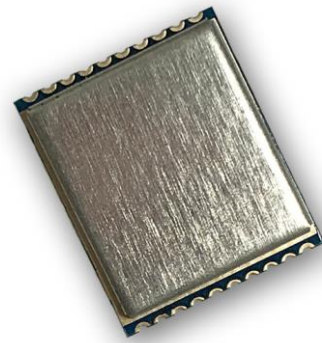


RYS8838

3.3V UART interface GNSS module with
Untethered Dead Reckoning (UDR)

Datasheet



13mm*11mm*2.2mm



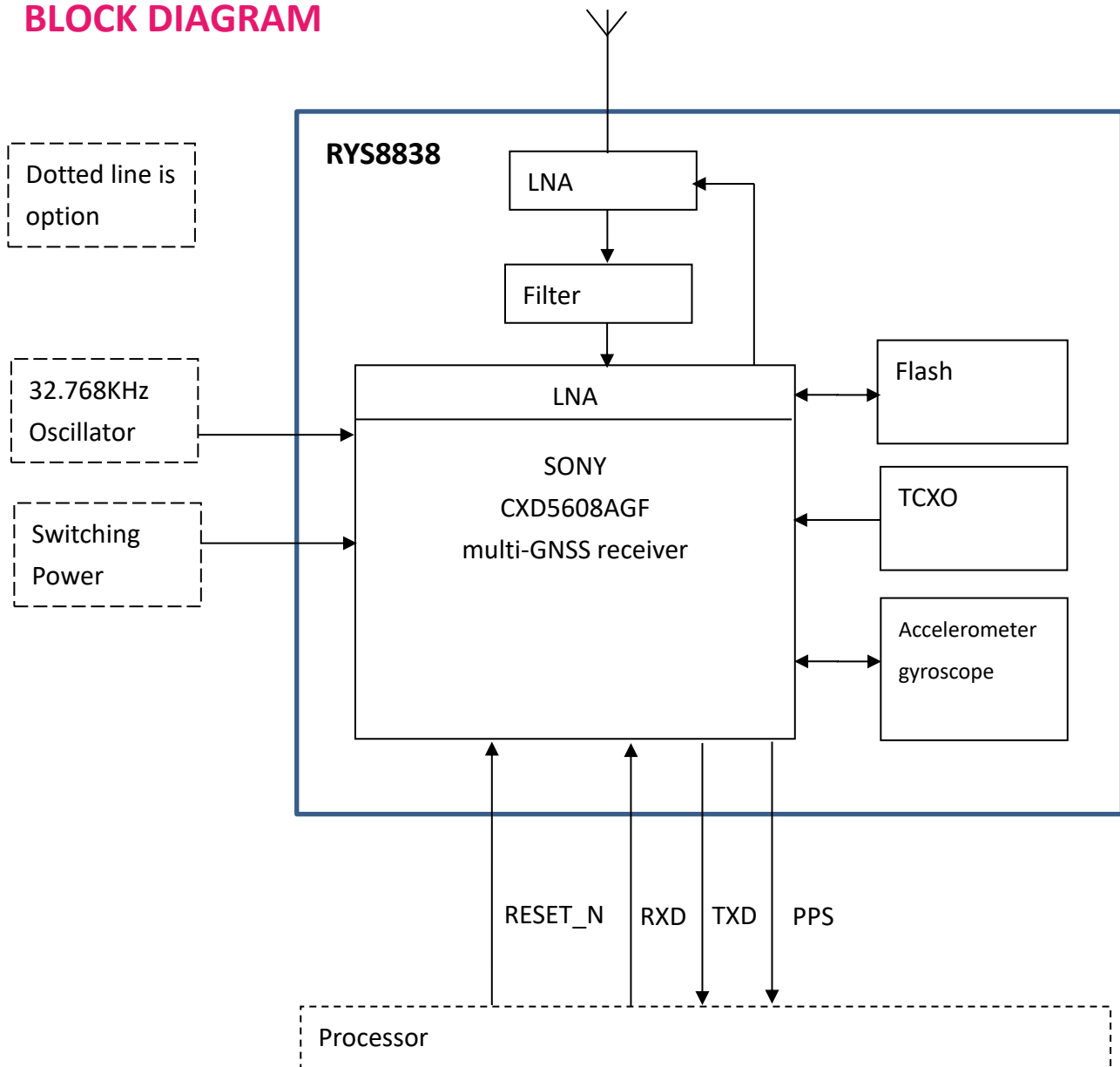
PRODUCT DESCRIPTION

The RYS8838 is a multi-GNSS module with high sensitivity, fast acquisition engine and an Untethered Dead Reckoning (UDR) function.

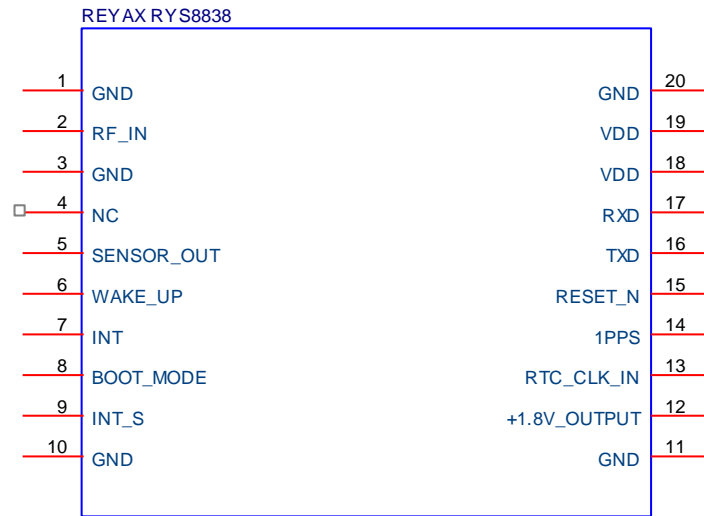
FEATURES

- SONY CXD5608AGF Engine.
- A multi-GNSS module for GPS(L1 C/A), GLONASS(L1 OF), SBAS(L1 C/A), QZSS(L1 C/A), BeiDou(B1) and Galileo(E1 CBOC).
- Including SAW filter, LNA and TCXO.
- Embedded digital noise filters and spectrum analyzer.
- Untethered Dead Reckoning (UDR) function

BLOCK DIAGRAM



PIN DESCRIPTION



Pin	Name	I/O	Condition
1	GND	-	Ground
2	RF_IN	I	GNSS RF Signal input.
3	GND	-	Ground
4	NC	-	Leave Unconnected.
5	SENSOR_OUT	-	Leave Unconnected.
6	WAKE_UP	-	Leave Unconnected.
7	INT	-	Leave Unconnected.
8	BOOT_MODE	I	BOOT Recovery. *If not used, Please connect to GND.
9	INT_S	-	Leave Unconnected.
10	GND	-	Ground
11	GND	-	Ground
12	+1.8V_OUTPUT		+1.8V 20mA power output
13	RTC_CLK_IN	I	32.768KHz RTC clock input. *If not used, Please Leave Unconnected.
14	1PPS	O	Time pulse output.
15	RESET_N	I	Low reset pin.
16	TXD	O	Serial interface Output
17	RXD	I	Serial interface Input
18	VDD	I	Power Supply and I/O Voltage.
19	VDD	I	Power Supply and I/O Voltage.
20	GND	-	Ground

SPECIFICATION

Item	Min.	Typical	Max.	Unit	Condition
Power Supply Voltage	3.2	3.3	3.4	V	VDD
GNSS continuous mode					
Satellite acquisition Current		32		mA	
Satellite tracking Current		28		mA	
Idle Current		17		mA	Waiting for command
Default Baud Rate		115200		bps	8,N,1
Digital input level high	0.7*VDD		VDD+0.3	V	VIH
Digital input level low	-0.3		0.3*VDD	V	VIL
Digital output level high	0.8*VDD		VDD	V	VOH 2mA
Digital output level low	0		0.2*VDD	V	VOL 2mA
GNSS Center Frequency		1561.098 1575.42 1602.5625		MHz	BeiDou GPS Glonass
Navigation update rate		1		Hz	
Accuracy		1		M	Signal strength is -130dBm
Cold starts		35		Sec.	Signal strength is -130dBm
Hot starts		2		Sec.	
Tracking Sensitivity		-161		dBm	
Hot starts Sensitivity		-160		dBm	
Cold starts Sensitivity		-147		dBm	
Operating Temperature	-40	25	+85	°C	
Dimensions					13mm*11mm*2.2mm
Weight		0.8		g	

REFLOW SOLDERING

Consider the "IPC-7530 Guidelines for temperature profiling for mass soldering (reflow and wave) processes, published 2001.

Preheat phase

Initial heating of component leads and balls. Residual humidity will be dried out. Please note that this preheat phase will not replace prior baking procedures.

- Temperature rise rate: max. 3 °C/s If the temperature rise is too rapid in the preheat phase it may cause excessive slumping.
- Time: 60 - 120 s If the preheat is insufficient, rather large solder balls tend to be generated. Conversely, if performed excessively, fine balls and large balls will be generated in clusters.
- End Temperature: 150 - 200 °C If the temperature is too low, non-melting tends to be caused in areas containing large heat capacity.

Heating/ Reflow phase

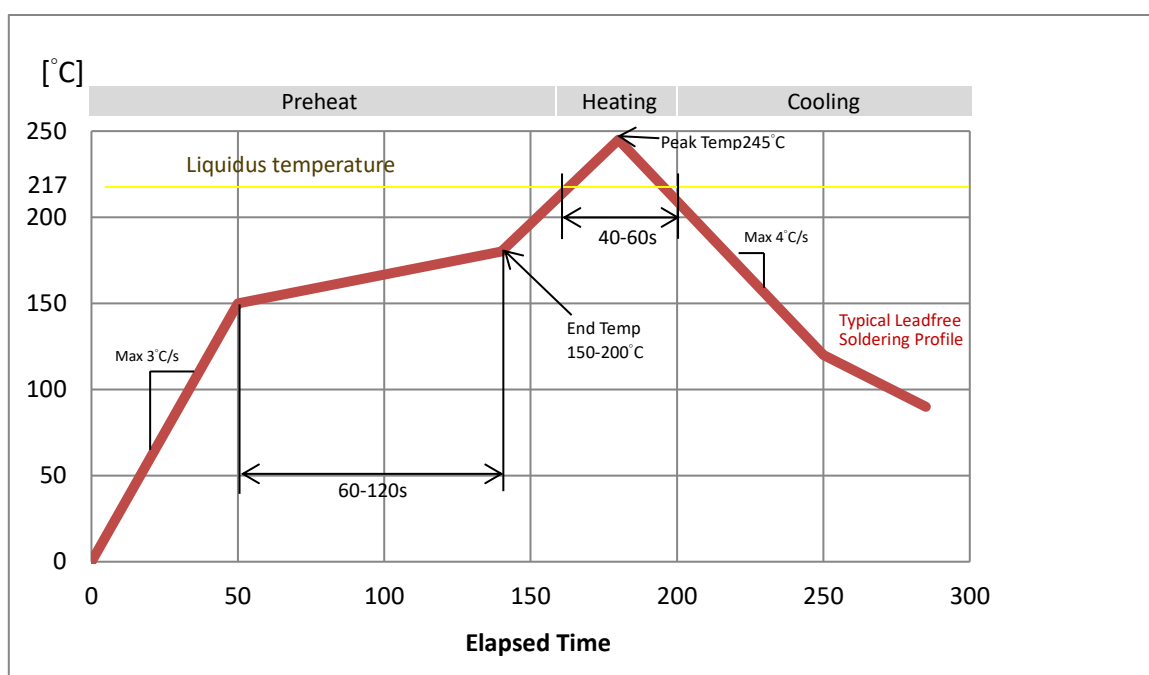
The temperature rises above the liquidus temperature of 217°C. Avoid a sudden rise in temperature as the slump of the paste could become worse.

- Limit time above 217 °C liquidus temperature: 40 - 60 s
- Peak reflow temperature: 245 °C

Cooling phase

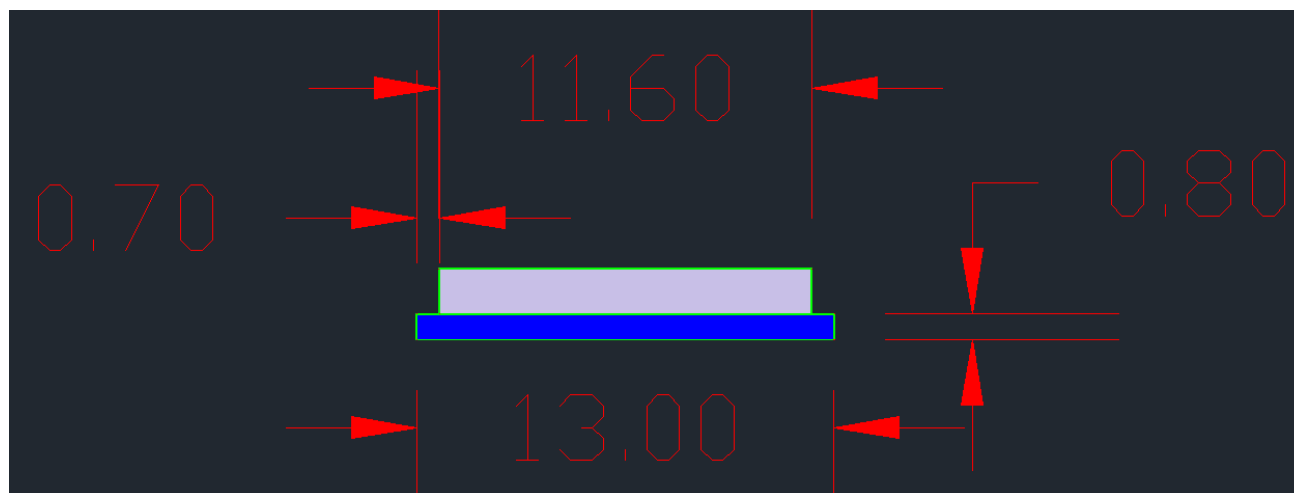
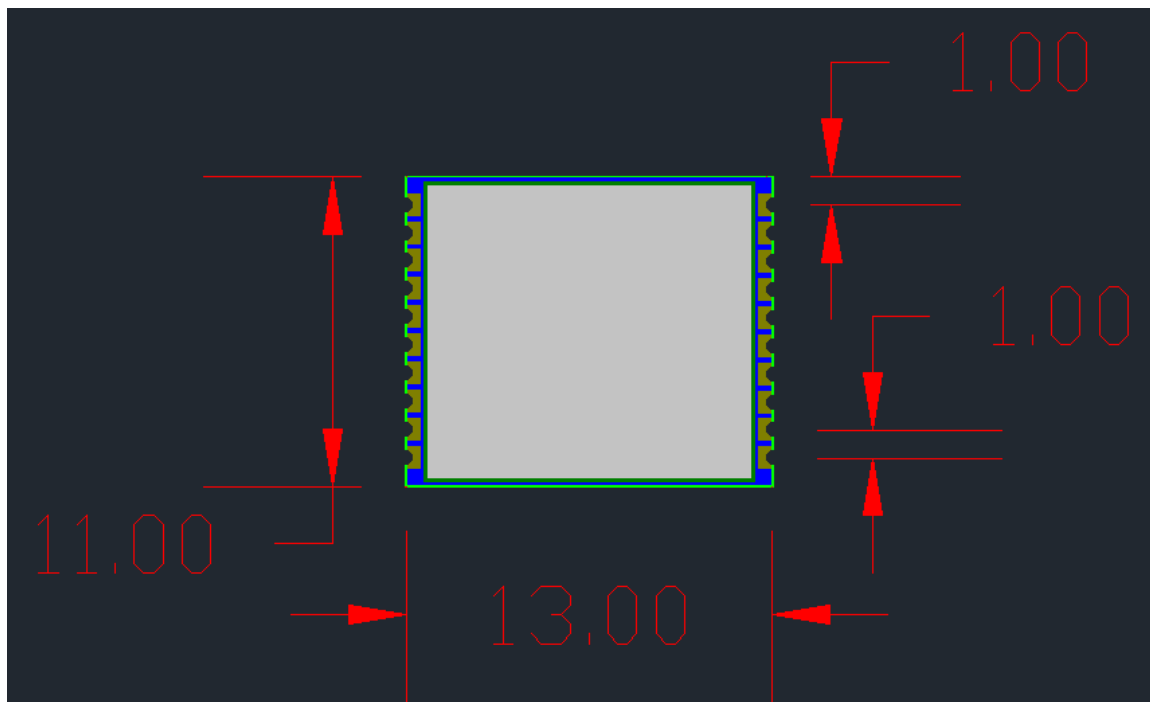
A controlled cooling avoids negative metallurgical effects (solder becomes more brittle) of the solder and possible mechanical tensions in the products. Controlled cooling helps to achieve bright solder fillets with a good shape and low contact angle.

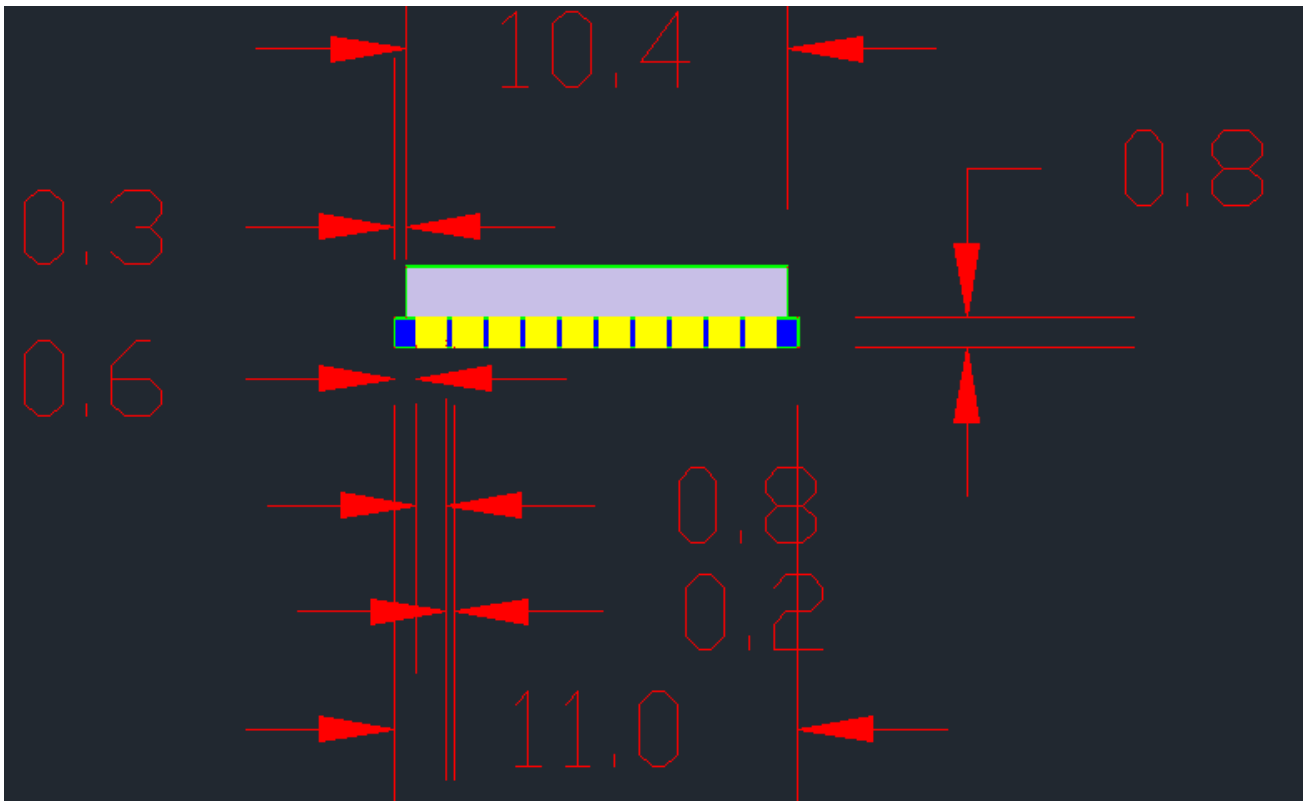
- Temperature fall rate: max 4 °C/s To avoid falling off, the REYAX module should be placed on the topside of the motherboard during soldering.



Recommended soldering profile

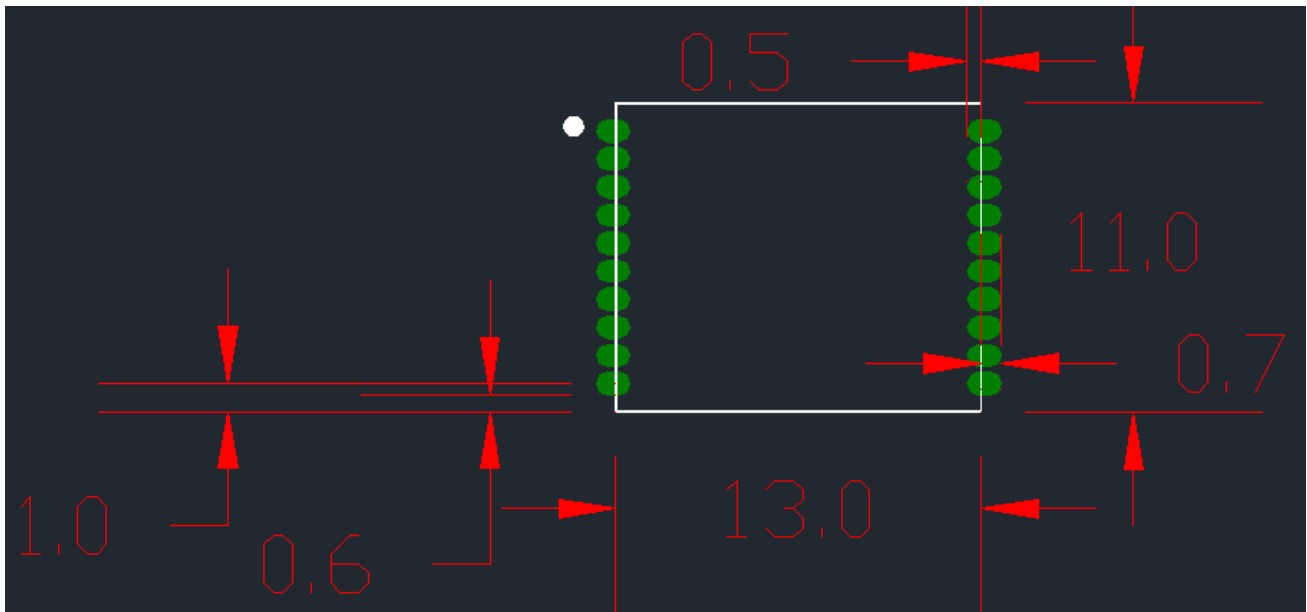
DIMENSIONS





Unit : mm

LAYOUT FOOTPRINT RECOMMENDATIONS



Unit : mm

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