



LM820 WiFi 802.11 b/g/n Module with IC Antenna

Host Controller Interface (HCI) via USB Interface

Revised

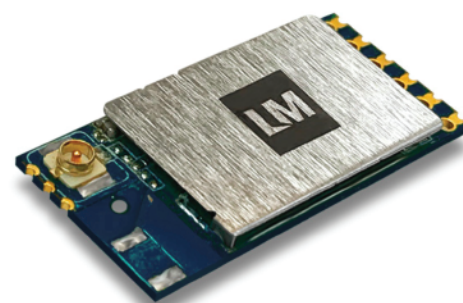
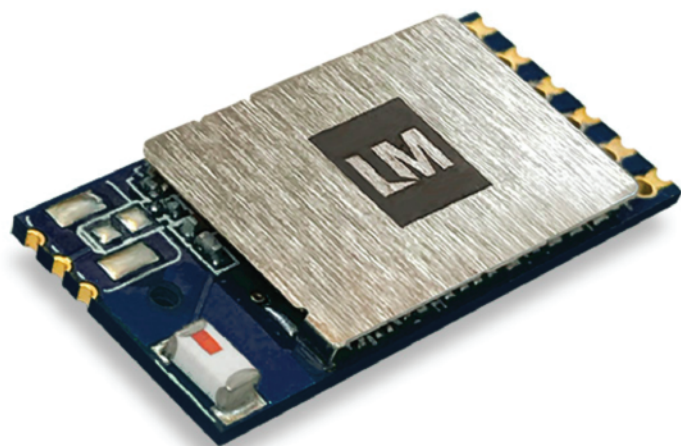
8/MAR/2021

Datasheet Version

1.4

Ordering Options

See last page



Also available with IPEX Receptical (LM821)

Features

- WiFi 802.11 b/g/n
- Operates in 2.4 GHz Frequency bands
- Onboard Chip Antenna
- Plug and Play (Linux, macOS X, Windows XP – 10 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

Important update for EU Sales



Not for Sale in the EU.

For European sales please see our LM822

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

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 LM820 WiFi USB module fully supports the 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.

Antenna Option - IPEX

This module is also offered with an IPEX receptical for increased range and for placing the module in a different location to the selected antenna. Please speak with our team for guidance when looking at this option.



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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 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	Onboard Chip Antenna
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)

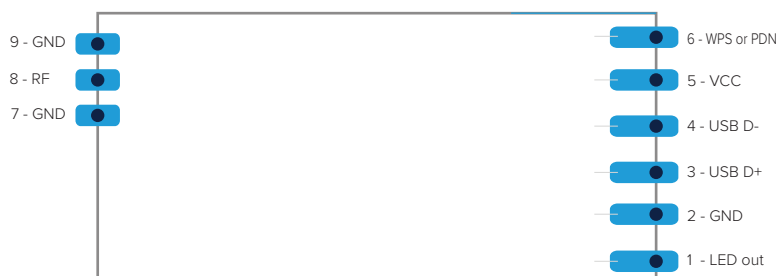
Physical Characteristics

Operating Temperature	0°C to +50°C ambient temperature
Storage Temperature	-10°C to +70°C ambient temperature
Humidity	5% to 90% maximum (non-condensing)
Dimensions (L x W x H)	25mm x 12mm x 2mm
Weight	1.03g +/- 0.25g tolerance
Certifications	See our website for this products certifications.
Compliance	RoHS, REACH and WEEE

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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

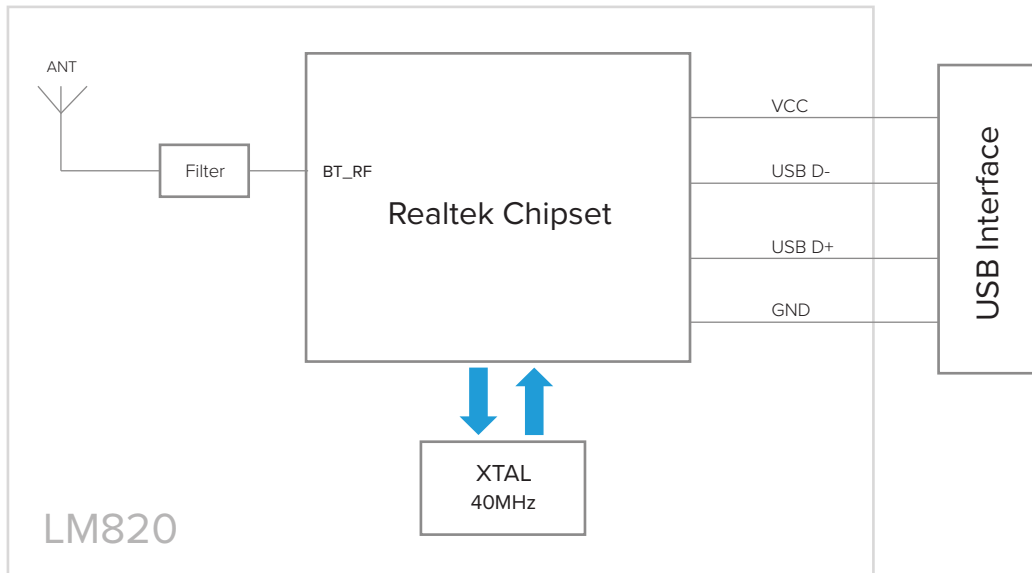
Pin Assignments

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	WiFi Protected Setup switch or Power Down switch (factory option)
7	GND	Ground	Common Ground
8	RF	-	Do not connect
9	GND	Ground	Common Ground

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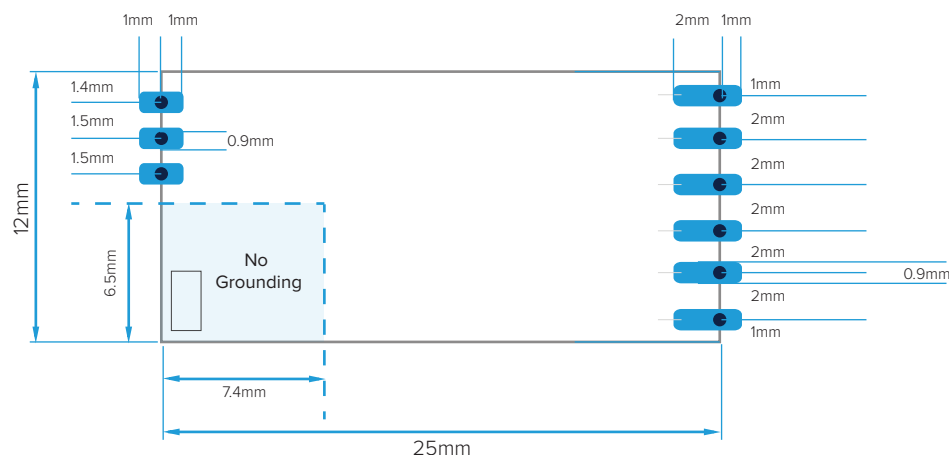
Module Block Diagram



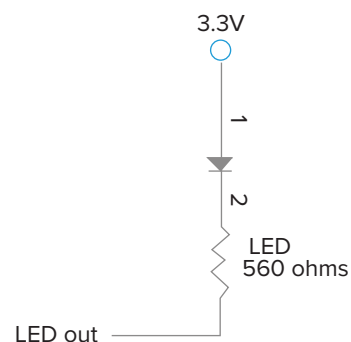
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PCB Footprint

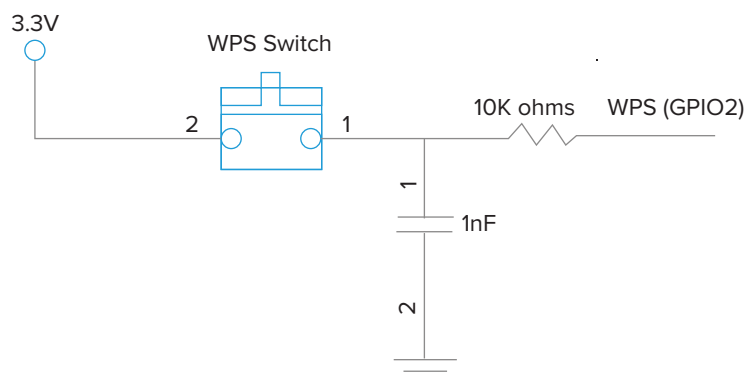


- The external circuit for WiFi activity LED (factory option)

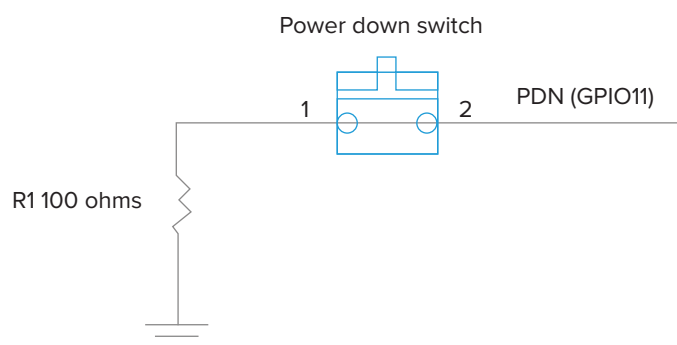


- The function of pin 6 is optional to WPS (GPIO2) or power-down (GPIO11), a factory option.

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.



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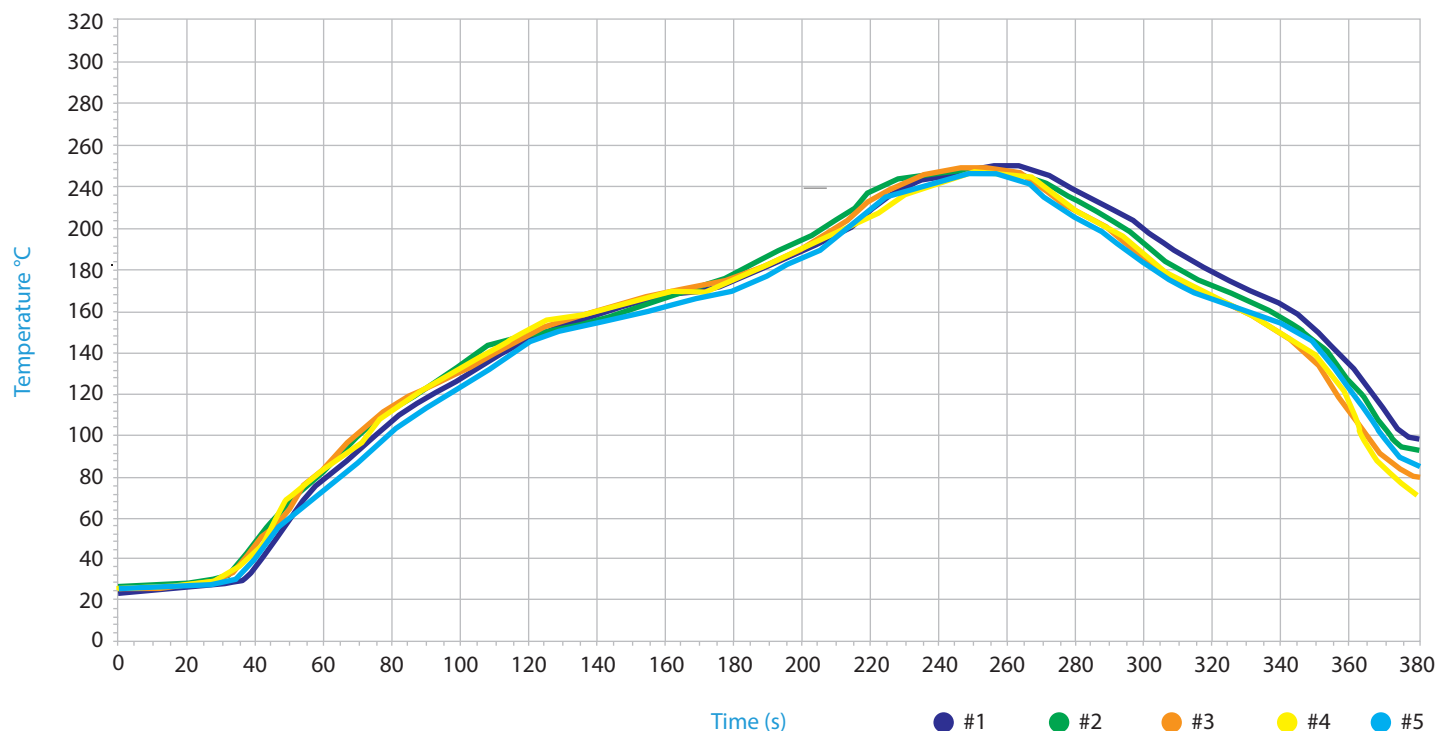
Host Controller Interface (HCI) via USB Interface

PCB Drying Conditions

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

Extracted from IPC/JEDEC J-STD-033B.1)

Soldering Reflow Chart



Zone 6	Zone 7	Zone 8	Zone 9	Zone 10
180.0	190.0	220.0	235.0	250.0
180.0	190.0	220.0	235.0	250.0
1.0	1.0	1.0	1.0	1.0

Speed (cm/min): 70.0

	Zone 1	Zone 2	Zone 3	Zone 4	Zone 5	Min	Positive	Negative
Name	Zone 1	Zone 2	Zone 3	Zone 4	Zone 5	24.30	2.29	-2.97
Max	158.0	160.0	170.0	170.0	180.0	24.10	2.11	-3.08
Min	158.0	160.0	170.0	170.0	180.0	24.00	2.17	-2.69
Length	1.0	1.0	1.0	1.0	1.0	25.00	1.87	-2.13
						25.00	2.37	-1.95

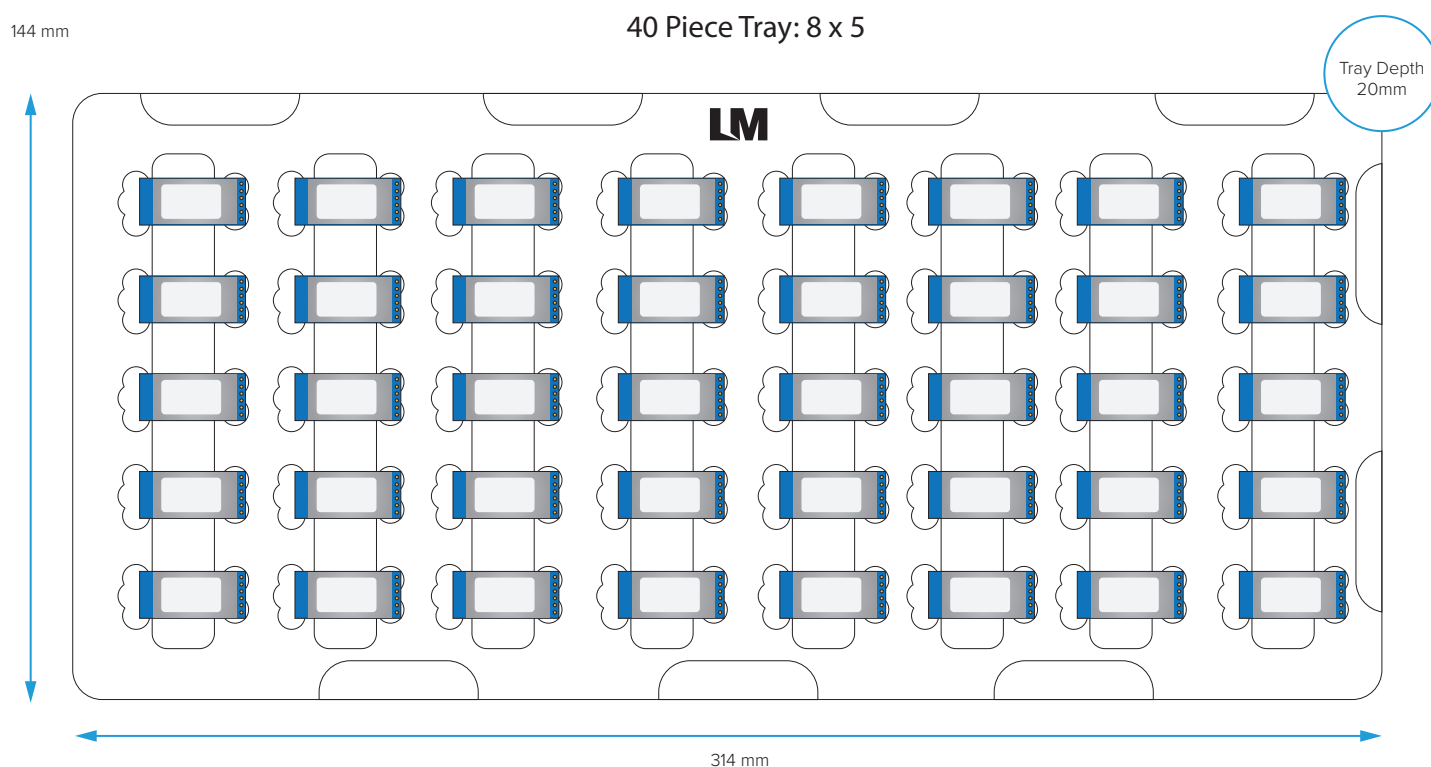
Probe	Liquidus Line		Maximum / Minimum
	Rising 110.00-190.00	Above 230.0	Max
#1	112.00	50.50	243.00
#2	113.00	42.50	244.10
#3	111.50	51.00	244.20
#4	112.00	47.00	241.60
#5	112.50	51.50	243.50

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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

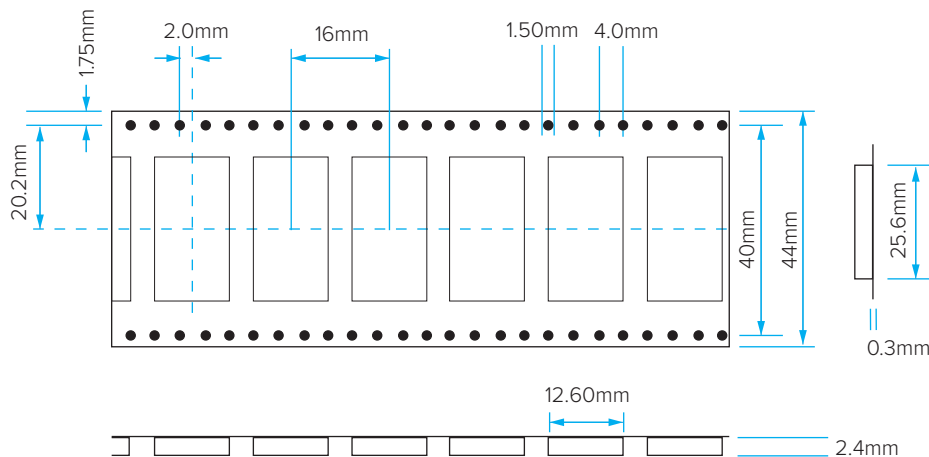
- Anti-Static PS Tray, Black.
- Material Thickness: 1mm
- Height of Tray: 20mm
- Carton Dimensions (L x W x H):
340mm x 290mm x 385mm

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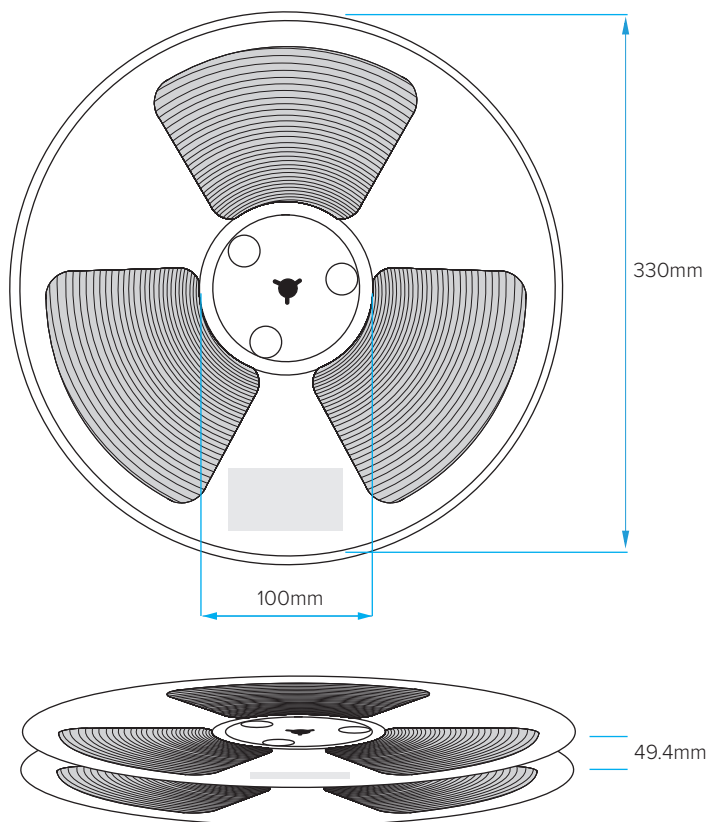
Host Controller Interface (HCI) via USB Interface

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



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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	30 NOV 2018	Part Numbers added to Packing Options.
v1.4	08 MAR 2021	Datasheet branding update.



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LM820 Packaging Options

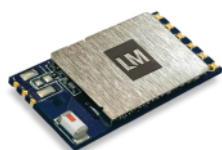
Alternative suggestion for this product due to EOL (End Of Life), see LM822

Important update for EU Sales



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820-0460

See LM822

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5 VOLT

5V Module

MOD SMT HCI 802.11n CUS USB 5V IC-ANT TRAY



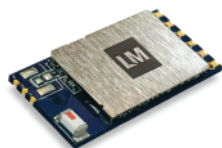
820-0462

See LM822

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5V Module

MOD SMT HCI 802.11n CUS USB 5V IC-ANT PCS



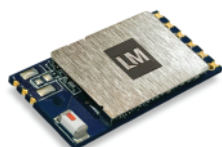
820-0466

See LM822

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5V Module

MOD SMT HCI 802.11n CUS USB 5V IC-ANT T&R



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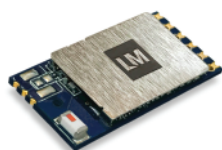
See LM822

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For EU sales see LM822

3 VOLT

3V Module

MOD SMT HCI 802.11n CUS USB 3V IC-ANT PCS



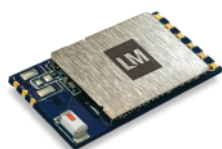
820-0468

See LM822

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3V Module

MOD SMT HCI 802.11n CUS USB 3V IC-ANT TRAY



820-0467

See LM822

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3V Module

MOD SMT HCI 802.11n CUS USB 3V IC-ANT T&R

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