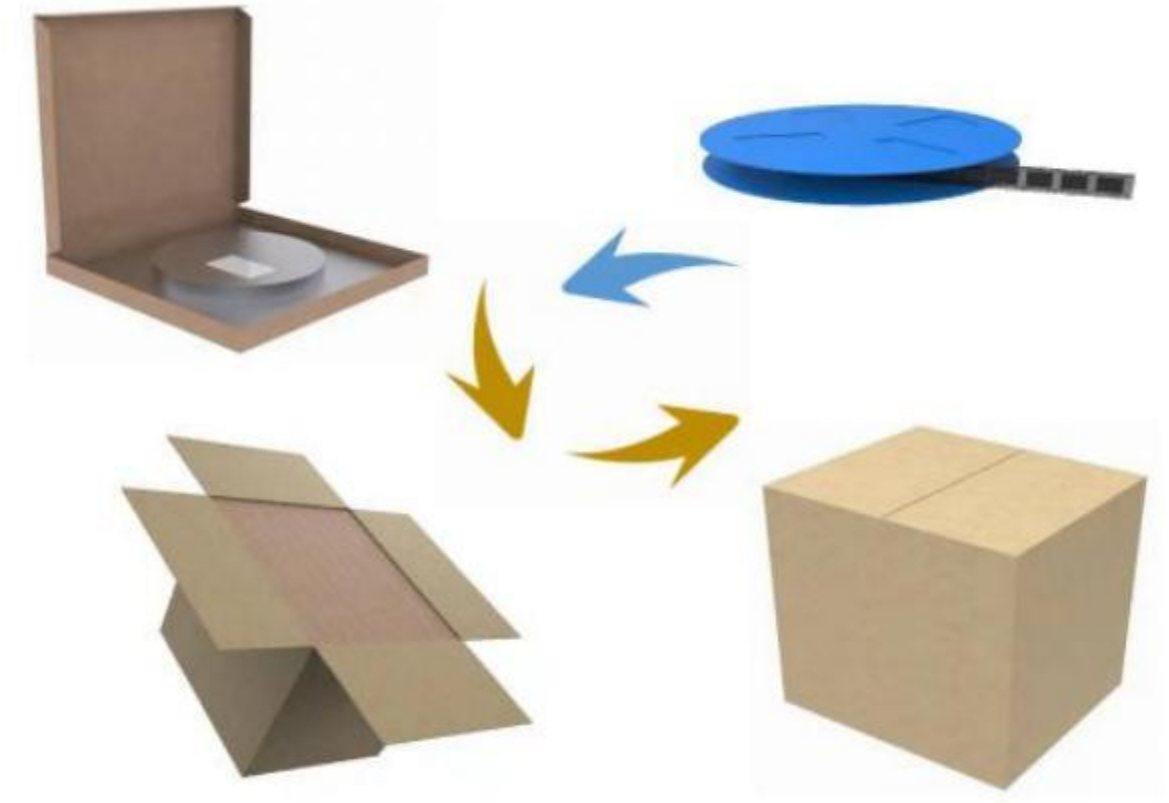
8.2 Carrier Tape Detail

ITEM	W	A0	B0	D	F	E	K0	P0	P2	P	T
DIM	24	12.61	13.62	1.50	11.5	1.75	1.70	4.0	2.0	16.0	0.30
TOLE	+0.3 −0.3	±0.15	±0.15	+0.1 −0.0	+0.1 −0.1	±0.1	±0.10	±0.1	±0.1	±0.1	±0.05



8.3 Packaging Detail



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8.4 Moisture sensitivity

The Modules is a Moisture Sensitive Device level 3, in according with standard IPC/JEDEC J-STD-020, take care all the relatives requirements for using this kind of components.

Moreover, the customer has to take care of the following conditions:

a) Calculated shelf life in sealed bag: 12 months at <40°C and <90% relative humidity (RH).

b)Environmental condition during the production: 30°C / 60% RH according to IPC/JEDEC J-STD-033A paragraph 5.

c) The maximum time between the opening of the sealed bag and the reflow process must be 168 hours if condition

b) “IPC/JEDEC J-STD-033A paragraph 5.2” is respected

e) Baking is required if conditions b) or c) are not respected

f) Baking is required if the humidity indicator inside the bag indicates 10% RH or more