GNSS Module

SMD type (without Antenna)

GYSFFMAXC

Brief Data Report

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Rev. record

07-Aug-2014 Ver.1.0

25-Aug-2014 Ver.1.01

Control No.		Control name
HD-AG-A121331	(1/1)	General Items

（1） Scope

This specification (“Specification”)applies to the hybrid IC “ GYSFFMAXC ”for use GNSS(GPS+GLONASS) module(“ Product”) manufacture by TAIYO YUDEN Co., Ltd.(“TAIYO YUDEN”)

Please be noted that the product code shall be changed in mass production stage.

1)User’s code : GYSFFMAXC

(Please state this code to order this product.)

2)Function・Features :

- GNSS Module（GPS L1：1575.42MHz）
  (GLONASS L1: 1598.0625MHz-1605.375MHz)
- 33ch tracking / 99ch acquisition –GPS/GLONASS/QZSS/SBAS
- 12 multi-tone Active Interference Canceller（AIC）
- Support multi-GNSS(GPS/GLONASS), QZSS, SBAS（WAAS / EGNOS / MSAS / GAGAN ）
- Additional Features:（to be supported with firmware change）
  - AlwaysLocate™ Advanced location awareness technology
  - EPO™ / HotStill™ orbit prediction
  - EASY™ self-generation orbit prediction
  - Logger function support
- Interface: UART
- Ultra Low Power Consumption
- Embedded High-performance electrical parts:LNA, TCXO, RTC, SAW_FL

3)Application : General Consumer Devices

4)Structure: Hybrid IC loaded with silicon semiconductor

Propriety of Pb free Packaging by customer（thermal resistance）: Available

5)Outline : 10.0mm(typ)×10.8mm(typ)×2.05mm(max) 46 Pin Leadless chip-carrier

6)Marking : Parts Name & Lot Number

7)Packing : Tape & Reel（MP）

Control No.		Control name
HD-AM-A121331	(1/1)	Absolute maximum ratings

1.Maximum rating

Item	Symbol	MIN	TYP	MAX	Unit	Condition
Input voltage	VDD3V3	-0.3		4.3	V	Ta=25degrees-C
	VDD_BACKUP	-0.3		4.3		
	RESET, GIO/EINT, RX	-0.3		3.6		

Control No.		Control name
HD-AE-A121331	(1/1)	Electrical characteristics

Electrical characteristics

2.Recommendation operating range

Item	Symbol	MIN	TYP	MAX	Unit	Condition
Operating input voltage	VDD3V3	3.0	3.3	4.3	V	
	VDD_BACKUP	2.0	3.3	4.3		
Supply voltage ripple and spike noise	VDD3V3			40	mV/p-p	
	VDD_BACKUP			40		
Operating temperature range	Topr	-30	25	85	degrees -C	Humidity =40%RH Note1
Storage temperature range	Tstg	-30	25	85	degrees -C	Humidity =40%RH Note2

Notes:

1. Operating temperature range is set to satisfy products electrical characteristics in the short terms. In terms of product life cycle when it is used in condition of varying from TYP standard in the long term, please refer to the reliability condition.

2. Storage temperature range is the condition for transportation and storage in temporary.

DC Specifications

The Specification applies for Topr.= 25 degrees-C, voltage=typical

No.	Parameter	Condition	Symbol	Min.	Typ.	Max.	Unit	Remark
1	Input Low Voltage	Rx, GIO/EINT, RESET	VIL18	-0.30	-	0.45	V	IO=1.8V
2	Input High Voltage		VIH18	1.35	-	2.10	V	IO =1.8V
3	Output Low Voltage	Tx, GIO/EINT	VOL18	-	-	0.27	V	IO=1.8V
4	Output High Voltage		VOH18	1.53	-	-	V	IO =1.8V
5	Input Low Voltage	Force ON	VIL11	-0.30	-	0.27	V	IO=1.8V
6	Input High Voltage		VIH11	0.83	-	2.1	V	IO=1.8V
7	Current MAIN	VDD3V3 Current Consumption (Average)	Icc_Ac	-	22	35	mA	Acquisition
			Icc_Tr	-	18	28	mA	Tracking
8	Current BK	VDD3V3_BACKUP Current Consumption	Icc _bk1	-	6	15	uA	Backup (VDD3V3= 0V)
			Icc _bk2	-	24	200	uA	Other mode

Note:

Please note that these electrical characteristics were measured under Taiyo Yuden evaluation environment.

Control No.		Control name
HD-AE-B121331	(1/1)	Electrical characteristics

RF Specifications

The Specification applies for Topr.=25 degrees-C

No	Parameter	Symbol	Spec			Unit	Remark
			Min	Typ	Max		
1	Frequency	Fc		1575.4		MHz	C/A code
2	Intermediate frequency	IF		13.2		MHz	
3	Image Rejection Ratio	IRR		30		dB	
4	VCO Oscillation Frequency	Fosc		3142.656		MHz	
5	Noise Figure	NF		1.0		dB	
6	Sensitivity 1	Hs1		-162		dBm	Hot start sensitivity
		Ws1		-146			Warm start sensitivity
		Cs1		-146			Cold start sensitivity
		Ts1		-164			Tracking sensitivity
7	TTFF 1	Ht1		1.0		sec	Hot start @-135dBm Note1
		Wt1		31			Warm start@-135dBm Note2
		Ct1		38			Cold start @-135dBm Note3
8	Accuracy 1	Ha1		1.4		m	Hot start @-135dBm
		Wa1		1.4			Warm start@-135dBm
		Ca1		1.4			Cold start @-135dBm

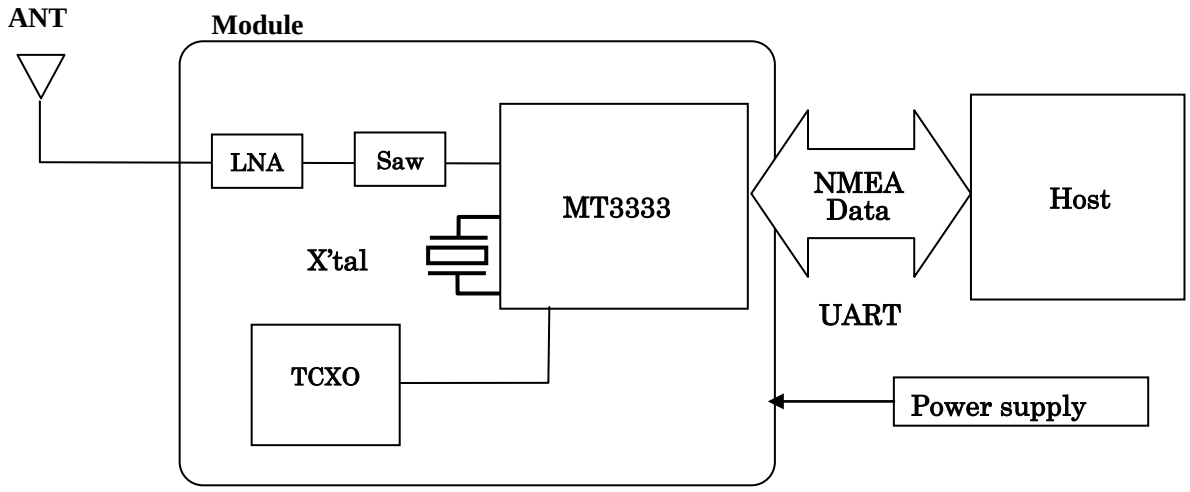
Note1 Hot start : Re-start in state with Data of Almanac, Ephemeris, and time information.

Note2 Warm start : Re-start in state with Data of Almanac.

Note3 Cold start : Start when there is not all information.

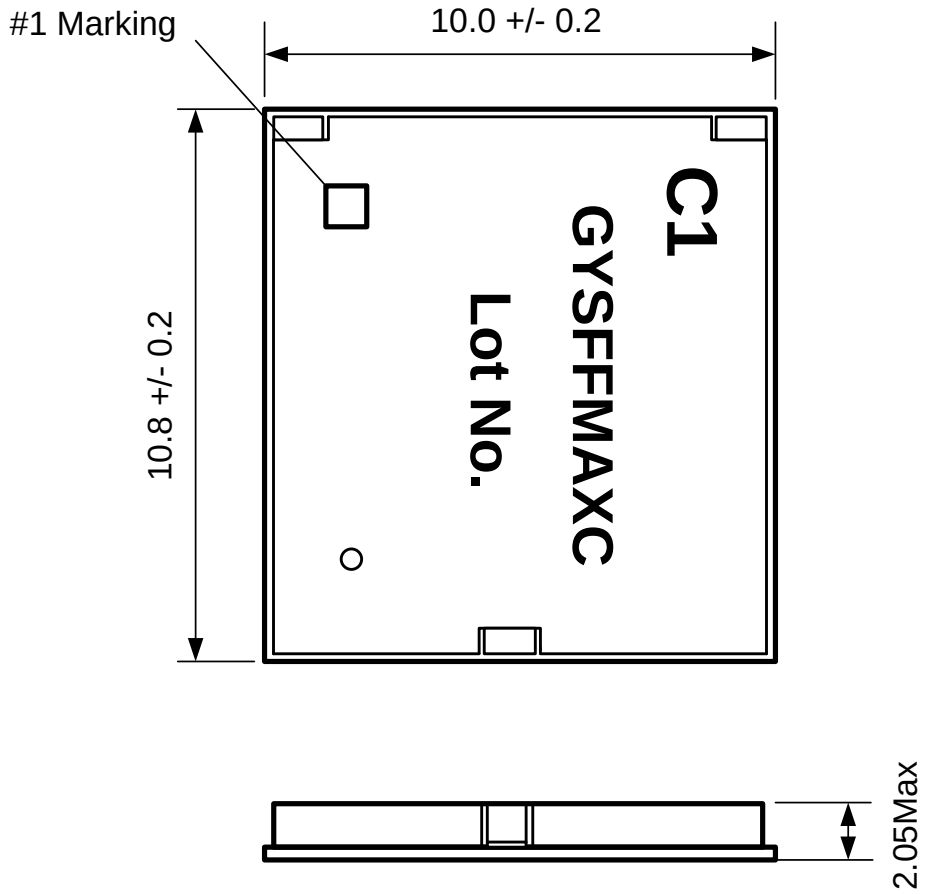
Control No.		Control name
HD-MC-A121331	(1/1)	Circuit Schematic

Module Block Diagram



Control No.		Control name
HD-AD-A121331	(1/1)	Outline/Appearance

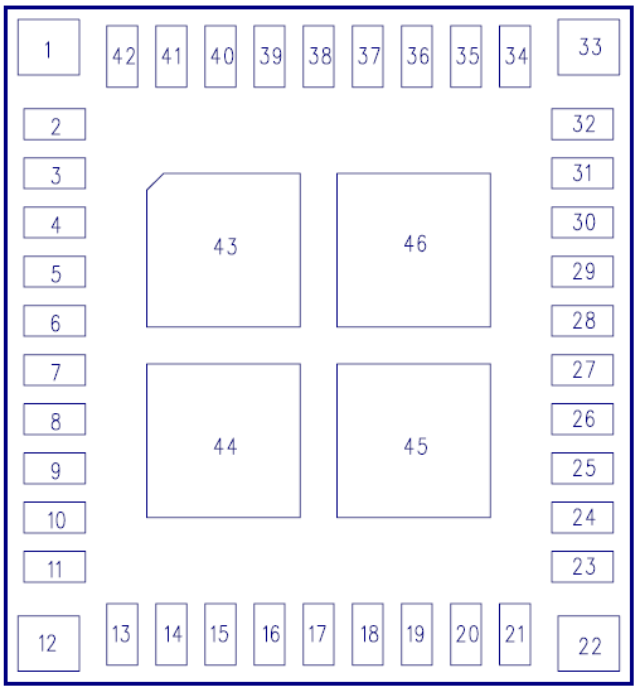
Outline



< Bottom View >

Control No.		Control name
HD-BA-A121331	(1/2)	Pin Layout

Pin Layout



(Top View)

Descriptions

No.	Pin Name	Type	Block	I/O	Description
1	GND	Power	GND	-	GND
2	ANT	RF	RF	I	RF_IN Antenna port
3	GND	Power	GND	-	GND
4	VDD3V3	Power	RF & Digital	I	Power Supply voltage 3.3V Main power supply
5	NC		-	-	**Never to connect**
6	NC		-	-	**Never to connect**
7	VDD2V8_OUT	Power	Digital	O	**Never to connect**
8	GND	Power	GND	-	GND
9	NC		-	-	**Never to connect**
10	GND	Power	GND	-	GND
11	NC	-	-	-	**Never to connect**
12	GND	Power	GND	-	GND
13	NC		-	-	**Never to connect**
14	VDD3V3_BACKUP	Power	Analog	I	Supply Voltage to RTC LDO. Back-up power supply **＊ at all times "ON" by button battery**
15	NC		-	-	**Never to connect**
16	NC	-	-	-	**Never to connect**
17	32KHZ_OUT	Debug	CLK	O	RTC 32kHz clock output default no output, controlled by S/W build.(Optional) ***Never to connect in case of an unnecessary**

Control No.		Control name
HD-BA-A121331	(2/2)	Pin Layout

No.	Pin Name	Type	Block	I/O	Description
18	NC		-	-	**Never to connect.**
19	NC		-	-	**Never to connect.**
20	NC		-	-	**Never to connect.**
21	GIO_2	CMOS	Digital	I/O	General purpose interface pin. Internal 75kΩpull up ***Never to connect in case of an unnecessary.**
22	GND	Power	GND	-	GND
23	NC	-	-	-	**Never to connect.**
24	NC	-	-	-	**Never to connect.**
25	UART_RXD	CMOS	UART	I	Serial data input for the UART Interface. Internal 75kΩpull up.
26	UART_TXD	CMOS	UART	O	Serial data output for the UART Interface. Internal 75kΩpull up.
27	FORCE_ON	CMOS	Digital	I	In backup mode, logic high to force power on this module.
28	GIO_6	CMOS	Digital	I/O	General purpose interface pin. Internal 75kΩpull down ***Never to connect in case of an unnecessary.**
29	GIO_7(1PPS)	CMOS	Digital	I/O	1pps signal output (Default: Pulse width:100msec, Output timing: 3DFix)
30	GIO_12 (EINT0)	CMOS	Digital	I/O	External Interrupt, General purpose interface pin Internal 75kΩpull down ***Never to connect in case of an unnecessary.**
31	GIO_14 (EINT2)	CMOS	Digital	I/O	External Interrupt, General purpose interface pin Internal 75kΩpull up ***Never to connect in case of an unnecessary.**
32	RESET	CMOS	Digital	I	RESET terminal, active LOW Internal 75kΩpull up
33	GND	Power	GND	-	GND
34	GIO_1	CMOS	Digital	I/O	General purpose interface pin. Internal 75kΩpull up ***Never to connect in case of an unnecessary.**
35	GIO_0	CMOS	GPIO	I/O	General purpose interface pin. Internal 75kΩpull up ***Never to connect in case of an unnecessary.**
36	GND	Power	GND	-	GND
37	GND	Power	GND	-	GND
38	GND	Power	GND	-	GND
39	GND	Power	GND	-	GND
40	GND	Power	GND	-	GND
41	GND	Power	GND	-	GND
42	GND	Power	GND	-	GND
43	GND	Power	GND	-	GND
44	GND	Power	GND	-	GND
45	GND	Power	GND	-	GND
46	GND	Power	GND	-	GND

Стандарт Электрон Связь

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