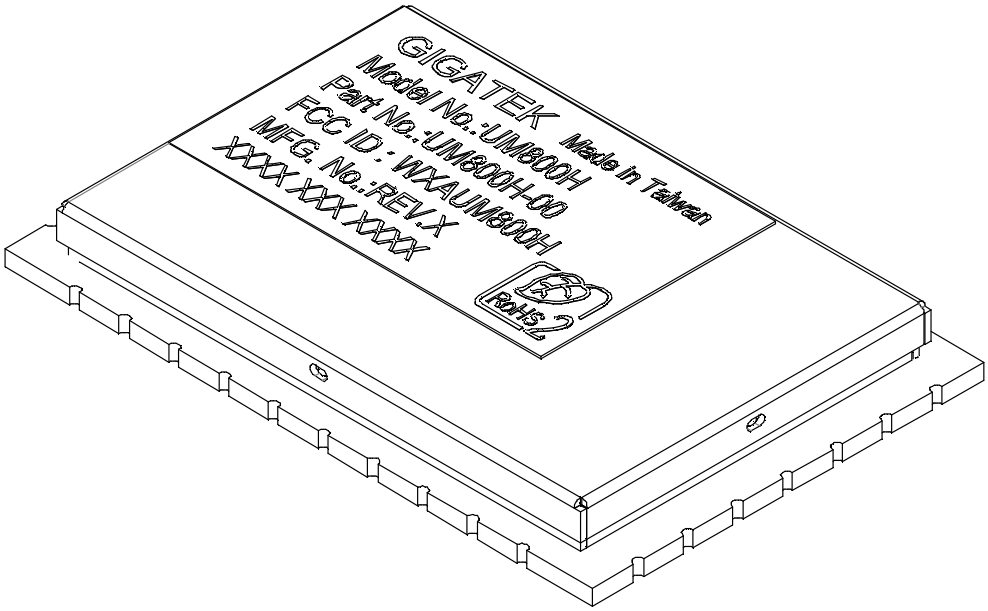
UM800H Series



Embedded UHF RFID Read/Write Module User Guide

Federal Communication Commission Interference Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

. Reorient or relocate the receiving antenna.

. Increase the separation between the equipment and receiver.

. Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

. Consult the dealer or an experienced radio/TV technician for help.

FCC Caution: To assure continued compliance, any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment. (Example - use only shielded interface cables when connecting to computer or peripheral devices).

End Product Labeling

This transmitter module is authorized only for use in devices where the antenna may be installed such that 65 cm may be maintained between the antenna and users. The final end product must be labeled in visible area with the following: "Contains FCC ID: WXAUM800H "
"

End Product Manual Information

The user manual for end users must include the following information in a prominent location "IMPORTANT NOTE: To comply with FCC RF exposure compliance requirements, the antenna used for this transmitter must be installed to provide a separation distance of at least 65 cm from all persons and must not be colocated or operating in conjunction with any other antenna or transmitter." This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions (1) This device may not cause harmful interference and (2) This device must accept any interference received, including interference that may cause undesired operation.

IMPORTANT NOTE: In the event that these conditions can not be met (for example certain laptop configurations or colocation with another transmitter), then the FCC authorization is no longer considered valid and the FCC ID can not be used on the final product. In these circumstances, the OEM integrator will be responsible for reevaluating the end product (including the transmitter) and obtaining a separate FCC authorization. This device is intended only for OEM integrators under the following conditions: The antenna must be installed such that 65 cm is maintained between the antenna and users. As long as a condition above is met, further transmitter test will not be required. However, the OEM integrator is still responsible for testing their end product for any additional compliance requirements required with this module installed (for example, digital device emissions, PC peripheral requirements, etc.).

LIMITED WARRANTY

Giga-Tms warrants that the products sold pursuant to this Agreement will perform in accordance with Giga-Tms's published specifications. This warranty shall be provided only for a period of **one year** from the date of the shipment of the product from Giga-Tms (the "Warranty Period"). This warranty shall apply only to the "Buyer" (the original purchaser, unless that entity resells the product as authorized by Giga-Tms, in which event this warranty shall apply only to the first re-purchaser).

During the Warranty Period, should this product fail to conform to Giga-Tms's specifications, Giga-Tms will, at its option, repair or replace this product at no additional charge except as set forth below. Repair parts and replacement products will be furnished on an exchange basis and will be either reconditioned or new. All replaced parts and products become the property of Giga-Tms. This limited warranty does not include service to repair damage to the product resulting from accident, disaster, unreasonable use, misuse, abuse, negligence, or modification of the product not authorized by Giga-Tms. Giga-Tms reserves the right to examine the alleged defective goods to determine whether the warranty is applicable.
Without limiting the generality of the foregoing, Giga-Tms specifically disclaims any liability or warranty for goods resold in other than Giga-Tms's original packages, and for goods modified, altered, or treated without authorization by Giga-Tms.

Service may be obtained by delivering the product during the warranty period to Giga-Tms (8F No. 31 Lane 169, Kang Ning Street, Hsi Chih Dist New Taipei City, Taiwan). If this product is delivered by mail or by an equivalent shipping carrier, the customer agrees to insure the product or assume the risk of loss or damage in transit, to prepay shipping charges to the warranty service location, and to use the original shipping container or equivalent. Giga-Tms will return the product, prepaid, via a three (3) day shipping service. A Return Material Authorization ("RMA") number must accompany all returns. Buyers may obtain an RMA number by contacting with sales@gigatms.com.tw

EACH BUYER UNDERSTANDS THAT THIS GIGA-TMS PRODUCT IS OFFERED AS IS. GIGA-TMS MAKES NO OTHER WARRANTY, EXPRESS OR IMPLIED, AND GIGA-TMS DISCLAIMS ANY WARRANTY OF ANY OTHER KIND, INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

IF THIS PRODUCT DOES NOT CONFORM TO GIGA-TMS'S SPECIFICATIONS, THE SOLE REMEDY SHALL BE REPAIR OR REPLACEMENT AS PROVIDED ABOVE. GIGA-TMS'S LIABILITY, IF ANY, SHALL IN NO EVENT EXCEED THE TOTAL AMOUNT PAID TO GIGA-TMS UNDER THIS AGREEMENT. IN NO EVENT WILL GIGA-TMS BE LIABLE TO THE BUYER FOR ANY DAMAGES, INCLUDING ANY LOST PROFITS, LOST SAVINGS, OR OTHER INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OF, OR INABILITY TO USE, SUCH PRODUCT, EVEN IF GIGA-TMS HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES, OR FOR ANY CLAIM BY ANY OTHER PARTY.

LIMITATION ON LIABILITY

EXCEPT AS PROVIDED IN THE SECTIONS RELATING TO GIGA-TMS'S LIMITED WARRANTY, GIGA-TMS'S LIABILITY UNDER THIS AGREEMENT IS LIMITED TO THE CONTRACT PRICE OF THIS PRODUCT.
GIGA-TMS MAKES NO OTHER WARRANTIES WITH RESPECT TO THE PRODUCT, EXPRESSED OR IMPLIED, EXCEPT AS MAY BE STATED IN THIS AGREEMENT, AND GIGA-TMS DISCLAIMS ANY IMPLIED WARRANTY, INCLUDING WITHOUT LIMITATION ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.
GIGA-TMS SHALL NOT BE LIABLE FOR CONTINGENT, INCIDENTAL, OR CONSEQUENTIAL DAMAGES TO PERSONS OR PROPERTY. GIGA-TMS FURTHER LIMITS ITS LIABILITY OF ANY KIND WITH RESPECT TO THE PRODUCT, INCLUDING ANY NEGLIGENCE ON ITS PART, TO THE CONTRACT PRICE FOR THE GOODS.
GIGA-TMS'S SOLE LIABILITY AND BUYER'S EXCLUSIVE REMEDIES ARE STATED IN THIS SECTION AND IN THE SECTION RELATING TO GIGA-TMS'S LIMITED WARRANTY.

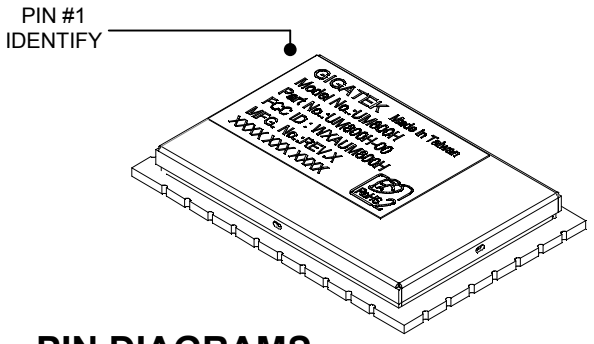
GIGA-TMS PROMAG

UM800H

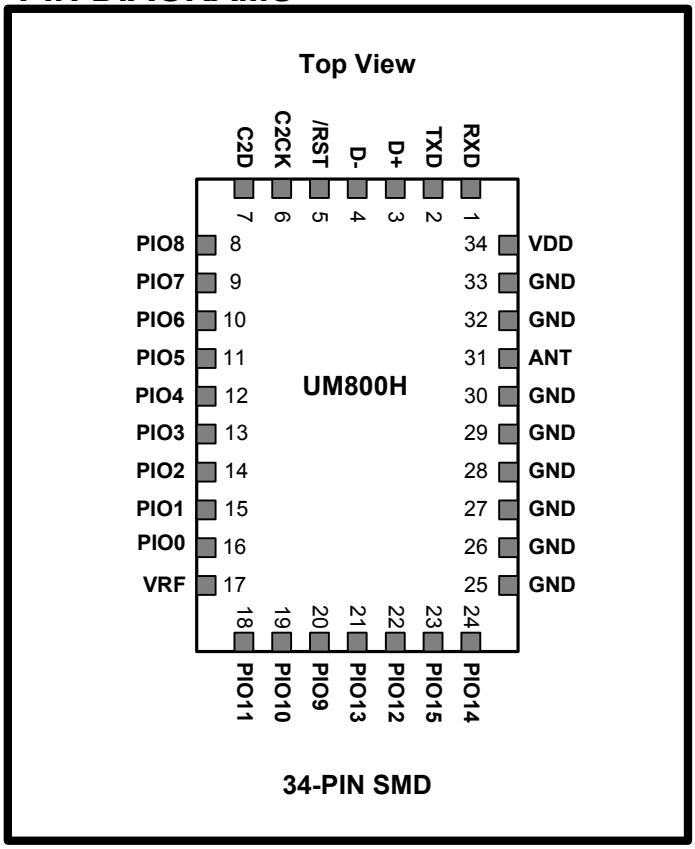
Embedded UHF RFID Read/Write Module

FEATURES

- Low cost ,Small Outline 30x20x3.2mm
- Compliant with EPCglobal Class1 Gen2 (ISO18000-6C)
- Operating Frequency 840 ~ 960 MHz
- Adjustable Transmit Output Power from +10 to +27dBm
- Operate voltage range 2.7~5.0 V
- Low power consumption: 50mA@ standby, 700mA @27dBm Output
- USB HID or UART TTL Interface
- 16 GPIO for Customize Application
- No RF Connect and Cable request
- Support In-System Programmable and Self Firmware Update



PIN DIAGRAMS



APPLICATIONS

- Access Control System
- Security System
- RFID Printer
- Mobile Phone
- Point of Sale
- Patrol System
- Portable Battery Device

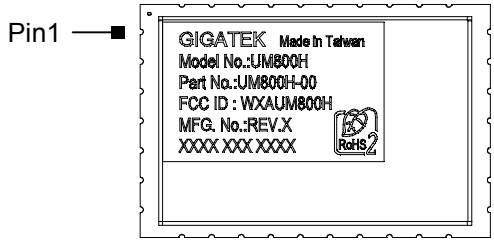
DESCRIPTION

UM800H is a compact and practical embedded UHF reader module which compliant with EPC Global Class1 Gen2.

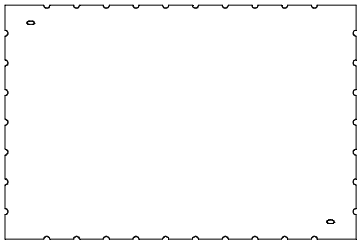
With small dimensions (30x20x3.2mm) and low power consumption (700mA, 27dBm for output) make UM800H an ECO friendly choice for your system.
With adjustable frequency (840~960 Mhz), adjustable transmit output (10 to 27dBm), optional interface (USB or UART TTL) and 16 GPIO enable you the flexibility for various applications under different environments.

UHF is one of the best solutions for middle and long range RFID applications.
Such as access control, parking, logistic and vehicle tracking etc.
Using UM800H, you can extend the wonderful experience to portable or mobile devices.
GIGA-TMS makes what you need and customizes what you want.

PIN FUNCTIONS



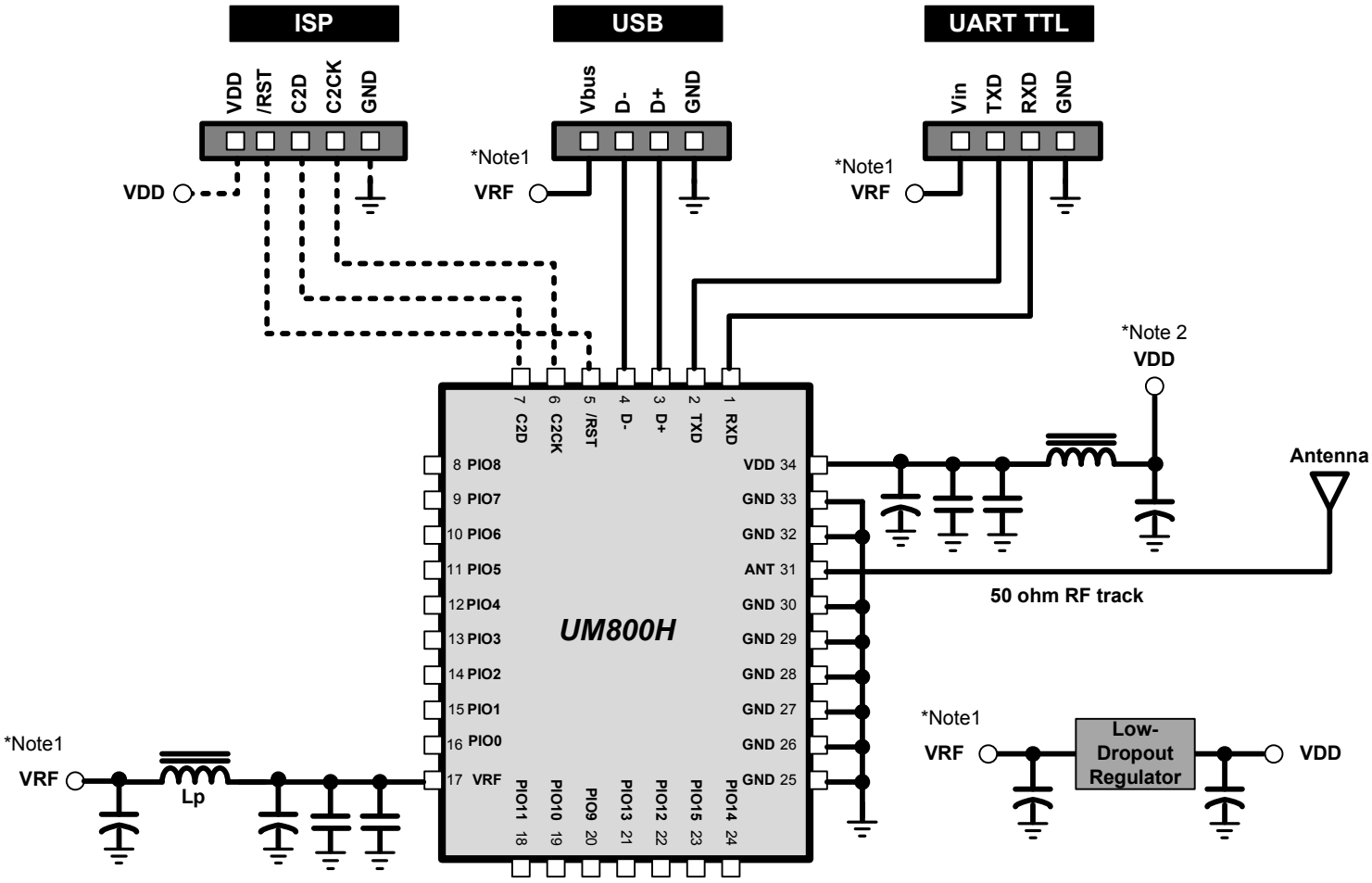
Top View



Bottom View

PIN	PIN NAME	I/O	FUNCTION DESCRIPTION
1	RXD	I	UART asynchronous input.
2	TXD	O	UART asynchronous transmit.
3	D+	I/O	USB Differential Plus Line (Option)
4	D-	I/O	USB Differential Minus Line (Option)
5	/RST	P	Reset Pin
6	C2CK	I/O	ISP
7	C2D	I/O	ISP
8	PIO8	I/O	GPIO , 5 V tolerant with high sink current
9	PIO7	I/O	GPIO , 5 V tolerant with high sink current
10	PIO6	I/O	GPIO , 5 V tolerant with high sink current
11	PIO5	I/O	GPIO , 5 V tolerant with high sink current
12	PIO4	I/O	GPIO , 5 V tolerant with high sink current
13	PIO3	I/O	GPIO , 5 V tolerant with high sink current
14	PIO2	I/O	GPIO , 5 V tolerant with high sink current
15	PIO1	I/O	GPIO , 5 V tolerant with high sink current
16	PIO0	I/O	GPIO , 5 V tolerant with high sink current
17	VRF	P	PA Power Supply Input 3.0~5.0v +/- 2% (5V Full power for 27dBm)
18	PIO11	I/O	GPIO , 5 V tolerant with high sink current
19	PIO10	I/O	GPIO , 5 V tolerant with high sink current
20	PIO9	I/O	GPIO , 5 V tolerant with high sink current
21	PIO13	I/O	GPIO , 5 V tolerant with high sink current
22	PIO12	I/O	GPIO , 5 V tolerant with high sink current
23	PIO15	I/O	GPIO , 5 V tolerant with high sink current
24	PIO14	I/O	GPIO , 5 V tolerant with high sink current
25~30	GND	P	Power Ground
31	ANT	A	Connect To Antenna
32~33	GND	P	Power Ground
34	VDD	P	2.7V~3.6V power supply (For optimal power supply rejection and performance a supply voltage of at least 3.3V is required.)
[Note 1] **I** : Input , **O** : Output , **I/O** : Input or Output , **P** : Power , **A** : Antenna			

APPLICATION CIRCUIT



[Note]

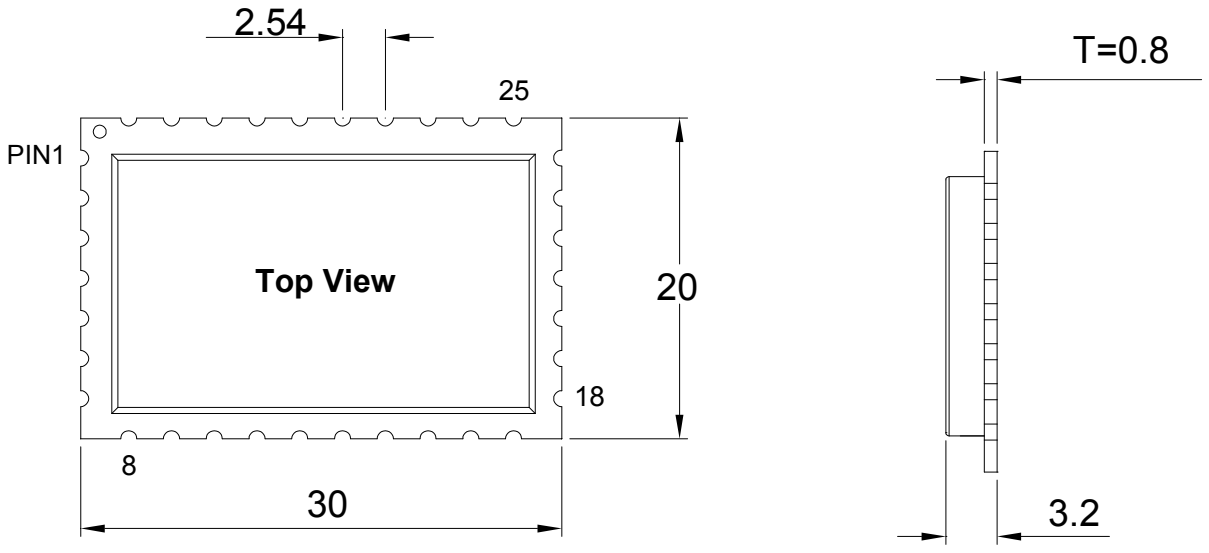
1. **VRF = 3.0~5.0V +/- 2% (5.0V Full Power Output)**
2. **VDD = 2.7~3.6V +/- 2%**

SPECIFICATIONS

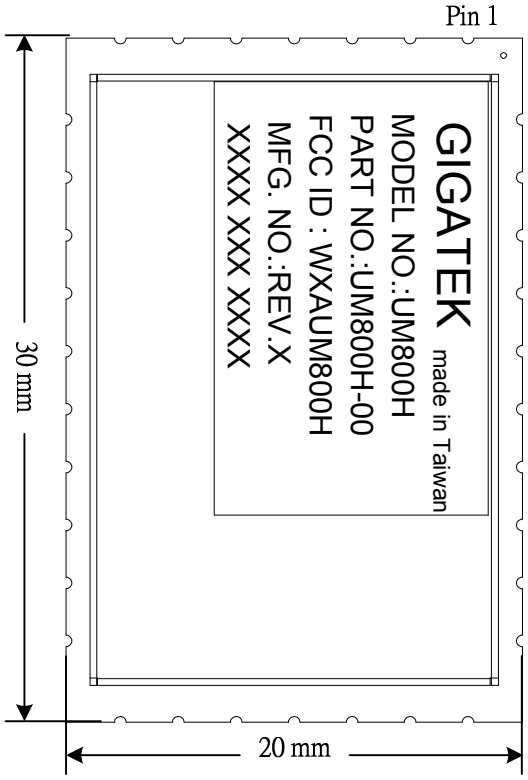
POWER REQUIREMENTS	3.0V ~ 5.0V regulated for VRF. A linear regulator is recommended. 2.7V ~ 3.6V regulated for VDD.
CURRENT CONSUMPTION	700 mA/5V @ 27dBm RF Power Output
RFID PROTOCOL SUPPORT	EPC Class 1 Gen 2, ISO18000-6C
SUPPORT EPC DRM	Yes
FREQUENCY	840 ~ 960MHz
DEMODULATION	PRASK & ASK
DATA ENCODING	FM0 or Miller code
BIT RATE	Supports uplink data rate of 40,160, 256, 320, 640 Kbps
TX OUTPUT POWER	10 ~ 27 dBm
ANTENNA TYPE	Mono-static
HOST INTERFACE	UART (Default : 115200 Baud rate) Programmable USB HID
INPUT / OUTPUT PIN	Programmable 16 Input / Output Pin by Customer
CONFIGURE INTERFACE	UART , 115200 bps, 8N1
DIMENSIONS	30 x 20 x 3.2 mm
WEIGHT	< 10 gm
ENVIRONMENT	Operating Temp : -10℃ ~ +60℃ Humidity : 10 ~ 90 % Non-condensing

PACKAGE DESCRIPTION

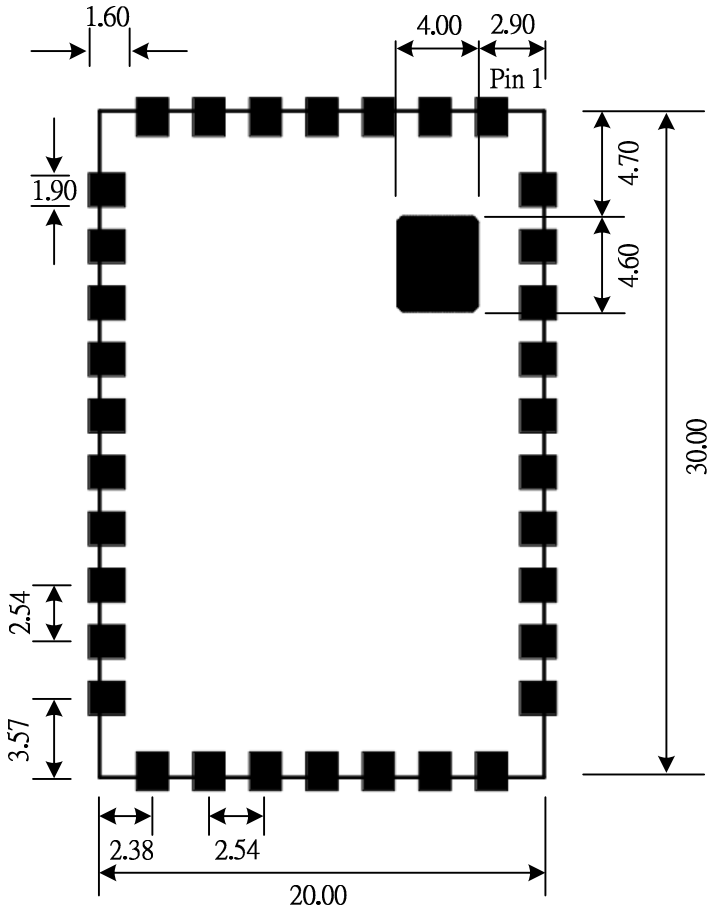
34-Pin SMD Package
Dimensions in Millimeters



Package Drawings and Markings



Example Board Layout



Reflow Profile