Welcome to **E-XFL.COM**

Embedded - Microcontrollers - Application Specific: Tailored Solutions for Precision and Performance

Embedded - Microcontrollers - Application Specific represents a category of microcontrollers designed with unique features and capabilities tailored to specific application needs. Unlike general-purpose microcontrollers, application-specific microcontrollers are optimized for particular tasks, offering enhanced performance, efficiency, and functionality to meet the demands of specialized applications.

What Are Embedded - Microcontrollers - Application Specific?

Application-specific microcontrollers are engineered to

Details

|	
Product Status	Obsolete
Applications	GPS Baseband Controller
Core Processor	ARM7®
Program Memory Type	FLASH (256kB)
Controller Series	VESPUCCI
RAM Size	64K x 8
Interface	I²C, SPI Serial, CAN, USB, UART
Number of I/O	48
Voltage - Supply	1.8V
Operating Temperature	-40°C ~ 85°C
Mounting Type	Surface Mount
Package / Case	64-TQFP
Supplier Device Package	64-TQFP
Purchase URL	https://www.e-xfl.com/product-detail/stmicroelectronics/sta2051tr

STA2051

32-bit single chip baseband controller for GPS and telematic applications

Data Brief

Features

- Suitable for automotive applications
- ARM7TDMI 16/32 bit RISC CPU based host microcontroller.
- Complete embedded memory system:
  - Flash 256 KB + 16 KB (100K erasing/programming cycles)
  - RAM 64 KB
- External memory interface provides glueless support for up to four banks of external SRAM, Flash, ROM.
- 12 channel GPS correlation DSP:
  - no TCXO required
  - RTCA-SC159 / WAAS / EGNOS support
- GPS performance
  - accuracy: stand alone <30m; differential <1m; surveying <1cm
  - time to first fix: autonomous start 90s; cold start 45s; warm start 7s; obscuration 1s.
- CMOS M8T (0.18 µm) technology.
- -40°C to 85°C operating temperature range.
- Packaged in TQFP 64-pin or 144-pin
- Power supply:
  - 2.7V to 3.6V operating supply range for input/output periphery
  - 3V to 3. V operating supply range for A/ D Converter reference
  - 1.8V operating supply range for core supply provided either by internal voltage regulator with external stabilization capacitor, or by external supply for higher power efficiency.
- 0-66MHz internal clock frequency managed by a reset and clock control unit; the unitisable to provide low power modes (Wait, Slow, Stop, Standby) and to generate the internal clock from the external reference through integrated PLL.
- 48 programmable general purpose I/O, each pin programmable independently as digital input or digital output; 40 (30 in TQFP64) are multiplexed with peripheral functions; 16 can generate an interrupt on input level/transition
- Real time clock module with 3 2 kHz low power oscillator and separate power supply to continue running during stand-by mode.

TQFP64   TQFP144

- 16-bit watchdog timer with 8 bits prescaler for system reliability and integrity.
- CAN module compliant with the CAN specification V2.0 part B (active). The bit rate can be programmed up to 1 MBaud.
- Four16-bit programmable timers with 7 bit prescaler, up to two input capture/output compare, one pulse counter function, one PWM channel with selectable frequency each.
- 4 channels 12-bit sigma-delta analog to digital converter, single channel or multi channel conversion modes, single-shotor continuous conversion modes, sample rate1KHz (4 KHz when single channel), conversion range 0-2.5V.
- Three serial communication interfaces (UART) allow full duplex, asynchronous, communications with external devices, independently programmable TX and RX baud rates up to 625K baud.
- One UART adapted to suit smart card interface needs, for asynchronous SC as defined by ISO 7816-3; it includes SC clock generation..
- Two serial peripheral interfaces (SPI) allow full duplex, synchronous communications with external devices, master or slave operation, max baud rate: 8Mb/s. One SPI may be used as multimedia card interface.
- Two I^2C interfaces provide multi-master and slave functions, support normal and fast I^2C mode (400 kHz), 7/10 bit addressing modes. One I^2C interface is multiplexed with one SPI, so either 2xSPI+1xI^2C or 1xSPI+2xI^2C may be used at a time.
- USB unit V1.1 compliant, software configurable end point setting, USB Suspend/Resume support. (TQFP144 only)
- High Level Data Link Controller (HDLC) unit supports full duplex operating mode, NRZ, NRZI, FM0 and MANCHESTER modes, internal 8bit Baud Rate Generator.
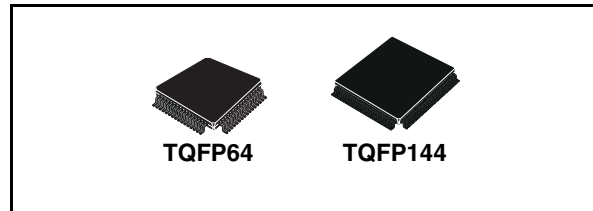
1 System block and pin connection diagrams
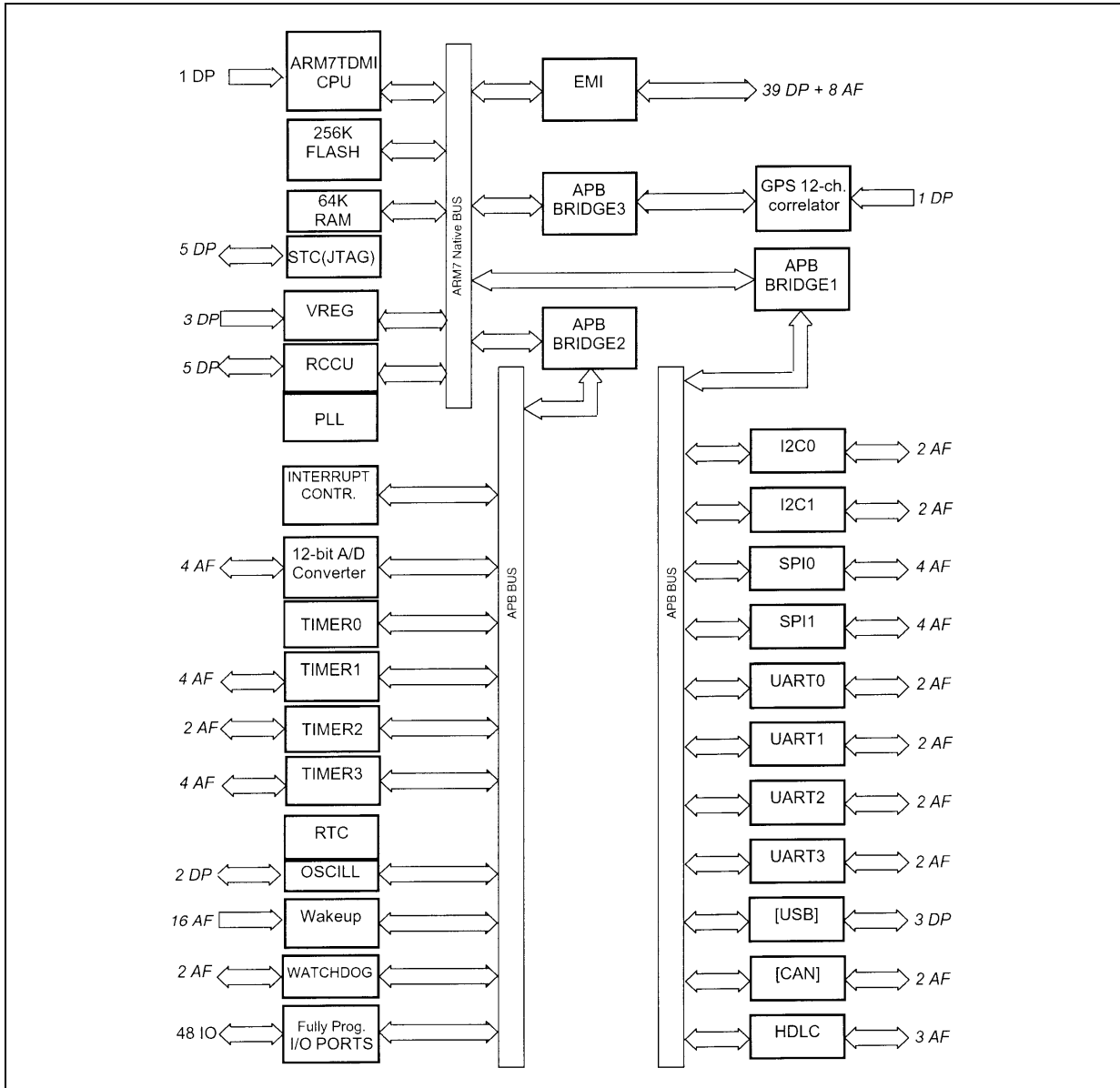
Figure 1. System block diagram

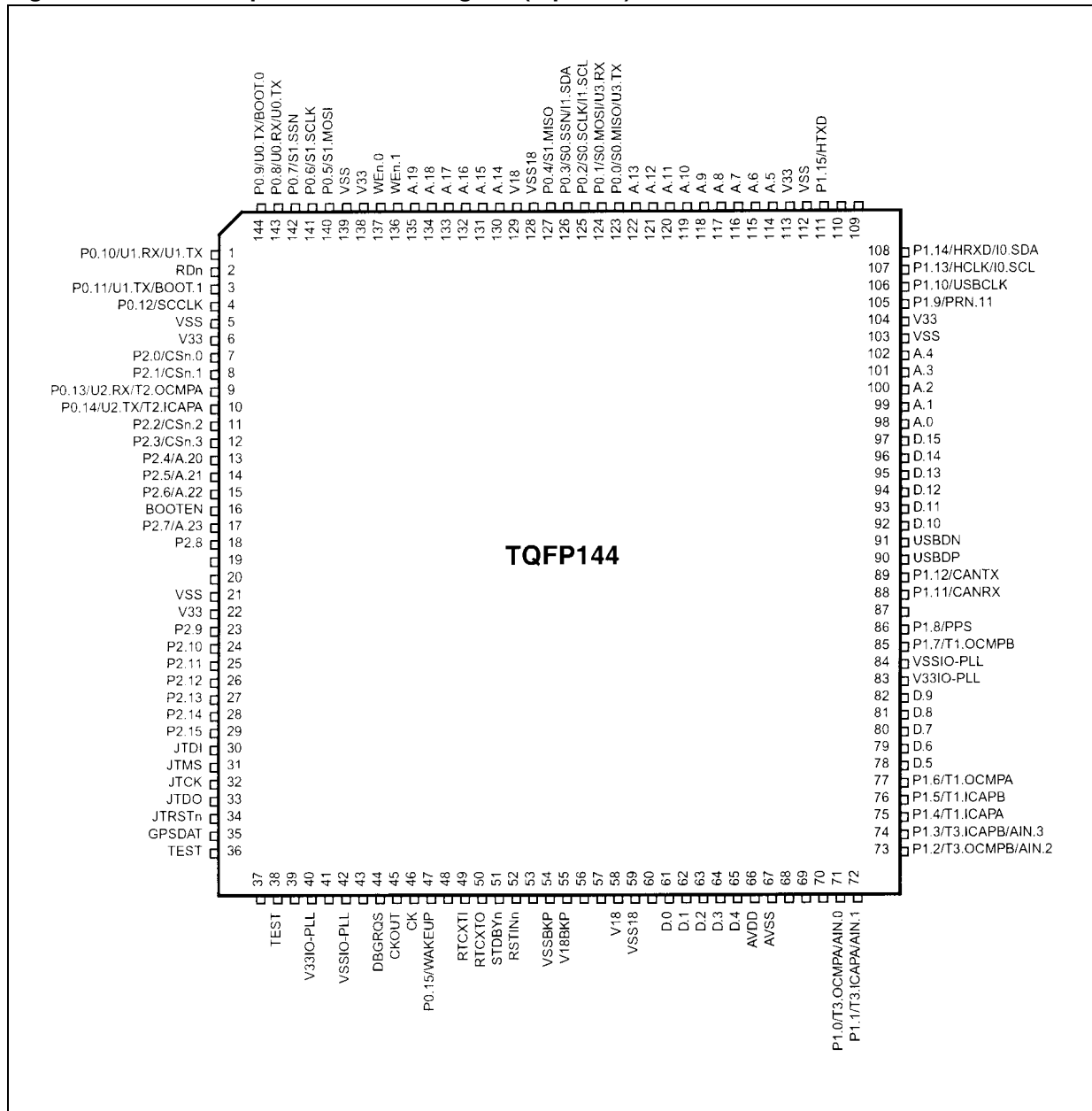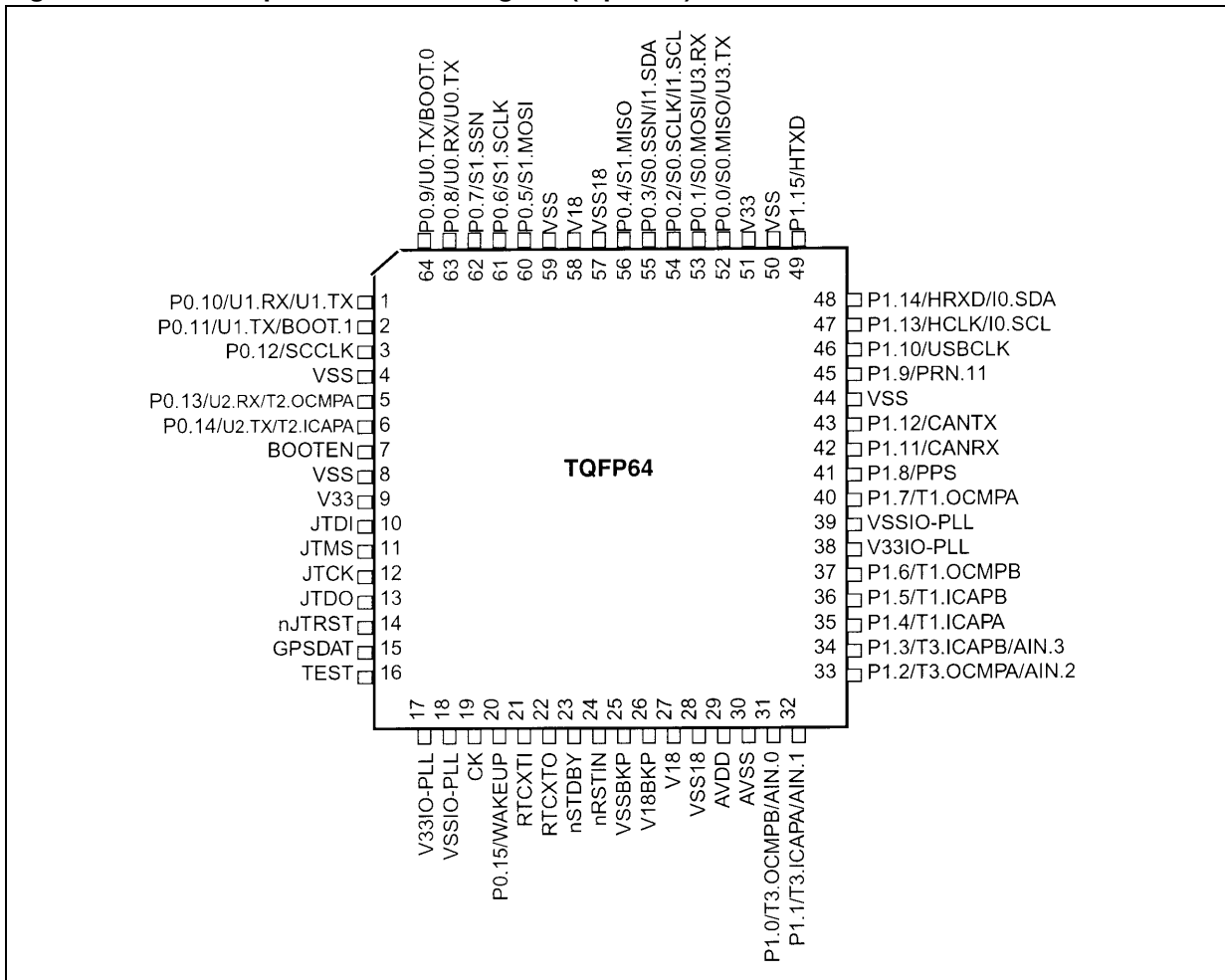**Figure 2.   TQFP144 pin connection diagram (top view)**

Figure 3.   LQFP64 pin connection diagram (top view)

2 Ordering information

Table 1. Device summary

Order code	Package	Packing
STA2051	TQFP64	Tray
STA2051TR	TQFP64	Tape and reel
STA2051E	TQFP144	Tray
STA2051ETR	TQFP144	Tape and reel
E-STA2051	TQFP64	Tray
E-STA2051TR	TQFP64	Tape and reel

3   Revision history

Table 2.   Document revision history

Date	Revision	Changes
24-Sep-1994	1	Initial release.
25-Jan-2004	2	Added a new feature (first bullet).
05-Dec-2008	3	Reformatted document. Updated *Section 2: Ordering information*.

Please Read Carefully:

Information in this document is provided solely in connection with ST products. STMicroelectronics NV and its subsidiaries ("ST") reserve the right to make changes, corrections, modifications or improvements, to this document, and the products and services described herein at any time, without notice.

All ST products are sold pursuant to ST's terms and conditions of sale.

Purchasers are solely responsible for the choice, selection and use of the ST products and services described herein, and ST assumes no liability whatsoever relating to the choice, selection or use of the ST products and services described herein.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted under this document. If any part of this document refers to any third party products or services it shall not be deemed a license grant by ST for the use of such third party products or services, or any intellectual property contained therein or considered as a warranty covering the use in any manner whatsoever of such third party products or services or any intellectual property contained therein.

UNLESS OTHERWISE SET FORTH IN ST'S TERMS AND CONDITIONS OF SALE ST DISCLAIMS ANY EXPRESS OR IMPLIED WARRANTY WITH RESPECT TO THE USE AND/OR SALE OF ST PRODUCTS INCLUDING WITHOUT LIMITATION IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE (AND THEIR EQUIVALENTS UNDER THE LAWS OF ANY JURISDICTION), OR INFRINGEMENT OF ANY PATENT, COPYRIGHT OR OTHER INTELLECTUAL PROPERTY RIGHT.

UNLESS EXPRESSLY APPROVED IN WRITING BY AN AUTHORIZED ST REPRESENTATIVE, ST PRODUCTS ARE NOT RECOMMENDED, AUTHORIZED OR WARRANTED FOR USE IN MILITARY, AIR CRAFT, SPACE, LIFE SAVING, OR LIFE SUSTAINING APPLICATIONS, NOR IN PRODUCTS OR SYSTEMS WHERE FAILURE OR MALFUNCTION MAY RESULT IN PERSONAL INJURY, DEATH, OR SEVERE PROPERTY OR ENVIRONMENTAL DAMAGE. ST PRODUCTS WHICH ARE NOT SPECIFIED AS "AUTOMOTIVE GRADE" MAY ONLY BE USED IN AUTOMOTIVE APPLICATIONS AT USER'S OWN RISK.

Resale of ST products with provisions different from the statements and/or technical features set forth in this document shall immediately void any warranty granted by ST for the ST product or service described herein and shall not create or extend in any manner whatsoever, any liability of ST.

ST and the ST logo are trademarks or registered trademarks of ST in various countries.

Information in this document supersedes and replaces all information previously supplied.

The ST logo is a registered trademark of STMicroelectronics. All other names are the property of their respective owners.

© 05/12/08 STMicroelectronics - All rights reserved

STMicroelectronics group of companies

Australia - Belgium - Brazil - Canada - China - Czech Republic - Finland - France - Germany - Hong Kong - India - Israel - Italy - Japan - Malaysia - Malta - Morocco - Singapore - Spain - Sweden - Switzerland - United Kingdom - United States of America

www.st.com