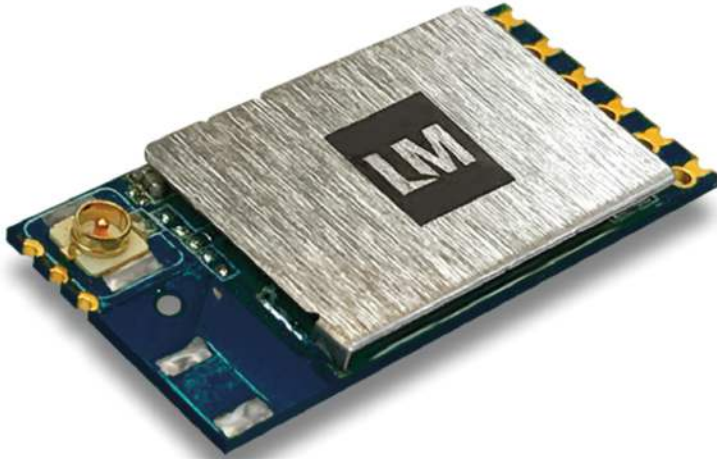




LM823 WiFi 802.11 b/g/n Module with IPEX Receptical Host Controller Interface (HCI) via USB Interface

Revised 24/JAN/2021
Datasheet Version 1.7
Ordering Options See last page



Also available with Onboard Antenna. (LM822)

Features

- WiFi 802.11 b/g/n
- Operates in 2.4 GHz Frequency bands
- IPEX receptical
- Plug and Play (Linux, macOS X, Windows XP – 10, Windows 10 IoT Core and Windows Compact Embedded 6/7 compatible)
- Up to 150Mbps Data Transfer Rate
- 802.11e-compatible bursting and I standards
- BPSK, QPSK, 16 QAM and 64 QAM modulation schemes
- WEP, TKIP, and AES, WPA and WPA2 encryption schemes
- Fully-featured software utility for easy configuration and management

- RoHS, REACH and WEEE compliant
- See our website for this products certifications.

Optional Features

- DC power input 3.3V or 5V
- WPS on half-hole pin 6
- Support LED function when choose WPS option

Overview

The LM823 WiFi USB module, fully supports IEEE 802.11 b, g and n standards.

It supports up to 150Mbps high-speed wireless network connections and is designed to provide excellent performance with low power consumption.

It is designed to be a highly cost-effective module that offers superior performance, better power management applications above its competitors.

Onboard Antenna Option

This module is also offered with an Onboard Antenna (LM822). Please speak with our team for guidance when looking at this option.



LM823 WiFi 802.11 b/g/n Module with IPEX Receptical

Host Controller Interface (HCI) via USB Interface

General Specification

Wireless

Wireless Standard	802.11 b/g/n, 802.3, and 802.3u
Module Type	Host Controller Interface (HCI)
OS Compatibility	Linux, macOS X, Windows XP – 10, Windows 10 IoT Core and Window Embedded Compact 6/7
Security	WEP, TKIP, AES, WPA and WPA2
Network Architecture	Ad hoc mode (Peer-to-Peer) and Infrastructure mode (supported on Linux and Windows 8.1 or earlier)

Hardware

Chipset	Realtek
Antenna	IPEX receptical
Interfaces	USB 2.0

RF Characteristics

Tx Output Power	(+/- 2dBm): 13dBm@11n, 17dBm@11b, 15dBm@11g
Rx Sensitivity	11Mbps -80dBm@8%, 54Mbps -70dBm@10%,130Mbps -64dBm@10%
Range (in open space)	Up to 180m
Current Consumption (DC 5V Module)	Transmit: 125 mA (Maximum) Receive: max 105 mA DC (Maximum)
Current Consumption (DC 3V3 Module)	Transmit: max. 172 mA (Maximum) Receive: max 139 mA (Maximum)
Data Transfer Rate	1,2,5,5,6,11,12,18,22,24,30,36,48,54,60,90,120 Mbps to a maximum of 150Mbps
Frequency	2.4GHz ISM Band
Modulation Scheme	BPSK/ QPSK/ 16-QAM/ 64-QAM
Spread Spectrum	IEEE 802.11b: DSSS (Direct Sequence Spread Spectrum) IEEE 802.11g/n: OFDM (Orthogonal Frequency Division Multiplexing)

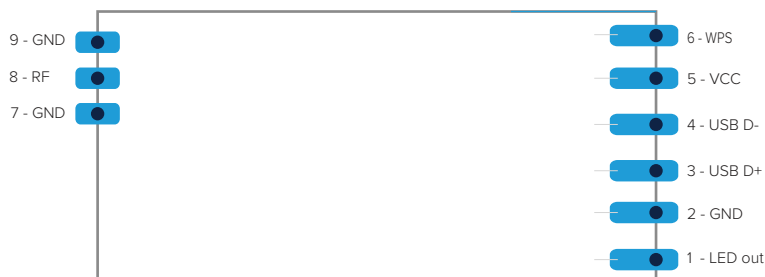
Physical Characteristics

Operating Temperature	-20°C to +85°C ambient temperature
Humidity	5% to 90% maximum (non-condensing)
Dimensions (L x W x H)	25mm x 12mm x 2mm (+/- 0.2mm)
Weight	1.09g +/- 0.25g tolerance
Certifications	See our website for this products certifications.
Compliance	RoHS, REACH and WEEE

LM823 WiFi 802.11 b/g/n Module with IPEX Receptical

Host Controller Interface (HCI) via USB Interface

Pin Outs



DC Power Input

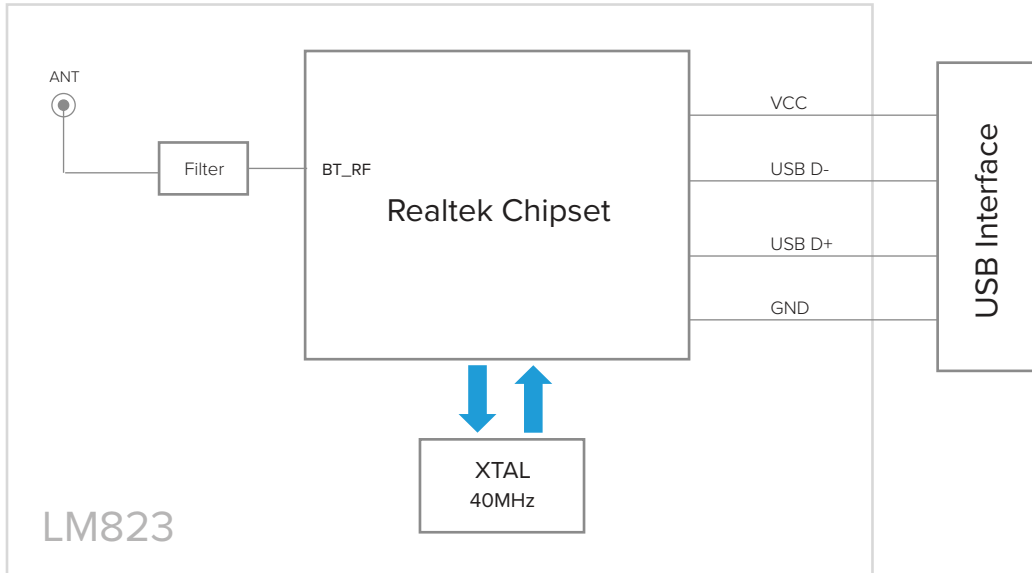
Module	Min	Typical	Max	Unit
DC 5V	4.75	5	5.25	V
DC 3.3V	3.135	3.3	3.465	V

Pin Assignments

Pin	Pin Name	Type	Description
1	LED out	Output	LED output
2	GND	Ground	Common Ground
3	USB D+	I/O	USB D+
4	USB D-	I/O	USB D-
5	VCC	Power	DC Power Supply (Refer to DC Power Input table)
6	WPS	I/O	Wi-Fi Protected Setup switch
7	GND	Ground	Common Ground
8	RF	-	Do not connect
9	GND	Ground	Common Ground

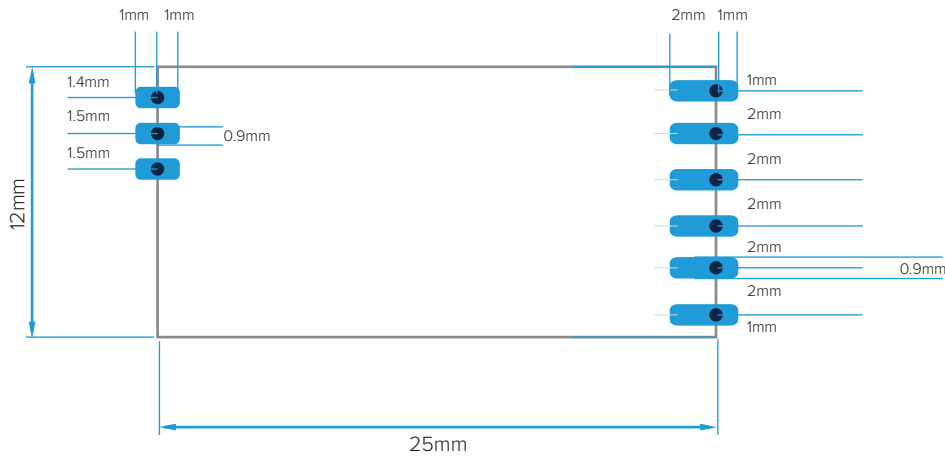
LM823 WiFi 802.11 b/g/n Module with IPEX Receptical
 Host Controller Interface (HCI) via USB Interface

Module Block Diagram

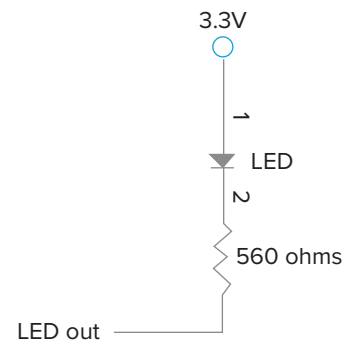


LM823 WiFi 802.11 b/g/n Module with IPEX Receptical Host Controller Interface (HCI) via USB Interface

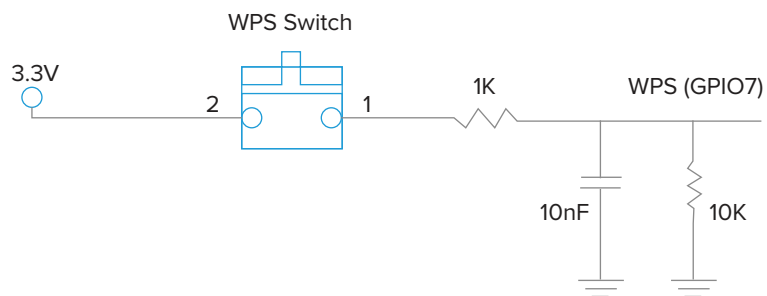
PCB Footprint



- The external circuit for WiFi activity LED (factory option)

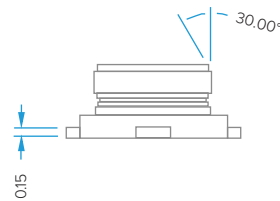
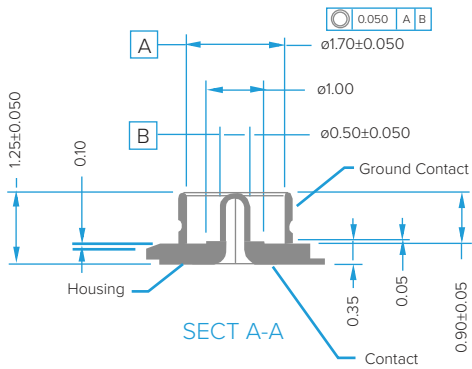
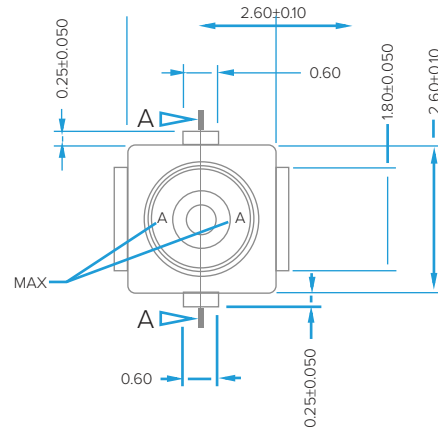
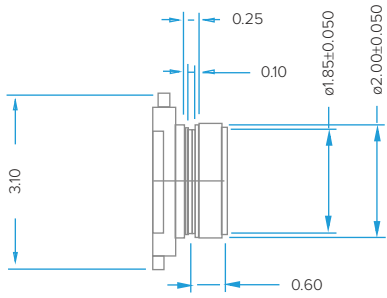


- Pin 6 has a optional WPS (GPIO7) function.
The external circuit for the WPS function input (factory option) uses a tact switch.



LM823 WiFi 802.11 b/g/n Module with IPEX Receptical
Host Controller Interface (HCI) via USB Interface

IPEX Connector Dimensions



LM823 WiFi 802.11 b/g/n Module with IPEX Receptacle Host Controller Interface (HCI) via USB Interface

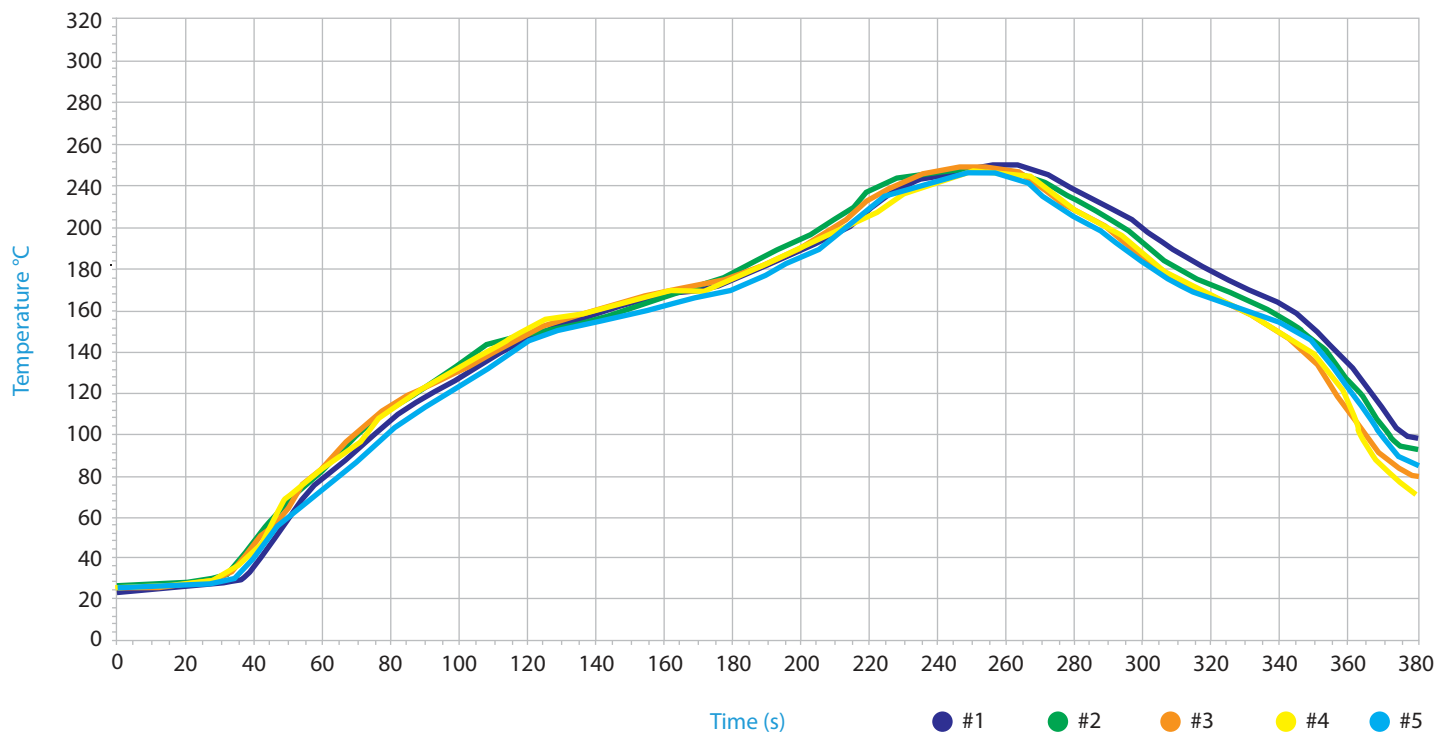
PCB Drying Conditions

This module is a Moisture Sensitivity Level 3 (MSL-3) surface mount device.

Please refer below for drying conditions prior to the solder reflow processes.

If your PCB was baked at the below temperatures, you should follow the below guidelines.

Soldering Reflow Chart



Speed (cm/min): 70.0

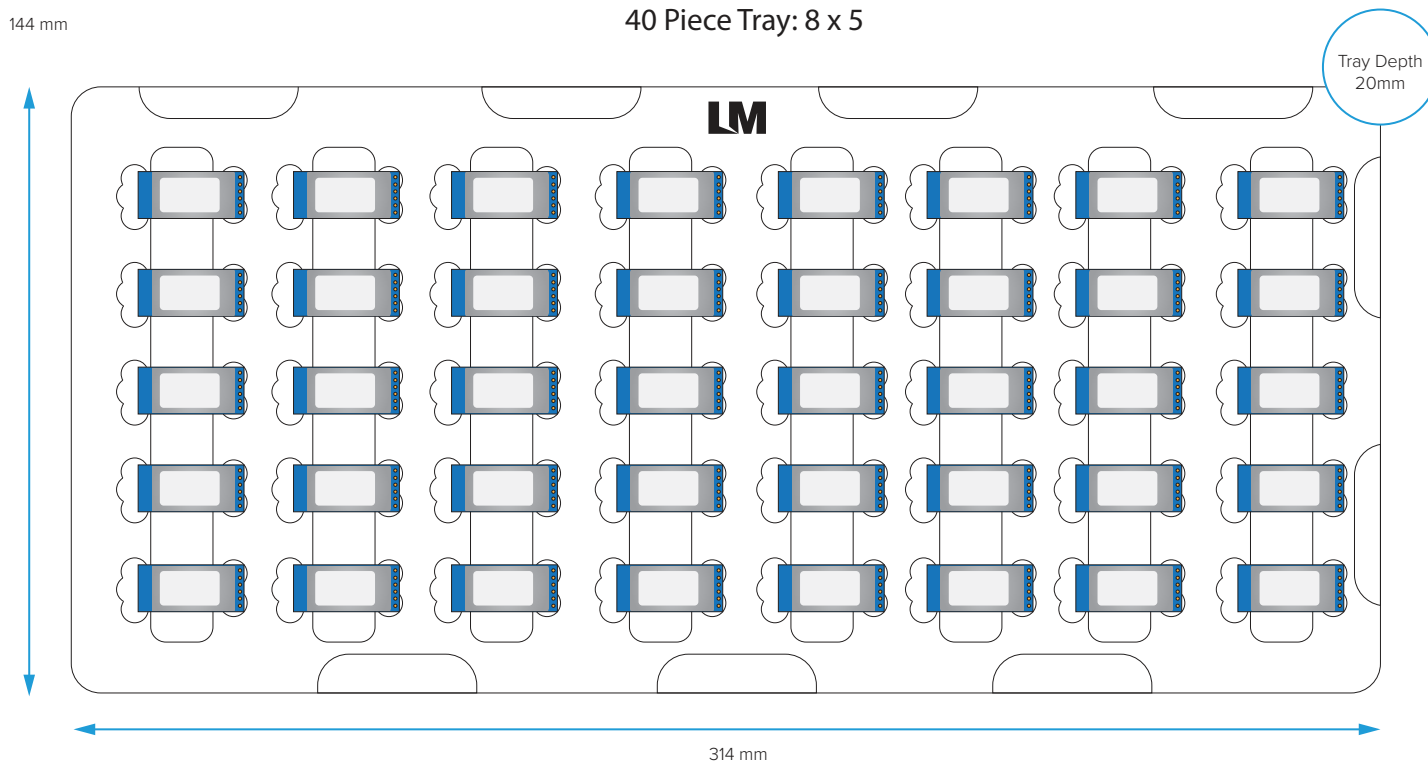
Name	Zone 1	Zone 2	Zone 3	Zone 4	Zone 5	Zone 6	Zone 7	Zone 8	Zone 9	Zone 10
Max	158.0	160.0	170.0	170.0	180.0	180.0	190.0	220.0	235.0	250.0
Min	158.0	160.0	170.0	170.0	180.0	180.0	190.0	220.0	235.0	250.0
Length	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0

Probe	Liquidus Line		Maximum / Minimum		Slope	
	Rising 110.00-190.00	Above 230.0	Max	Min	Positive	Negative
#1	112.00	50.50	243.00	24.30	2.29	-2.97
#2	113.00	42.50	244.10	24.10	2.11	-3.08
#3	111.50	51.00	244.20	24.00	2.17	-2.69
#4	112.00	47.00	241.60	25.00	1.87	-2.13
#5	112.50	51.50	243.50	25.00	2.37	-1.95

LM823 WiFi 802.11 b/g/n Module with IPEX Receptical Host Controller Interface (HCI) via USB Interface

Tray Packaging

Tray Dimensions



Quantities

- 40 modules per Tray
- 3 Trays per Inner Box
- 120 modules per Inner Box
- 8 Inner Boxes per Outer Carton
- 960 modules per Outer Carton

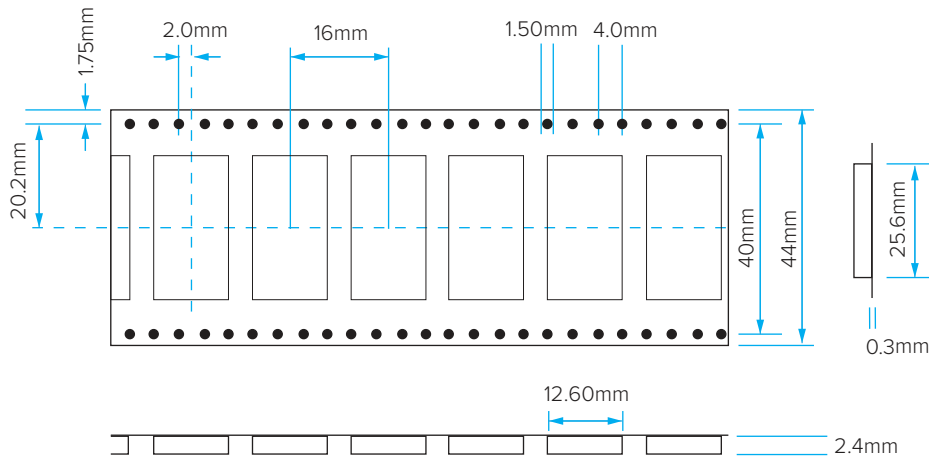
Notes

- Anti-Static PS Tray, Black.
- Material Thickness: 1mm
- Height of Tray: 20mm
- Carton Dimensions (L x W x H):
340mm x 290mm x 385mm

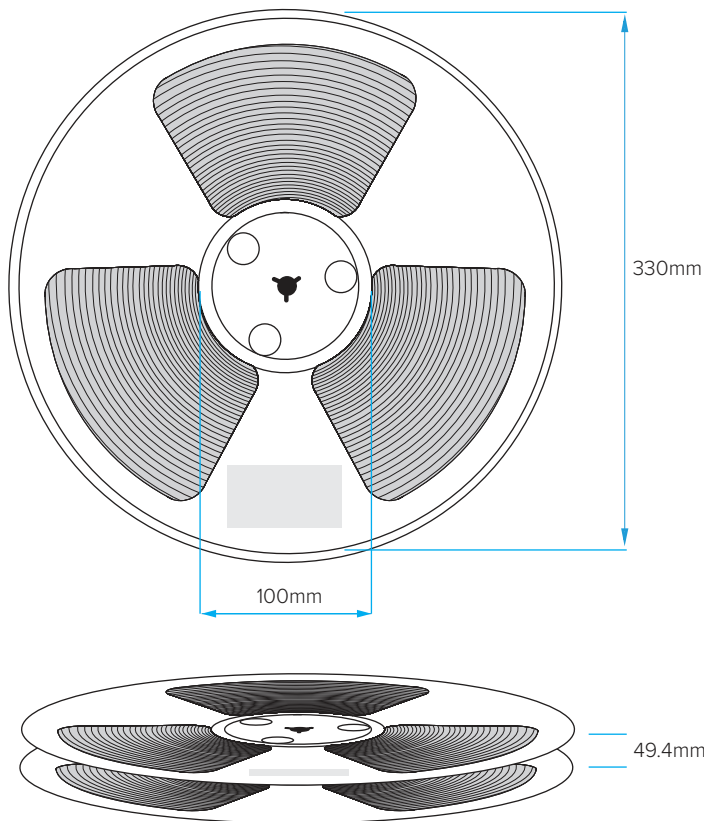
LM823 WiFi 802.11 b/g/n Module with IPEX Receptical Host Controller Interface (HCI) via USB Interface

Tape and Reel Packaging

Tape Dimensions



Reel Dimensions



Quantities

- 1500 modules per Tape & Reel
- 1 Tape & Reel per Inner Box
- 5 Inner Boxes per Outer Carton
- 7500 modules per Outer Carton

Notes

- Inner Box Dimensions (L x W x H):
360mm x 360mm x 60mm
- Outer Carton Dimensions (L x W x H):
395mm x 360mm x 305mm

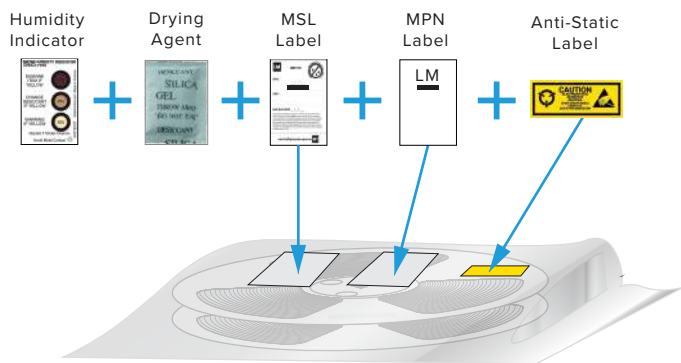
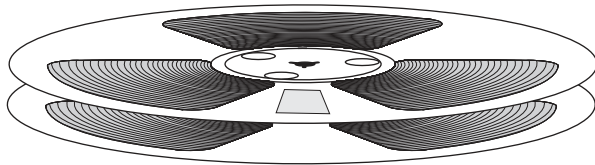
LM823 WiFi 802.11 b/g/n Module with IPEX Receptacle Host Controller Interface (HCI) via USB Interface

Packaging for Tape & Reel / Tray

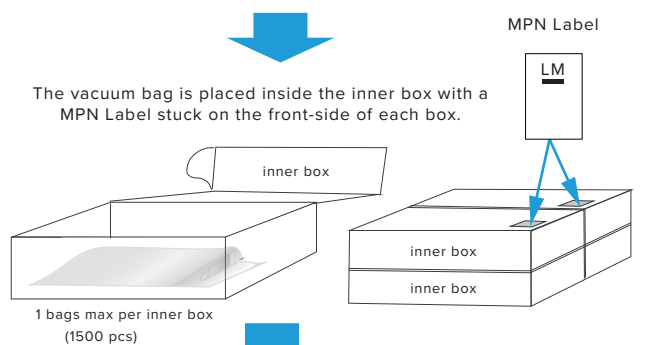
The Tape & Reel / Tray are inserted into an anti-static vacuum bag with a Humidity Indicator Card and Drying Agent. On the outside of the vacuum bag are MSL (Moisture Sensitivity Levels), MPN and an Anti-Static Labels.

Tape & Reel

Reels are placed within a vacuum bag.

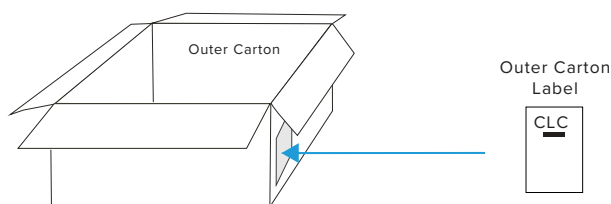


Vacuum bag.



The vacuum bag is placed inside the inner box with a MPN Label stuck on the front-side of each box.

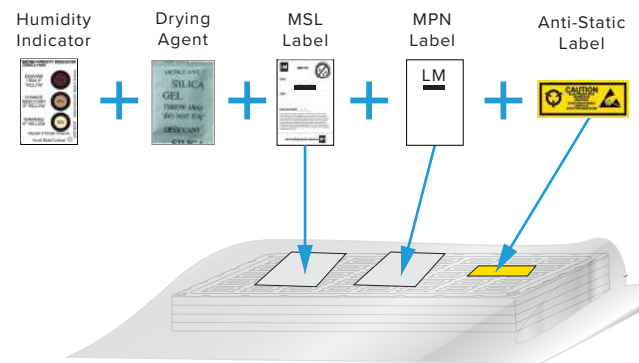
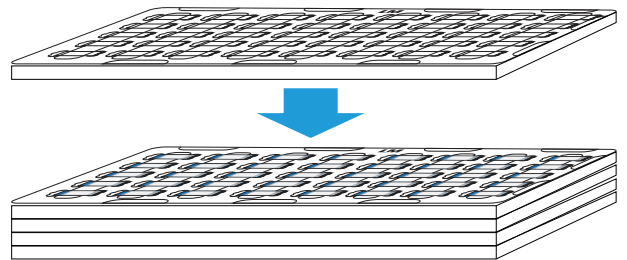
1 bags max per inner box (1500 pcs)



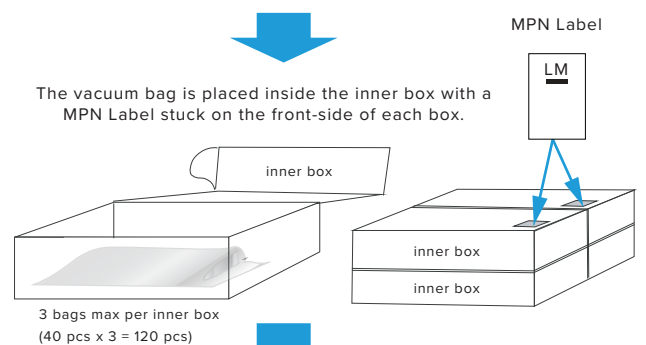
Each Outer Carton contain 5 inner boxes max (7500 pcs)

Tray

Trays are stacked with an empty tray on the top and placed within a vacuum bag.

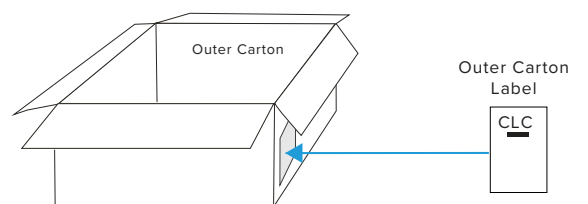


Vacuum bag.



The vacuum bag is placed inside the inner box with a MPN Label stuck on the front-side of each box.

3 bags max per inner box (40 pcs x 3 = 120 pcs)



Each Outer Carton contain 8 inner boxes max (120 pcs x 8 = 960 pcs)



LM823 WiFi 802.11 b/g/n Module with IPEX Receptical

Host Controller Interface (HCI) via USB Interface

Datasheet Version Notes

v1.0	11 JAN 2018	Added version notes to datasheet.
v1.1	13 MAR 2018	MSL Description text improvement in the PCB Drying Conditions section.
v1.2	04 JUL 2018	MSL Description text improvement in the PCB Drying Conditions section. Packing information addition.
v1.3	18 SEP 2018	Alterations to Packaging Options.
v1.4	30 NOV 2018	Module dimensions updated for new shield height.
v1.5	28 OCT 2019	Alterations to Packaging Options.
v1.6	04 NOV 2019	Alterations to Packaging Options and PDN option.
v1.7	24 JAN 2021	Datasheet branding update.



LM823 WiFi 802.11 b/g/n Module with IPEX Receptical

Host Controller Interface (HCI) via USB Interface

Ordering Options

RF Country Bands

Our default radio region is ETSI. Unless specified otherwise, units will be shipped using the ETSI radio bands.

When ordering units for use with the US region, include US at the end of the part number as shown here. e.g.: [823-XXXX-X US](#) or [823-XXXX US](#)

3 VOLT



[823-1463-3](#)

3V Module

MOD SMT HCI 802.11n USB -20c EUS 3V IPEX PCS

ETSI

[823-1464-3](#)

3V Module

MOD SMT HCI 802.11n USB -20c EUS 3V IPEX TRAY

ETSI

[823-1466-3](#)

3V Module

MOD SMT HCI 802.11n USB -20c EUS 3V IPEX T&R

ETSI

[823-1468-3](#)

3V Module

MOD SMT HCI 802.11n USB -20c EUS 3V IPEX (PIO6) T&R

ETSI

[823-1463-3 US](#)

3V Module

MOD SMT HCI 802.11n USB -20c EUS 3V IPEX PCS

US

[823-1464-3 US](#)

3V Module

MOD SMT HCI 802.11n USB -20c EUS 3V IPEX TRAY

US

[823-1466-3 US](#)

3V Module

MOD SMT HCI 802.11n USB -20c EUS 3V IPEX T&R

US

[823-1468-3 US](#)

3V Module

MOD SMT HCI 802.11n USB -20c EUS 3V IPEX (PIO6) T&R

US

Note

All 3 Volt modules are signified by having 8 digits and 2 dashes within their part number. e.g.: [XXX-XXXX-X](#)

5 VOLT



[823-1463](#)

5V Module

MOD SMT HCI 802.11n USB -20c EUS 5V IPEX PCS

ETSI

[823-1465](#)

5V Module

MOD SMT HCI 802.11n USB -20c EUS 5V IPEX T&R

ETSI

[823-1467](#)

5V Module

MOD SMT HCI 802.11n USB -20c EUS 5V IPEX IPEX TRAY

ETSI

[823-1468](#)

5V Module

MOD SMT HCI 802.11n USB -20c EUS 5V IPEX (PIO6) T&R

ETSI

[823-1463 US](#)

5V Module

MOD SMT HCI 802.11n USB -20c EUS 5V IPEX PCS

US

[823-1465 US](#)

5V Module

MOD SMT HCI 802.11n USB -20c EUS 5V IPEX T&R

US

[823-1467 US](#)

5V Module

MOD SMT HCI 802.11n USB -20c EUS 5V IPEX TRAY

US

[823-1468 US](#)

5V Module

MOD SMT HCI 802.11n USB -20c EUS 5V IPEX (PIO6) T&R

US

Note

All 5 Volt modules are signified by having 7 digits and 1 dash within their part number. e.g.: [XXX-XXXX](#)

- See our website to download any applicable Product Software, Manuals and Notes - <http://www.lm-technologies.com/downloads>