Telemaco3P automotive family of telematics and connectivity microprocessor

Features

- AEC-Q100 qualified Grade 2

Core and Infrastructure
- Dual ARM CortexA7 up to 600 MHz, with MMU, FPU and NEON support
- Memory organization:
  - L1 Cache: 32 KB I, 32 KB D
  - L2 Cache: 256 KB
  - Total embedded SRAM: 768 KB

Embedded Vehicle Interface
- Isolated Cortex-M3 core
  - L1 Cache: 8 KB I
- 256 KB reserved embedded SRAM (extendible to 768 KB)
- 1x CAN Standard (C_CAN)
- 2x CAN FD (M_CAN)
- 1x Flexray

Media Interfaces
- 1x SD/MMC/SDIO SDR50 (SD/MMC0)
- 1x SD/MMC/SDIO SDR25 (SD/MMC1)
- 1x USB 2.0 DR with HS PHY and HSIC
- 1x USB 2.0 DR with HS PHY
- 2x ETH AVB MAC with RMII/RGMII

Embedded HW Security Module
- HIS SHE/SHE+ Service Set with extensions for PKC (SHE_EXT)
- Cryptographic Functions Accelerators
  - Symmetric keys: MP AES
  - Public keys: RSA, ECC
  - Hash: MD5, SHA1, SHA2
- True Random Number Generator
- User programmable OTP memory (eHSM OTP)

Memory Interfaces
- 16-bit DDR3L-1066 (533 MHz)
- 16-bit LPDDR2-800 (400 MHz)
- SQI Interface
- 8-bit Parallel NAND (1 chip select)

I/O Interfaces
- 1x 6-channel 10-bits ADC
- 3x I2C multi-master/slave interfaces
- 6x UART controller
- 3xI2S audio interfaces
- 3x Synchronous Serial Port (SSP/SPI)
- 5x 32-bit GPIO ports
- JTAG based in-circuit emulator (ICE) with Embedded Trace Module
Operating conditions

- VDD, VDD_ARM: 1.14 V-1.21 V
- VDD_IO_3V3: 3.3 V ±10%
- VDD_IO_SDMMC0: 1.8 V-3.3 V ±10%
- VDD_IO_BOOT: 1.8 V/3.3 V ±10%
- VDD_IO_ON: 3.3 V ± 10%
- VDDQ: 1.35 V ± 5% (DDR3L)
- Junction temperature range: -40 C/ +150 C

Description

STA1385 is a fully automotive, power efficient System-On-Chip, targeting cost effective processing solutions for innovative Telematics and Connectivity applications including Cyber-security protection.

It features a powerful Dual ARM Cortex-A7 processor, an embedded and independent Hardware Security Module (HSM), an isolated sub-system based on ARM Cortex-M3 for vehicle CAN interface and a full set of standard connectivity interfaces, including a dual Gbit ETH AVB controller and Flexray.
1 Package information

In order to meet environmental requirements, ST offers these devices in different grades of ECOPACK packages, depending on their level of environmental compliance. ECOPACK specifications, grade definitions and product status are available at: www.st.com. ECOPACK is an ST trademark.

1.1 LFBGA361 (16x16x1.7mm) package mechanical data

Figure 2. LFBGA361 (16x16x1.7mm) package mechanical drawing

Table 1. LFBGA361 (16x16x1.7mm) package mechanical data

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Millimeters</th>
<th>Inches</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td></td>
<td>1.7</td>
</tr>
<tr>
<td>A1</td>
<td>0.25</td>
<td>0.3</td>
</tr>
<tr>
<td>A2</td>
<td>0.3</td>
<td>0.8</td>
</tr>
<tr>
<td>A4</td>
<td>0.8</td>
<td>1.7</td>
</tr>
<tr>
<td>b</td>
<td>0.35</td>
<td>0.4</td>
</tr>
<tr>
<td></td>
<td>0.0189</td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>15.85</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td>0.6358</td>
<td></td>
</tr>
<tr>
<td>D1</td>
<td>14.4</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td>0.6358</td>
<td></td>
</tr>
<tr>
<td>E</td>
<td>15.85</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td>0.6358</td>
<td></td>
</tr>
<tr>
<td>E1</td>
<td>14.4</td>
<td>0.8</td>
</tr>
<tr>
<td>e</td>
<td>0.8</td>
<td>0.8</td>
</tr>
<tr>
<td>Z</td>
<td>0.8</td>
<td>0.8</td>
</tr>
<tr>
<td>ddd</td>
<td>0.1</td>
<td>0.1</td>
</tr>
<tr>
<td>Symbol</td>
<td>Millimeters</td>
<td></td>
</tr>
<tr>
<td>--------</td>
<td>-------------</td>
<td>-----------------</td>
</tr>
<tr>
<td>eee</td>
<td>0.15</td>
<td></td>
</tr>
<tr>
<td>fff</td>
<td>0.08</td>
<td></td>
</tr>
</tbody>
</table>
# Revision history

<table>
<thead>
<tr>
<th>Date</th>
<th>Version</th>
<th>Changes</th>
</tr>
</thead>
<tbody>
<tr>
<td>07-Feb-2020</td>
<td>2</td>
<td>Updated Section Features and Section Description</td>
</tr>
</tbody>
</table>
IMPORTANT NOTICE – PLEASE READ CAREFULLY

STMicroelectronics NV and its subsidiaries ("ST") reserve the right to make changes, corrections, enhancements, modifications, and improvements to ST products and/or to this document at any time without notice. Purchasers should obtain the latest relevant information on ST products before placing orders. ST products are sold pursuant to ST's terms and conditions of sale in place at the time of order acknowledgement.

Purchasers are solely responsible for the choice, selection, and use of ST products and ST assumes no liability for application assistance or the design of Purchasers' products.

No license, express or implied, to any intellectual property right is granted by ST herein.

Resale of ST products with provisions different from the information set forth herein shall void any warranty granted by ST for such product.

ST and the ST logo are trademarks of ST. For additional information about ST trademarks, please refer to www.st.com/trademarks. All other product or service names are the property of their respective owners.

Information in this document supersedes and replaces information previously supplied in any prior versions of this document.

© 2020 STMicroelectronics – All rights reserved