Get your Position!

A1029-B/D Easy plug-in
GPS Modules

The A1029-B as well as the A1029-D expand the product line of Tyco's GPS receiver modules based on STMicroelectronics' STA2051 base-band chip. Offering a high level of performance at ultra-low power consumption, these receivers allow an easy plug-in to motherboards, show durability towards shock and vibration, and provide comfortable antenna connection via cable and a standard SMA connector. Due to the perfect combination of highly sophisticated firmware in the base-band processor and the SiGe SE4100L GPS RF chip the modules achieve high sensitivity and excellent TTFF values. The enhanced version A1029-D even features a TCXO for faster TTFF and increased availability. Both modules are 100% compatible, so an easy migration is guaranteed. Beyond NMEA information the modules also provide an accurate one pulse per second (1PPS) signal synchronized to Universal Time (UTC). They support WAAS/EGNOS/MSAS for even higher position accuracy and are capable of interpreting assisted GPS data. In situations where the satellite signals are blocked, sensor signals that are connected to the module with a minimum of effort will help to further calculate positions (Dead Reckoning).

- ■ Highly sensitive and accurate positioning
- ■ Plug-in via cost-effective standard I/O connector
- ■ Antenna cable and connector for easy system integration
- ■ Ultra-low power consumption
- ■ Differential ready, SBAS (WAAS/EGNOS/MSAS) support
- ■ Integrated Dead Reckoning

Performance

Channels	12 parallel tracking
Frequency	L1 - 1575 MHz
Position Accuracy	
Stand alone	3 m CEP, SA off
Differential[1]	< 1 m CEP
Time To First Fix	
Obscuration recovery[2]	1 s
Hot start[3]	< 3 s
Warm start[4]	< 32 s
Autonomous/Cold[5]	< 60 s (B), < 45 s (D)
Power-off start[6]	varying

Mechanical

Dimensions	33 mm x 45.7 mm x 4.5 mm
	1.3″ x 1.8″ x 0.18″
Cable Length	~ 100 mm, 4″
Weight	11 g, 0.5 oz

Power

Input Voltage	3.0 to 3.6 VDC
Current Draw	
Operational (1 fix/s)	< 50 mA (typ.)
Standby	< 30 µA (typ.)
Antenna Supply via VANT	
Voltage range	VCC-0.5 V to 5.2 V
Max. allowed current[7]	50 mA
Antenna Current Monitor	
ANTSTAT high	9 mA < I_{ant} < 16 mA (typ.)
ANTSTAT low	I_{ant} out of above specified range

1) Assumes a benign multipath environment and differential corrections once per second.
2) The receiver's calibrated clock is not stopped, thus it knows precise time (to the µs level).
3) The receiver has estimates of time/date/position and valid almanac and ephemeris data.
4) The receiver has estimates of time/date/position and almanac.
5) The receiver has no estimate of time/date/position, and no recent almanac.
6) Receiver is powered-off, clock stops. Start-up time depends on time to power on and power-on location.
7) An external current limiter is suggested to avoid damage in fault conditions.

Communications

Standard GPS Software

NMEA Message Switchable	GGA, GSA, GSV, VTG, RMC
Baudrate (in baud)	4800 default, 9600, 19200, 38400
Geodetic Datum	WGS84 standard and 258 map datums
Projection	UTM
Boot Loader	Easy firmware update through serial port

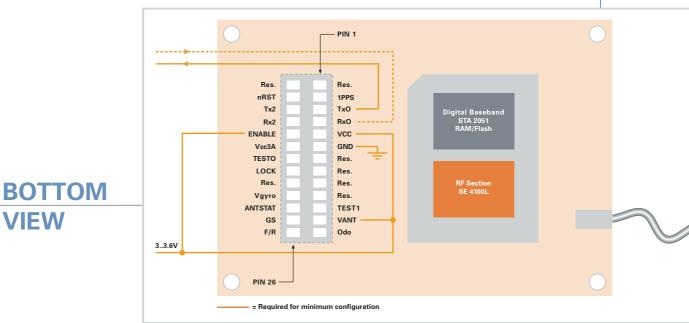| Serial Ports	3.3V CMOS compatible
Tx0	NMEA output
Rx0	NMEA input
Tx2	Test report output
Rx2	RTCM input (DGPS)

Connectors

Data/Power	Standard 1.27 mm (0.05″) double row low profile socket with 26 pins
Antenna	SMA female bulk-head

Environment

Temperature	
Operating	-40°C to +85°C
Storage	-40°C to +85°C
Humidity	non-condensing

Products

A1029-B	GPS receiver module, single samples or quantities in trays
A1029-D	GPS receiver with TCXO, single samples or quantities in trays
DKS1029-B DKS1029-D	Demonstration kit with two RS232 serial interfaces to be connected to PC environment, 5 to 12 VDC input range; complete with A1029-B or A1029-D module, active antenna, serial cable, documentation

BOTTOM VIEW

PIN 1

Res.	Res.
nRST	1PPS
Tx2	TxO
Rx2	RxO
ENABLE	VCC
Vcc3A	GND
TESTO	Res.
LOCK	Res.
Res.	Res.
Vgyro	Res.
ANTSTAT	TEST1
GS	VANT
F/R	Odo

3..3.6V

PIN 26

Digital Baseband STA 2051 RAM/Flash

RF Section SE 4100L

= Required for minimum configuration

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