

# **L80** Hardware Design

**GPS Module Series**

Rev. L80\_Hardware\_Design\_V1.2

Date: 2014-06-11















































































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Heat Test	85°C, 2 hours, operational	GB/T 2423.1-2001 Ab IEC 68-2-1 Test
Cold Test	-40°C, 2 hours, operational	GB/T 2423.1-2001 Ab IEC 68-2-1 Test
Heat Soak	90°C, 72 hours, non-operational	GB/T 2423.2-2001 Bb IEC 68-2-2 Test B
Cold Soak	-45°C, 72 hours, non-operational	GB/T 2423.1-2001 A IEC 68-2-1 Test

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# 6 Mechanics

This chapter describes the mechanical dimensions of the module.

## 6.1. Mechanical View of the Module

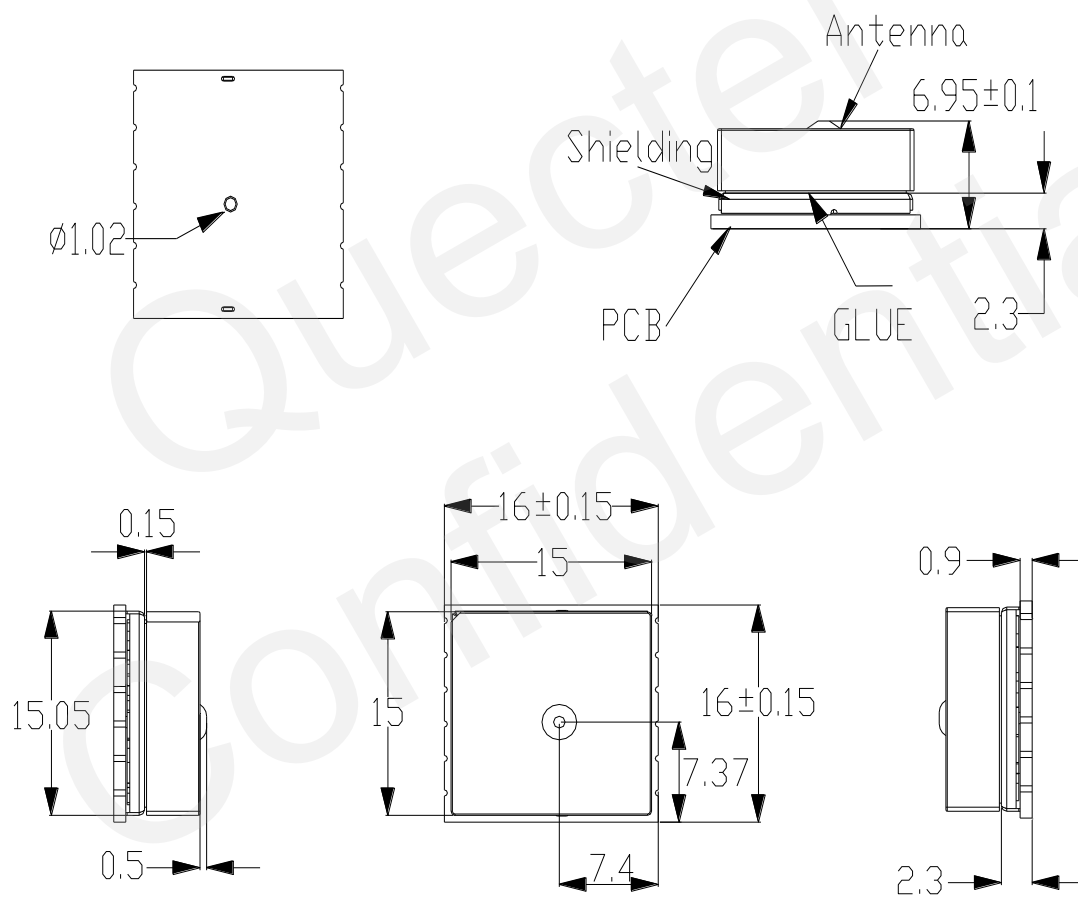


Figure 18: Mechanical View (Unit: mm)

## 6.2. Bottom Dimension and Recommended Footprint

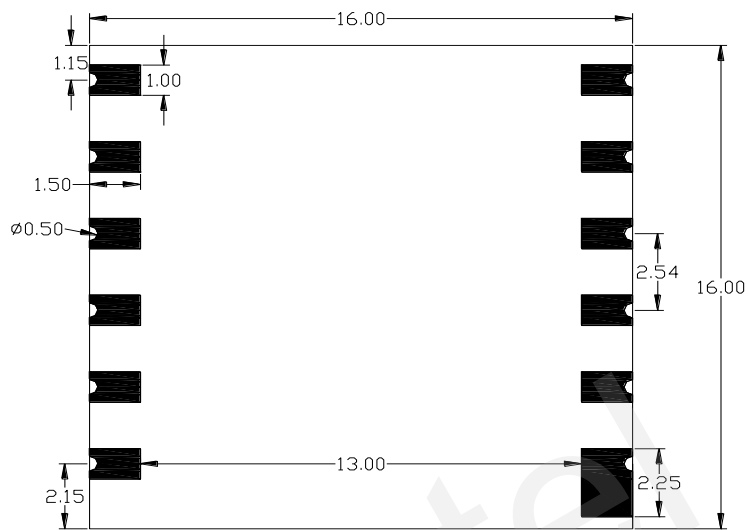


Figure 19: Bottom Dimension (Unit: mm)

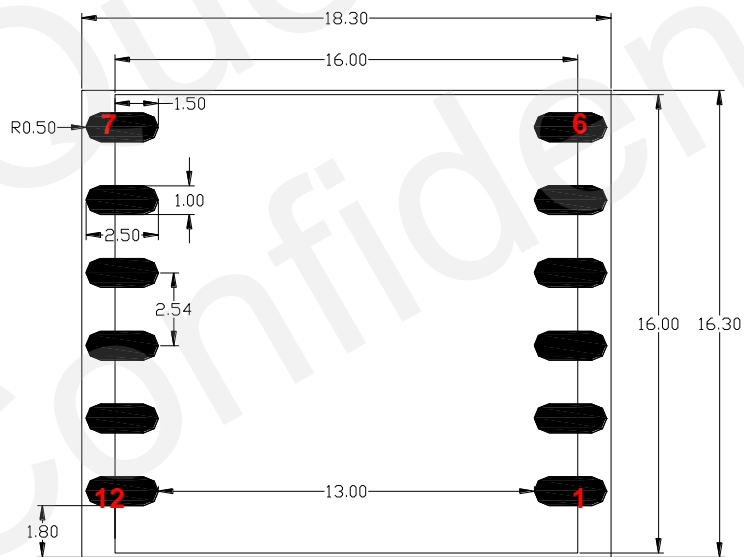


Figure 20: Footprint of Recommendation (Unit: mm)

### NOTE

For easy maintenance, please keep a distance of no less than 3mm between the module and other components in host board.

### 6.3. Top View of the Module

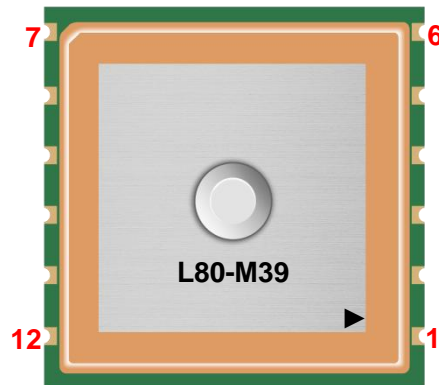


Figure 21: Top View of the Module

### 6.4. Bottom View of the Module

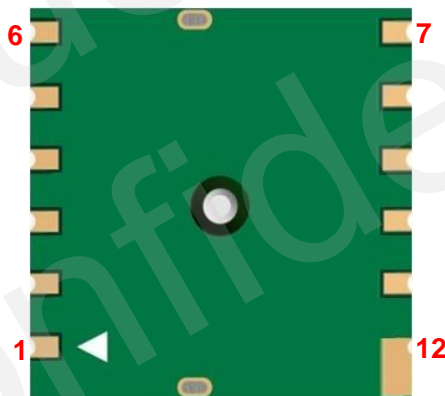


Figure 22: Bottom View of the Module

# 7 Manufacturing

## 7.1. Assembly and Soldering

L80 module is intended for SMT assembly and soldering in a Pb-free reflow process on the top side of the PCB. It is suggested that the minimum height of solder paste stencil is 100um to ensure sufficient solder volume. Pad openings of paste mask can be increased to ensure proper soldering and solder wetting over pads. It is suggested that peak reflow temperature is 235~245°C (for SnAg3.0Cu0.5 alloy). Absolute max reflow temperature is 260°C. To avoid damage to the module when it is repeatedly heated, it is suggested that the module should be mounted after the first panel has been reflowed. The following picture is the actual diagram which we have operated.

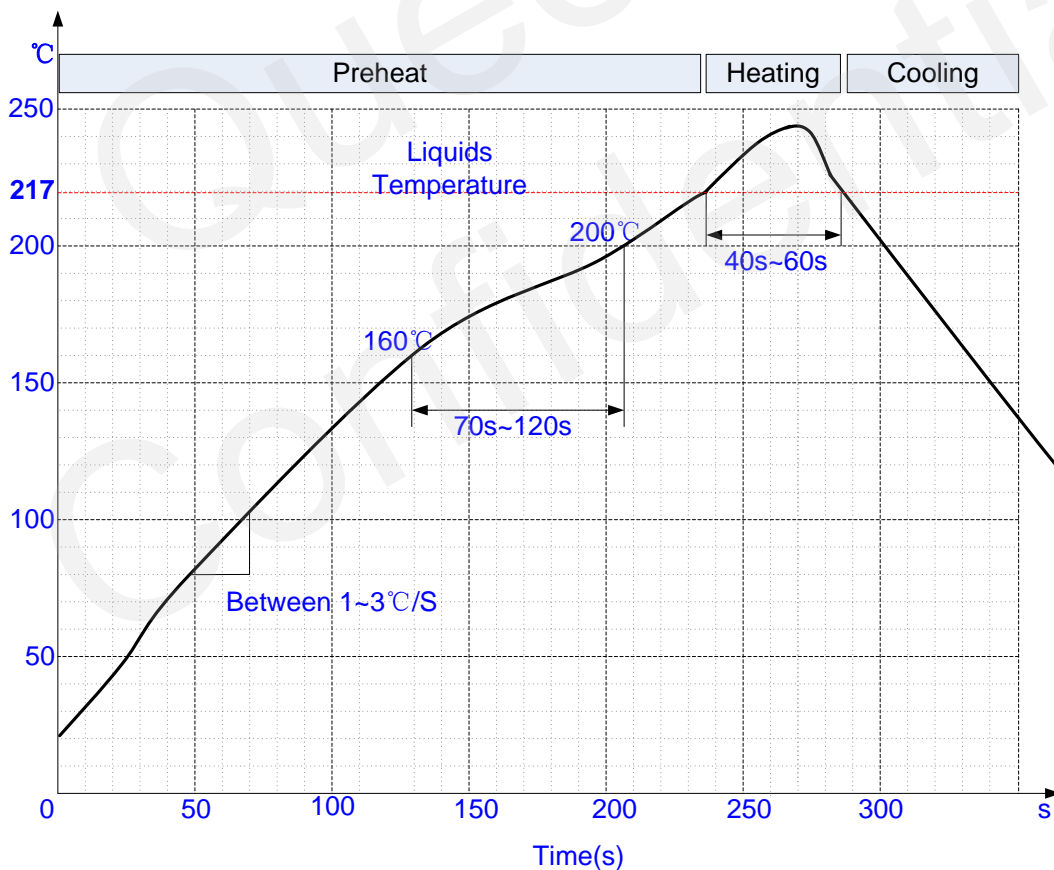


Figure 23: Ramp-soak-spike-reflow of Furnace Temperature



## 7.2. Moisture Sensitivity

L80 module is sensitivity to moisture absorption. To prevent L80 from permanent damage during reflow soldering, baking before reflow is required in following cases:

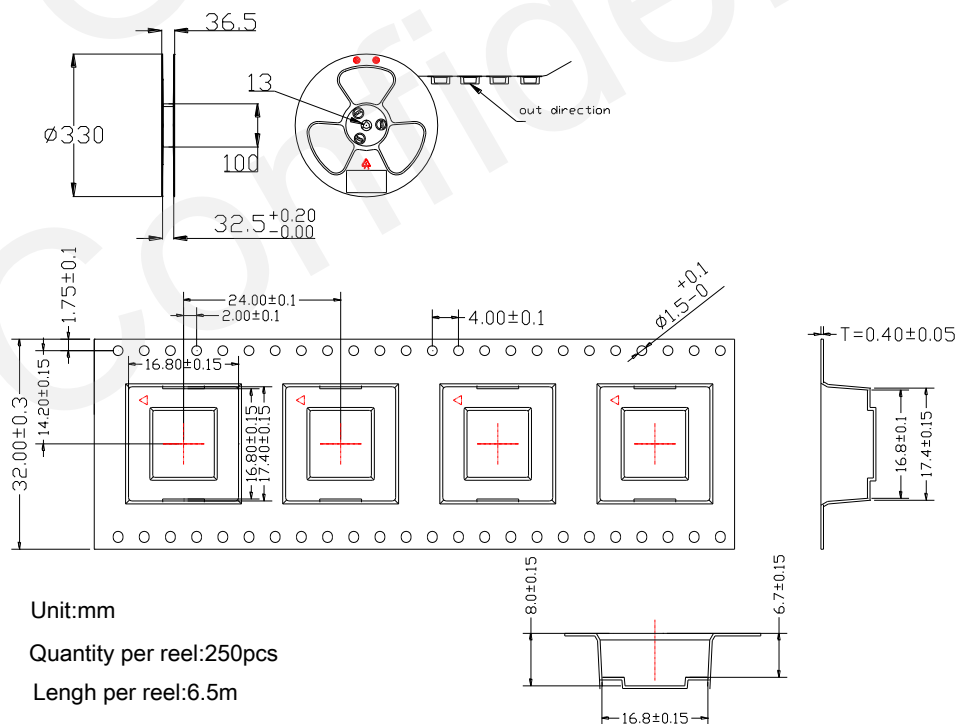
- Humidity indicator card: At least one circular indicator is no longer blue
- The seal is opened and the module is exposed to excessive humidity.

L80 should be baked for 192 hours at temperature  $40^{\circ}\text{C}+5^{\circ}\text{C}/-0^{\circ}\text{C}$  and  $<5\%$  RH in low-temperature containers, or 24 hours at temperature  $125^{\circ}\text{C}\pm 5^{\circ}\text{C}$  in high-temperature containers. Care should be taken that plastic tape is not heat resistant. L80 should be taken out before preheating, otherwise, the tape maybe damaged by high-temperature heating.

## 7.3. ESD Protection

L80 module is sensitive to ESD and requires special precautions when handling. Particular care must be exercised when handing patch antenna, duo to the risk of electrostatic charges.

## 7.4. Tape and Reel



**Figure 24: Tape and Reel Specification**

**Table 16: Reel Packing**

Model Name	MOQ for MP	Minimum Package: 250pcs	Minimum Package x4=1000pcs
L80	250pcs	Size: 370mm x 350mm x 56mm N.W: 1.5kg G.W: 2.25kg	Size: 380mm x 250mm x 365mm N.W: 6.1kg G.W: 9.4kg

## 7.5. Ordering Information

**Table 17: Ordering Information**

Model Name	Ordering Code
L80	L80-M39

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## 8 Appendix Reference

**Table 18: Related Documents**

SN	Document Name	Remark
[1]	Quectel_L80_EVB_User Guide	L80 EVB User Guide
[2]	Quectel_L80_GPS_Protocol_Specification	L80 GPS Protocol Specification
[3]	Quectel_L80_Reference_Design	L80 Reference Design

**Table 19: Terms and Abbreviations**

Abbreviation	Description
AGPS	Assisted GPS
AIC	Active Interference Cancellation
CEP	Circular Error Probable
DGPS	Differential GPS
EASY	Embedded Assist System
EGNOS	European Geostationary Navigation Overlay Service
EPO	Extended Prediction Orbit
ESD	Electrostatic Discharge
GPS	Global Positioning System
GNSS	Global Navigation Satellite System
GGA	GPS Fix Data
GLL	Geographic Position – Latitude/Longitude
GLONASS	Global Navigation Satellite System

GSA	GNSS DOP and Active Satellites
GSV	GNSS Satellites in View
HDOP	Horizontal Dilution of Precision
I/O	Input/Output
Kbps	Kilo Bits Per Second
LNA	Low Noise Amplifier
MSAS	Multi-Functional Satellite Augmentation System
MOQ	Minimum Order Quantity
NMEA	National Marine Electronics Association
PDOP	Position Dilution of Precision
PMTK	MTK Proprietary Protocol
PPS	Pulse Per Second
PRN	Pseudo Random Noise Code
QZSS	Quasi-Zenith Satellite System
RHCP	Right Hand Circular Polarization
RMC	Recommended Minimum Specific GNSS Data
SBAS	Satellite-based Augmentation System
SAW	Surface Acoustic Wave
SPDT	Single-Pole Double-Throw
TTF	Time To First Fix
UART	Universal Asynchronous Receiver & Transmitter
VDOP	Vertical Dilution of Precision
VTG	Course over Ground and Ground Speed, Horizontal Course and Horizontal Velocity
WAAS	Wide Area Augmentation System
Inom	Nominal Current
Imax	Maximum Load Current

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Vmax	Maximum Voltage Value
Vnom	Nominal Voltage Value
Vmin	Minimum Voltage Value
VIHmax	Maximum Input High Level Voltage Value
VIHmin	Minimum Input High Level Voltage Value
VILmax	Maximum Input Low Level Voltage Value
VILmin	Minimum Input Low Level Voltage Value
VImax	Absolute Maximum Input Voltage Value
VImin	Absolute Minimum Input Voltage Value
VOHmax	Maximum Output High Level Voltage Value
VOHmin	Minimum Output High Level Voltage Value
VOLmax	Maximum Output Low Level Voltage Value
VOLmin	Minimum Output Low Level Voltage Value

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