SKW17A–USB WiFi Module

Datasheet

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Revision	Description	Approved	Date
V1.01	Initial	George	20190118

Contents

1. General Description

SKW17A is a 802.11n/ b/g WiFi one-stream USB interface designed specifically to provide enhanced WiFi performance and value for home gateways, set-top boxes, gaming consoles, printers, IP cameras, and variety of other products that host processors not originally intended to support WiFi functions. SKW17A's MT7601 single-chip features a new architecture that integrates both a CPU and memory to run more of the WiFi function on-chip. The integrated CPU offloads the wireless processing overhead from the host appliance and enables consumer electronic devices to support WiFi functions seamlessly without change of original host processors.

Figure 1: SKW17A Top View

2. Applications

- Desktop Computer
- Laptop Computer,
- IP Camera
- IP TV
- IP DVD(Internet VOD Player)
- Set Top Box
- Home Gateways
- Gaming Consoles
- Printers

3. Features

■ Compliant to IEEE 802.11b/g/n WLANs

■ 2.4 GHz WLAN MAC/BB processing

■ Security: WEP 64/128, WPA, WPA2, TKIP, AES, WAPI

■ Supports for Windows XP 32/64, 2000, Vista 32/64bit, Windows 7 32/64bit, Linux, Android.

■ Power Supply: 3.3V or 5.0V

■ Package: SMD or 4pin/6pin Connector

■ USB 2.0 high speed interface.

■ Supports 72.2 Mbps for 20 MHz and 150 Mbps for 40 MHz channel operations.

■ RoHS certificated meets environment-friendly requirement.

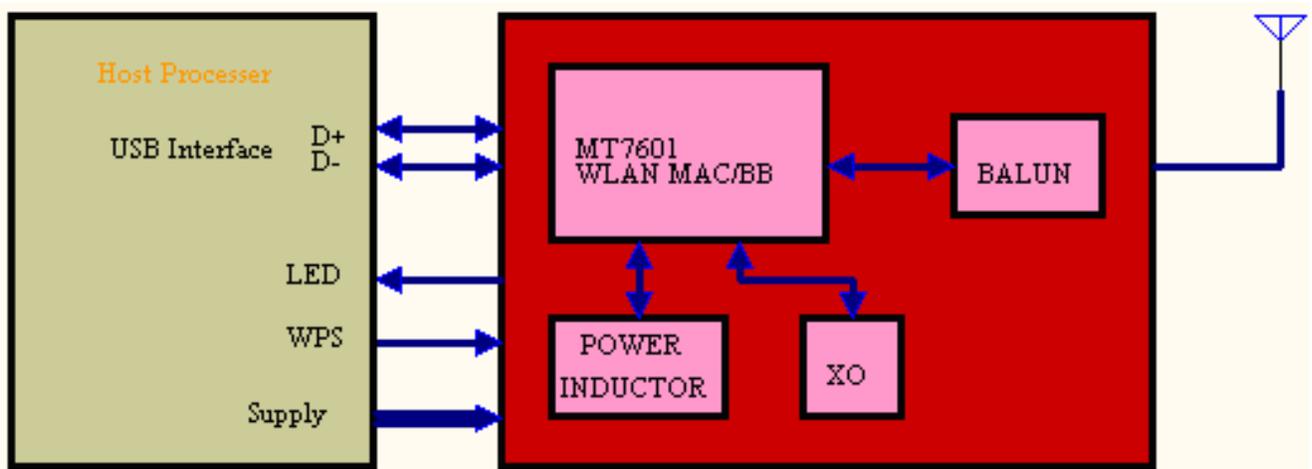■ 18.3(L) x 16.5(W) x 2.8(H) mm small dimension

4. Applications Block Diagram

Figure 2: SKW17A Block Diagram

5. Ordering Information

Module NO.	RF Connector Type	Antenna Option
SKW17AE	IPEX Connector	Ext Antenna
SKW17AP	PCB Pin	Ext Antenna

6. 6. Performance Specification

7. 6.1 Wireless Specifications

Model	SKW17A
Antenna Type	IPEX connector or PCB Antenna
Standard Conformance	802.11b, 802.11g, and 802.11n
Frequency Range	USA: 2.400 ~ 2.483GHz
	Europe: 2.400 ~ 2.483GHz
	Japan: 2.400 ~ 2.497GHz
	China: 2.400 ~ 2.483GHz
Modulation Technique	DSSS with CCK, DQPSK, DBPSK
	OFDM with BPSK, QPSK, 16QAM, 64QAM
Channel Spacing	5MHz/20MHz/40MHz
Data Rate	802.11b: 1, 2, 5.5 and 11Mbps
	802.11g: 6, 9, 12, 18, 24, 36, 48, 54Mbps
	802.11n: 20MHz channel: 1Nss: 65Mbps @ 800GI, 72.2Mbps @ 400GI (Max.)
	40MHz channel: 1Nss: 135Mbps @ 800GI, 150Mbps @ 400GI (Max.)
Operating Channels	USA/Canada: 11 (1~11)
	Major Europe Countries: 13 (1~13)
	France: 4 (10~13)
	Japan: 14 for 802.11b (1~13 or 14th), 13 for 802.11g (1~13)

	China: 13 (1~13)
Wi-Fi Compliance	Wi-Fi 2.4GHz by request
Certification	
Security	64/128/152-bit WEP encryption
	WPA/WPA2 encryption
	AES-CCM & TKIP encryption

8. 6.2 Transmit Power And Receive Sensitivity

		Data Rate	IEEE Spec(1 Rx dBm)	Typical
Transmit Power	target power tolerance ±2dBm			
	802.11b:	+18 dBm for 802.11b CCK		
	802.11g:	+16dBm @ 6, 9, 12,18,24,36,48Mbps		
		+15dBm @ 54Mbps		
	802.11n HT20:	+15dBm @ MCS 7/15		
	802.11n HT40:	+15dBm @ MCS 7/15		
Receiver Sensitivity	802.11b	1M	-82	-92
		5.5M	-80	-89
		11M	-76	-87
	802.11g	6M	-82	-92
		9M	-81	-92
		12M	-79	-91
		18M	-77	-90
		24M	-74	-86
		36M	-70	-83
		48M	-66	-78
		54M	-65	-76
	802.11n HT20	MCS0	-82	-92
		MCS1	-79	-91
		MCS2	-77	-90
		MCS3	-74	-85

		MCS4	-70	-82
		MCS5	-66	-79
		MCS6	-65	-75
		MCS7	-64	-73
	802.11n HT40	MCS0	-79	-88
		MCS1	-76	-87
		MCS2	-74	-86
		MCS3	-71	-82
		MCS4	-67	-78
		MCS5	-63	-75
		MCS6	-62	-72
		MCS7	-61	-70
Operation Distance		Outdoor		Indoor
	802.11b	150m @ 11Mbps		30m @ 11Mbps
		300m @ 1Mbps		100m @ 1Mbps
	802.11g	50m @ 54Mbps		30m @ 54Mbps
		300m @ 6Mbps		100m @ 6Mbps
	802.11n HT20	30m @ 150Mbps		20m @ 150Mbps
		30m @ 65Mbps		20m @ 65Mbps
		250m @ 6.5Mbps		100m @ 6.5Mbps

9. 7. Electrical Characteristics

10. 7.1 Absolute Maximum Rating

Parameter	Symbol	Min	Max	Units
Supply Voltage	VCC_3V3	0.3	4	V
RF input (reference to 50 Ω)	RFin		10	dBm
Storage Temperature	Tstore	-40	125	°C

Junction Temperature	Tjunction		125	°C
Electrostatic Discharge Tolerance	ESD		2000	V

11.   7.2 Operating Conditions

Parameter	Symbol	Min	Typ	Max	Units
Supply Voltage	VCC_3V3	3	3.3	3.6	V
RF input (reference to 50 Ω)	RFin		10	dBm	dBm
Operation temperature	Toperation	-20	25	70	°C
Thermal Parameter	PsiJT			3.23	°C/W

12.   7.3 Power Consumption for 2.4 GHz Operation

Mode	Operating Mode	VDD_3V3(mA)	Max(mA)
HT40 @15dBm	Standby	50	
	TX	135	330
	RX	101	
802.11b @18dBm	Sleep	50	
	TX	205	330
	RX	101	

Note: For Tx, transmitter and synthesizer are on. Tx power at 18 dBm for 802.11b and 15 dBm for HT40. For Rx, receiver and synthesizer are on with maximum receiver gain.
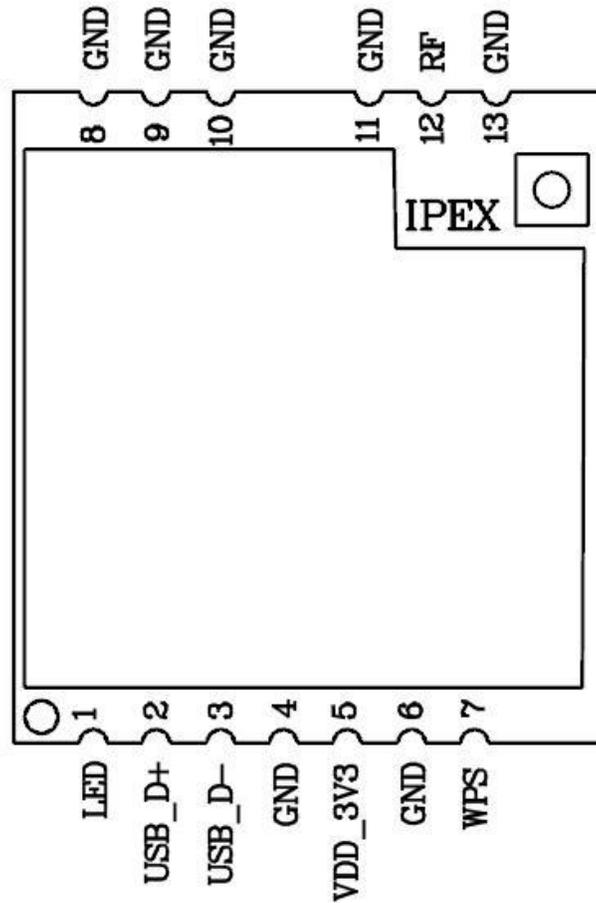
13. 8. Module Pinout

Figure 3: SKW17A Pin Name

14. 9. Pin Description

Pin No.	Pin name	I/O	Description	Remark
1	LED	O	Light Emitting Diode Driver	up to 10mA
2	USB_D+	I/O	USB Interface DP	
3	USB_D-	I/O	USB Interface DM	
4	GND	G	Ground	
5	VDD_3V3	P	Module Power Supply	

6	GND	G	Ground	
7	WPS	I	Wi-Fi Protected Setup	Internal 100 KΩ PU
8	GND	G	Ground	
9	GND	G	Ground	
10	GND	G	Ground	
11	GND	G	Ground	
12	RF	RF port	Antenna PIN	For SKW17AP
IPEX	RF	RF port	Antenna Connect	For SKW17AE
13	GND	G	Ground	

15.   10. PCB Dimensions
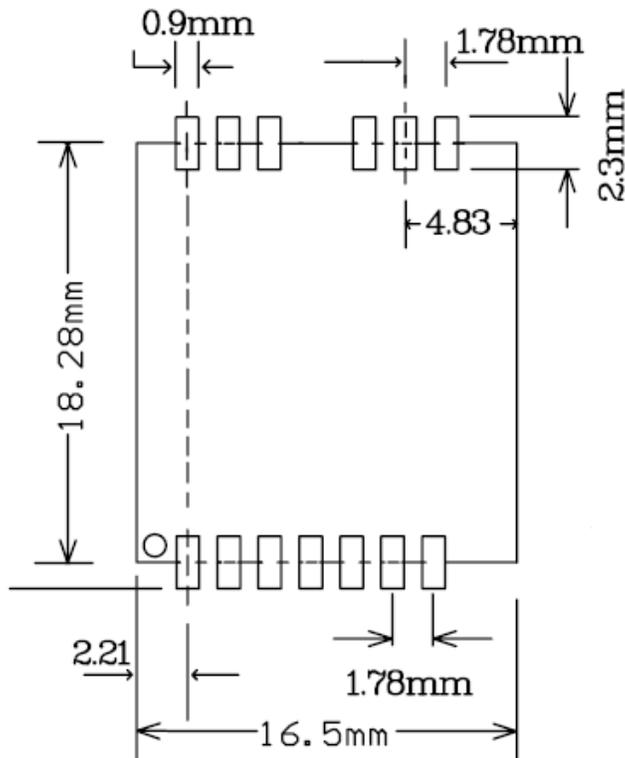
Figure 4: SKW17A Dimensions

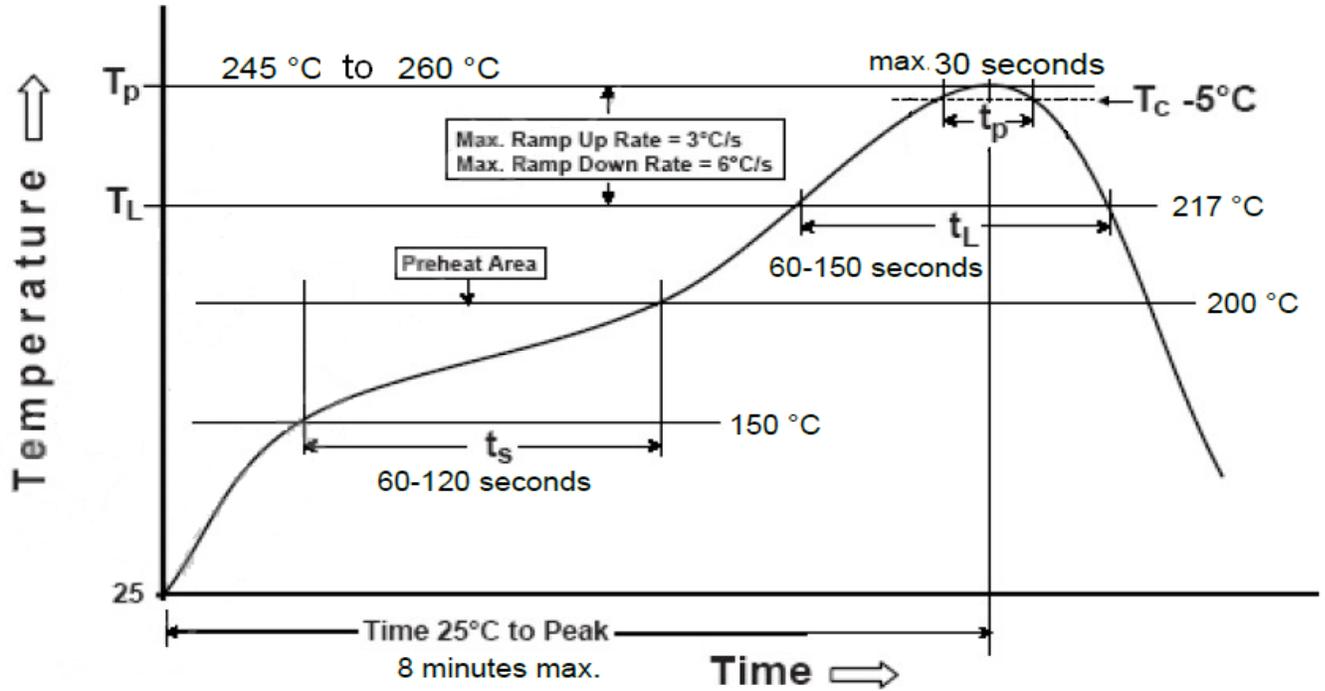## 16.   11. Manufacturing Process Recommendations

Figure 5: SKW17ATypical Leadfree Soldering Profile

Note：The final soldering temperature chosen at the factory depends on additional external factors like choice of soldering paste，size，thickness and properties of the baseboard，etc. Exceeding the maximum soldering temperature in the recommended soldering profile may permanently damage the module.
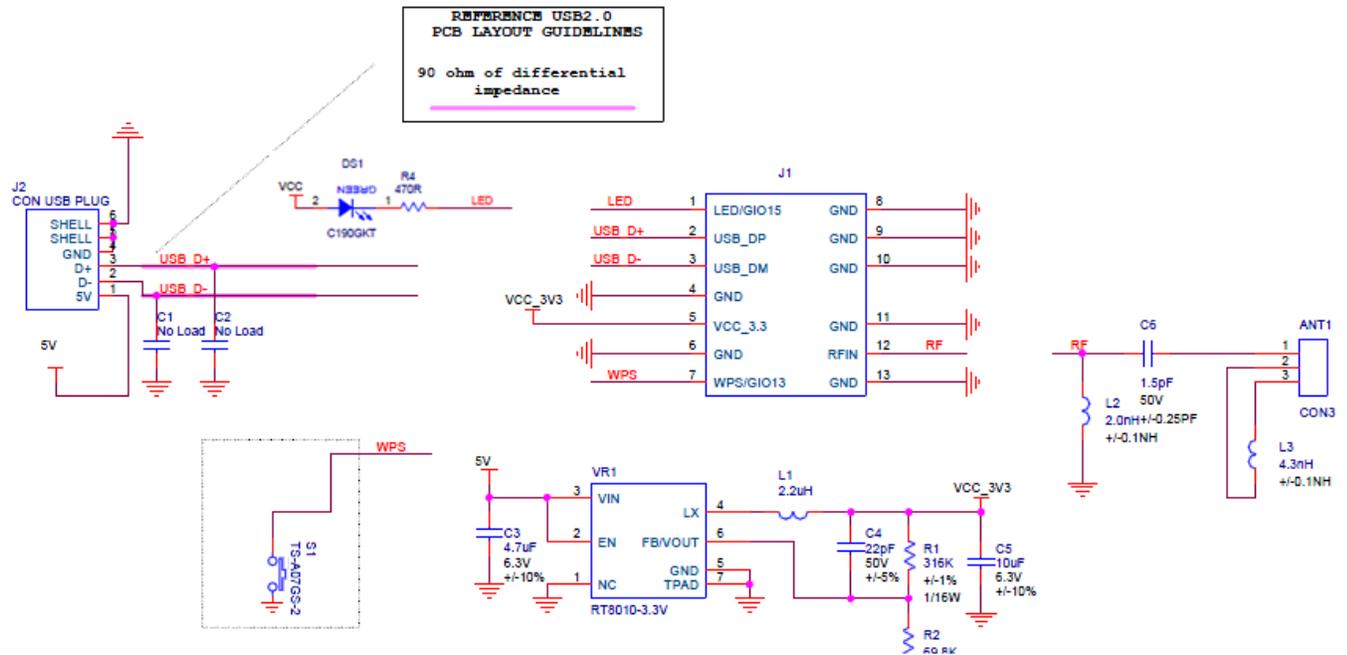
17. 12. Reference design schematic

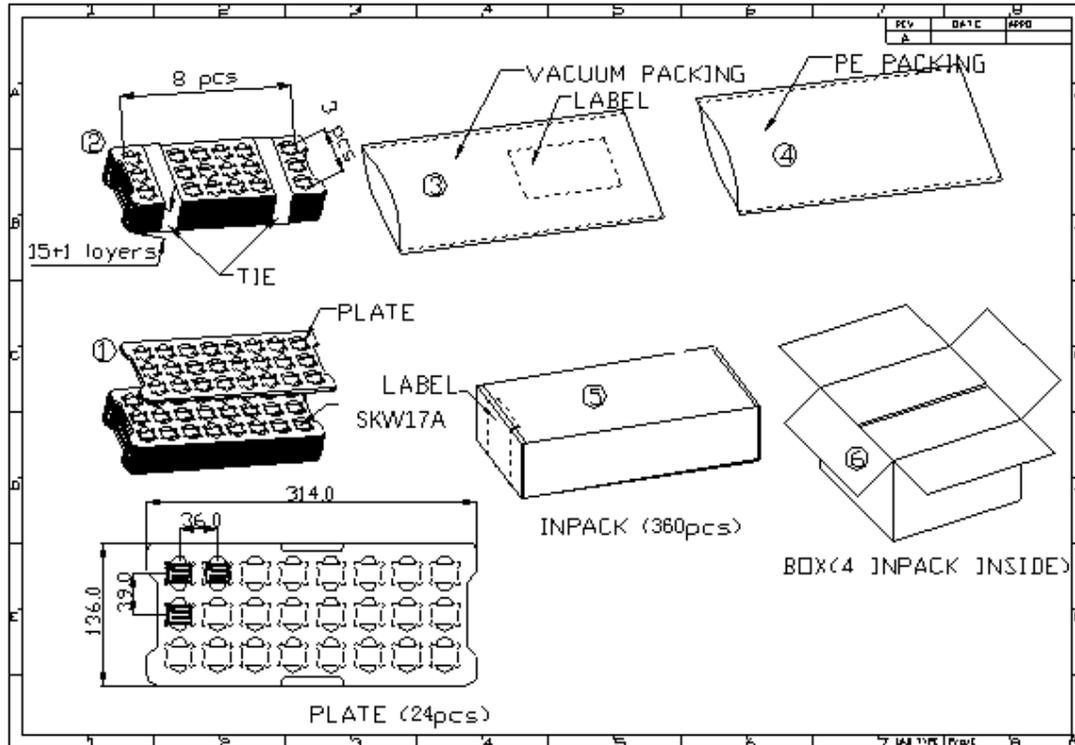**Figure 6: SKW17A schematic application**

18. 13. Packaging Specification

Figure 7: SKW17A Packaging

19. 14. Contact Information

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