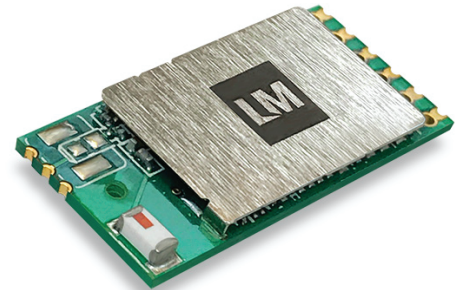
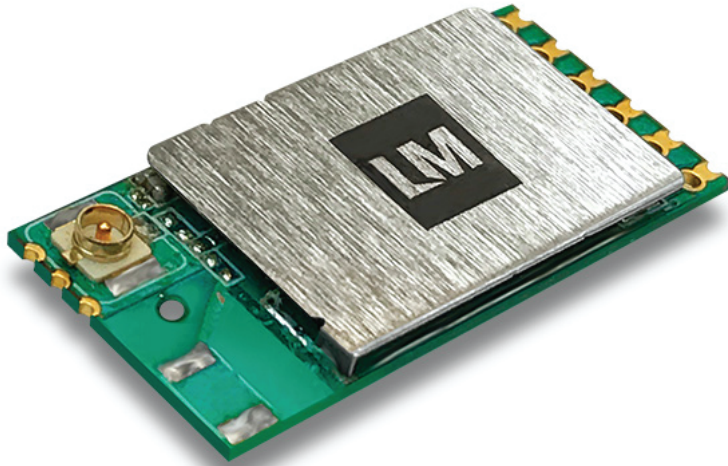


# LM823 WiFi 802.11 b/g/n Module with IPEX Receptical Host Controller Interface (HCI) via USB Interface

Product LM823  
 Part No See Last Page  
 Revised 13/MAR/2018  
 Datasheet Version 1.1



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 or PDN control function 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

Product  
Part No

LM823  
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### 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 (Full Speed)

#### 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)

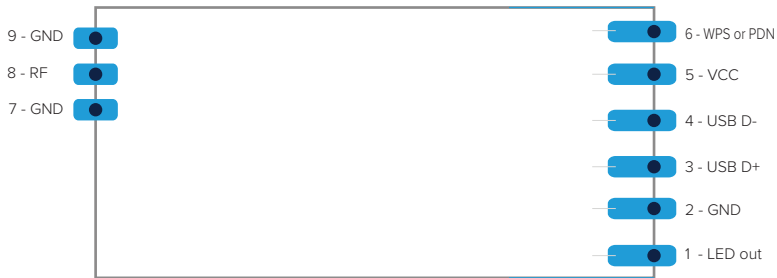
#### Physical Characteristics

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
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

Product LM823  
Part No See Last Page

## 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

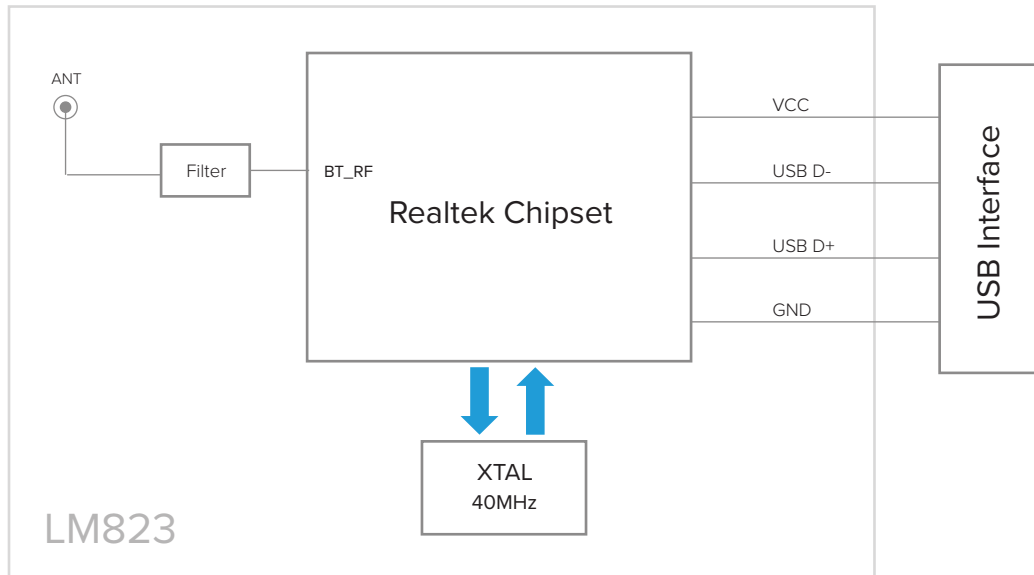
## Pin Assignments

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 or PDN	I/O	Wi-Fi Protected Setup switch; 823-1468 has the Option for PDN (Power Down) Pin, ask for details on PDN
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

Product LM823  
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**Module Block Diagram**



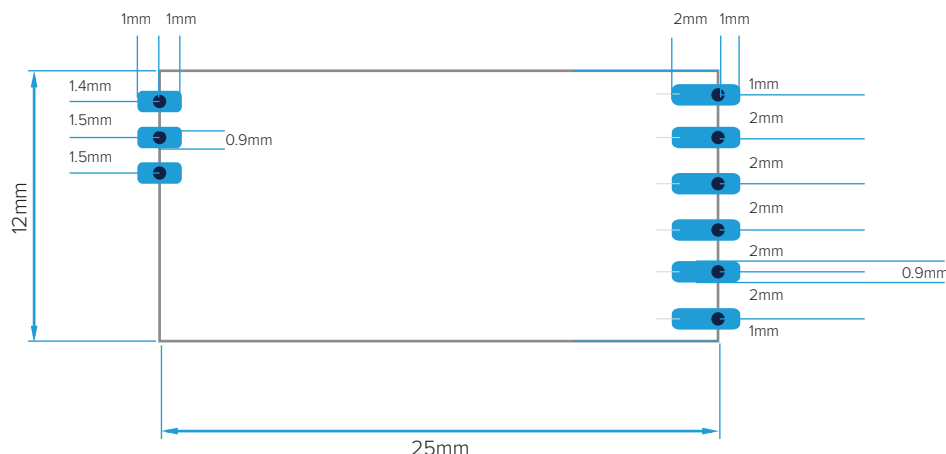




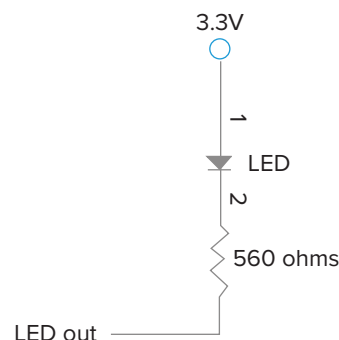
# LM823 WiFi 802.11 b/g/n Module with IPEX Receptical Host Controller Interface (HCI) via USB Interface

Product LM823  
Part No See Last Page

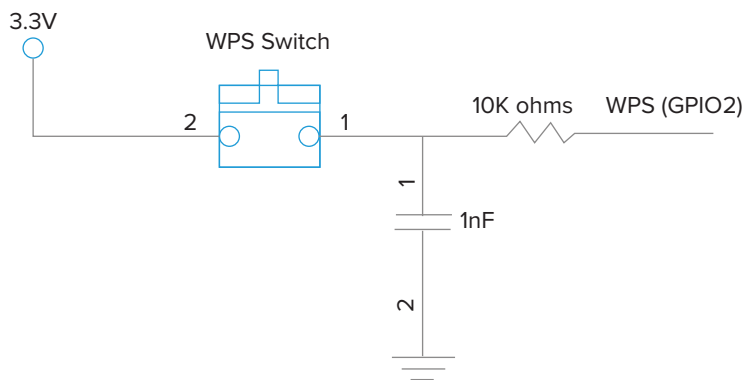
## PCB Footprint



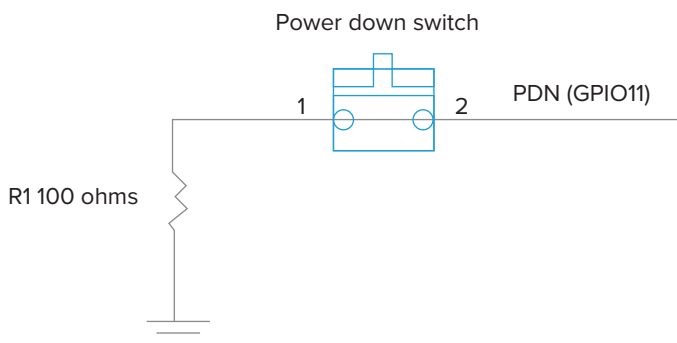
- The external circuit for WiFi activity LED (factory option)



- The function of pin 6 is optional to WPS (GPIO2) or power-down (GPIO11), a factory option. The external circuit for WPS function input (factory option), uses a tact switch.



- The external circuit power-down function input (factory option) uses a push or toggle switch.

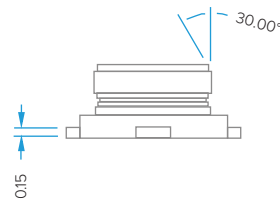
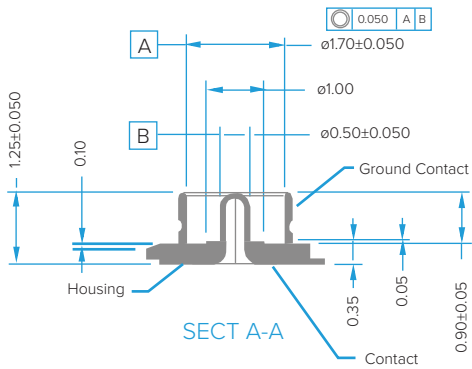
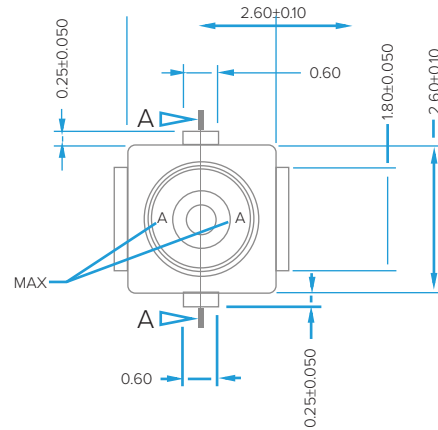
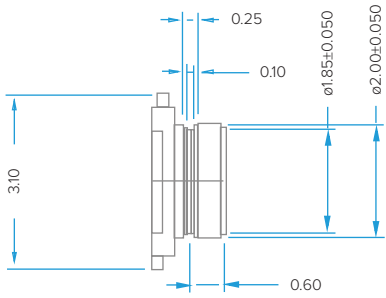


**LM823 WiFi 802.11 b/g/n Module with IPEX Receptical**  
 Host Controller Interface (HCI) via USB Interface

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**IPEX Connector Dimensions**





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

Product LM823  
Part No See Last Page

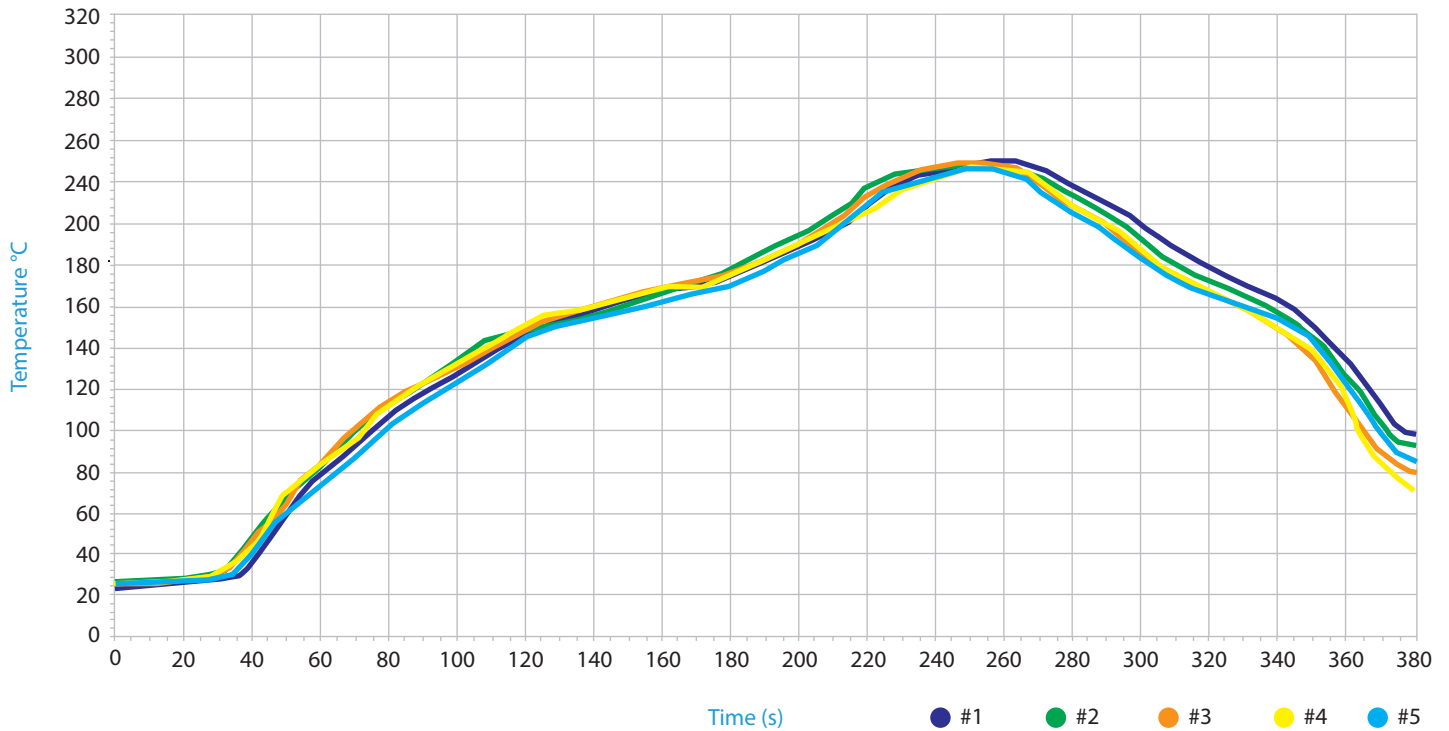
## PCB Drying Conditions

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

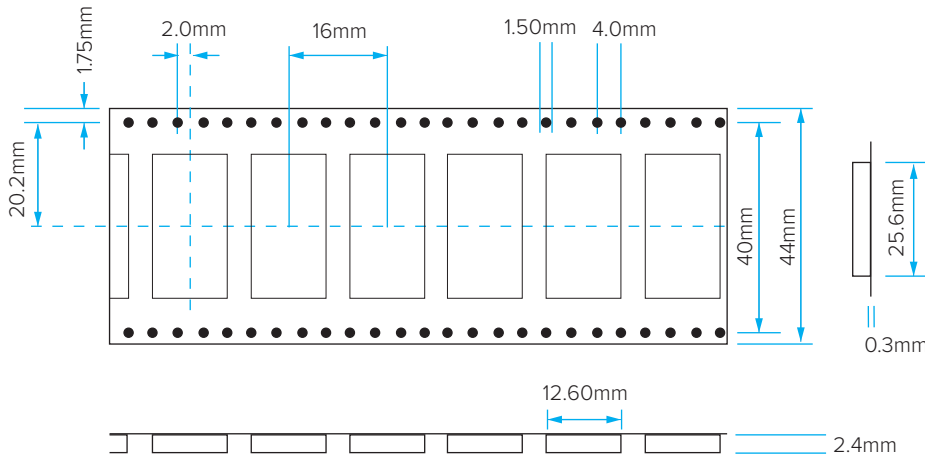
Probe	Liquidus Line		Maximum / Minimum		Slope	
	Rising 110.00-190.00	Above 230.0	Max	Min	Positive	Negative
#1	112.00	50.50	243.00	24.30	2.29	-2.97
#2	113.00	42.50	244.10	24.10	2.11	-3.08
#3	111.50	51.00	244.20	24.00	2.17	-2.69
#4	112.00	47.00	241.60	25.00	1.87	-2.13
#5	112.50	51.50	243.50	25.00	2.37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

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

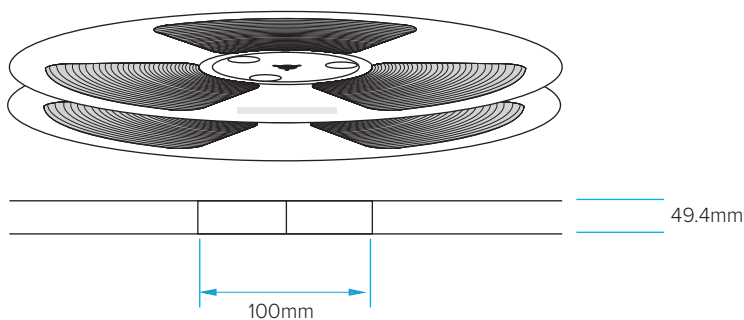
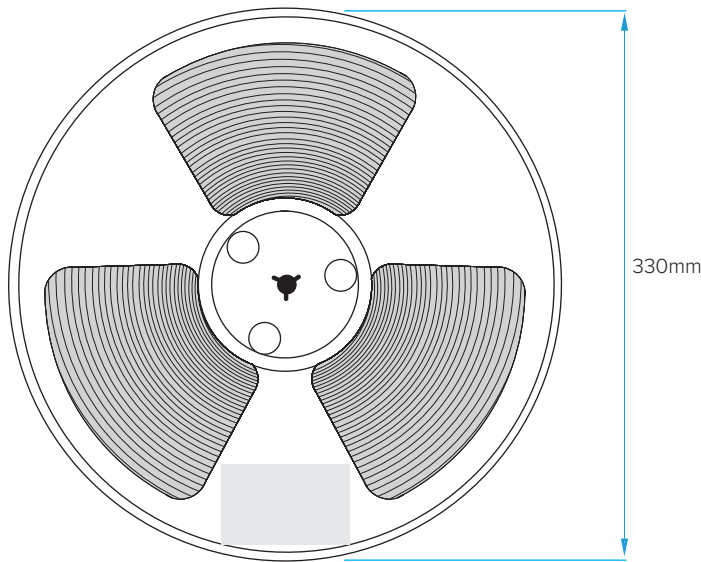
Product LM823  
 Part No See Last Page

**Tape and Reel Packaging**

**Tape Dimensions**



**Reel Dimensions**



**Notes**

- Carton Dimensions (L x W x H):  
395mm x 360mm x 305mm

**Quantities**

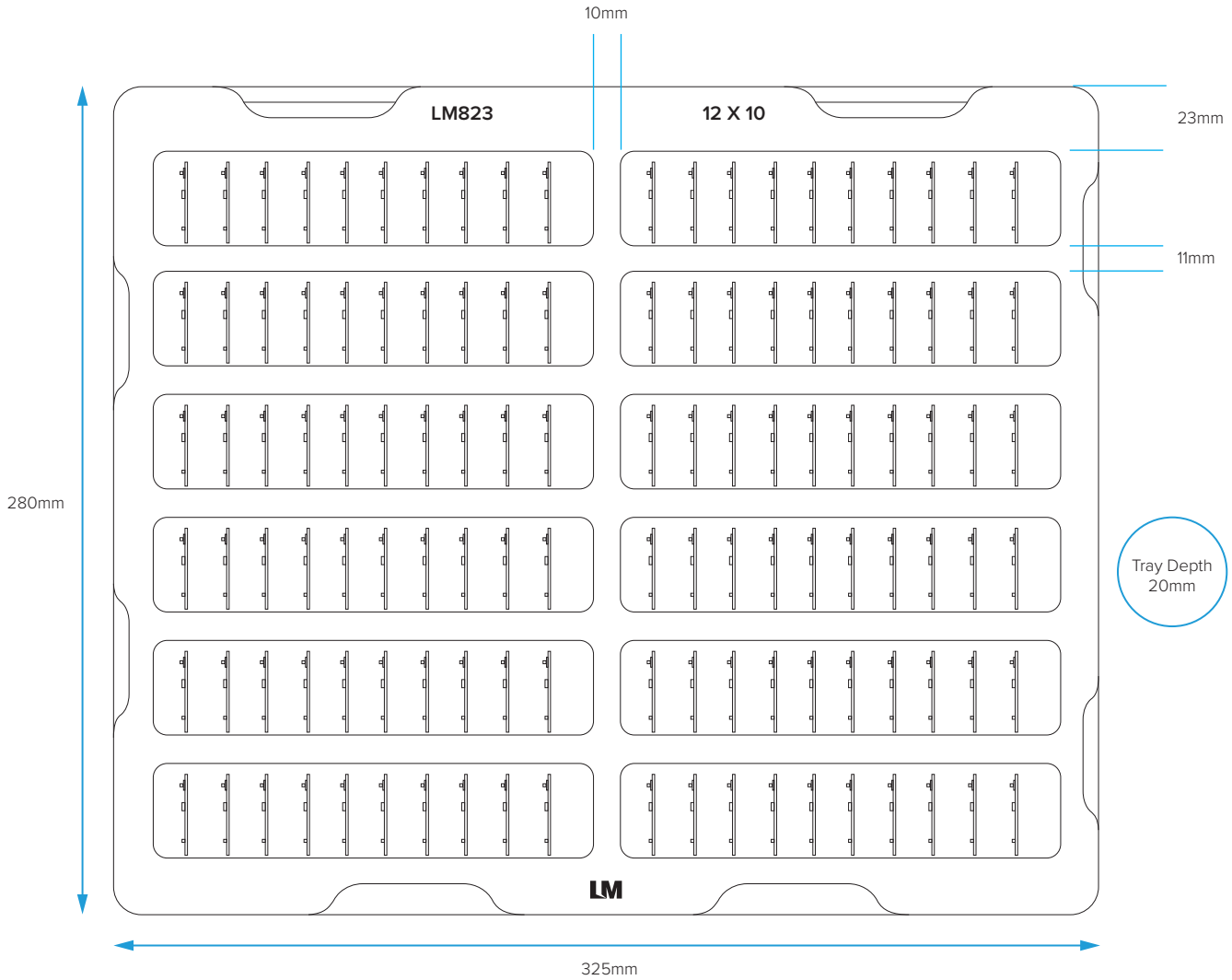
- 1500 modules per Tape
- 5 Boxes per Carton
- 7500 modules per carton

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

Product LM823  
Part No See Last Page

**Tray Packaging**

Tray Dimensions



**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

**Quantities**

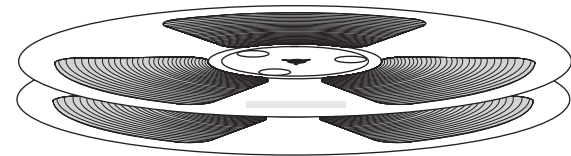
- 120 modules per Tray
- 20 Boxes per Carton
- 2400 modules per Carton

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

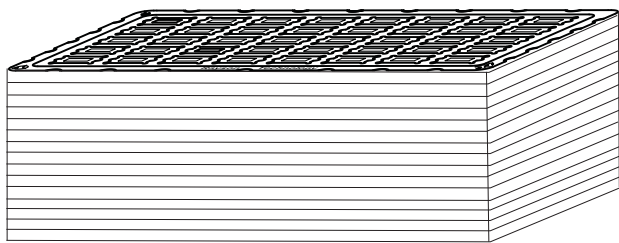
Product LM823  
Part No See Last Page

**Packaging for Tape & Reel / Tray**

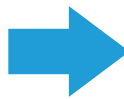
The trays/reels are stacked and inserted into an anti-static vacuum bag, with the anti-static, model name and moisture sensitive labels affixed.



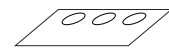
Reels are place within a vacuum bag.



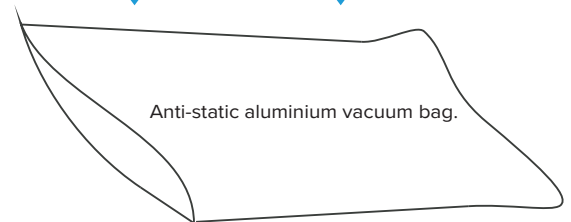
Trays are stacked up with an empty tray on the top.



drying agent

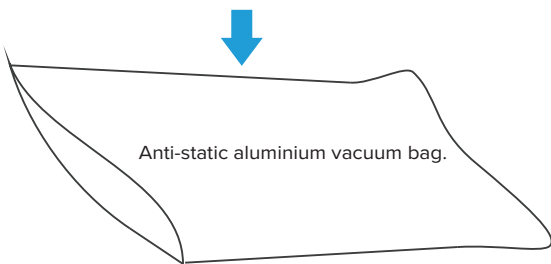


Humidity Indicator Card

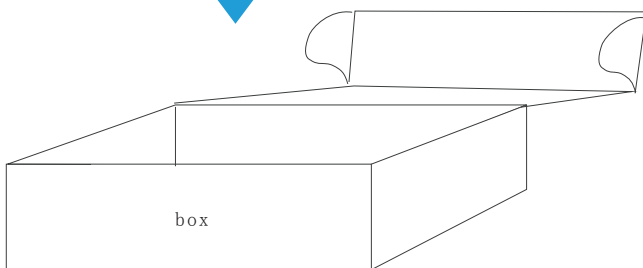


Anti-static aluminium vacuum bag.

The vacuum bag is placed inside the box and a model name label affixed on the front-side of each box.

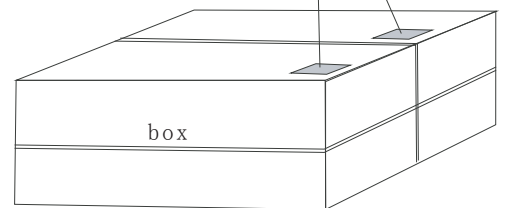


Anti-static aluminium vacuum bag.

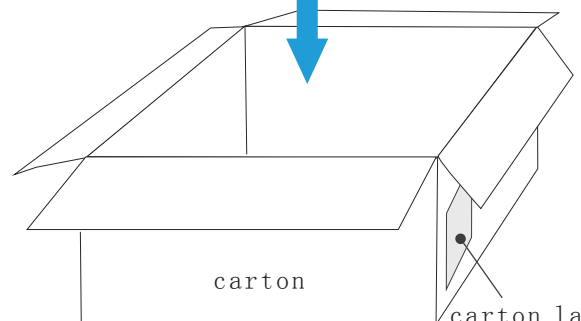


box

Model name label



box



carton

carton label

Each carton contains 4 boxes.



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

Product LM823  
Part No See Last Page

## 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.



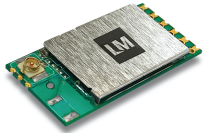


# LM823 WiFi 802.11 b/g/n Module with IPEX Receptical Host Controller Interface (HCI) via USB Interface

Product  
Part No

LM823  
See Below

## LM823 Packaging Options



823-1463-3

### 3 VOLT

#### 3V Module

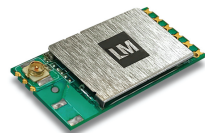
MOD SMT HCI 802.11n USB -20c EUS 3V IPEX PCS



823-1464-3

#### 3V Module

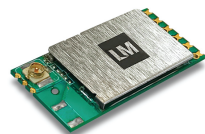
MOD SMT HCI 802.11n USB -20c EUS 3V IPEX TRAY



823-1466-3

#### 3V Module

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

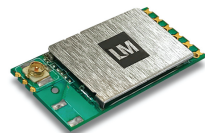


823-1468-3

#### 3V Module

MOD SMT HCI 802.11n USB -20c EUS 3V IPEX (PDN PIN 6) T&R

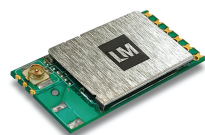
### 5 VOLT



823-1463-5

#### 5V Module

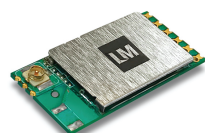
MOD SMT HCI 802.11n USB -20c EUS 5V IPEX PCS



823-1464-5

#### 5V Module

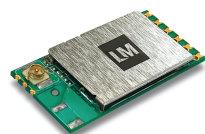
MOD SMT HCI 802.11n USB -20c EUS 5V IPEX TRAY



823-1466-5

#### 5V Module

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



823-1468-5

#### 5V Module

MOD SMT HCI 802.11n USB -20c EUS 5V IPEX (PDN PIN 6) T&R

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