



**Please note that Cypress is an Infineon Technologies Company.**

The document following this cover page is marked as “Cypress” document as this is the company that originally developed the product. Please note that Infineon will continue to offer the product to new and existing customers as part of the Infineon product portfolio.

**Continuity of document content**

The fact that Infineon offers the following product as part of the Infineon product portfolio does not lead to any changes to this document. Future revisions will occur when appropriate, and any changes will be set out on the document history page.

**Continuity of ordering part numbers**

Infineon continues to support existing part numbers. Please continue to use the ordering part numbers listed in the datasheet for ordering.

## Getting Started with Traveo™ Family S6J3360/70 Series

**Author: Takashi Node**

**Associated Part Family: [Traveo Family S6J3360/70 Series](#)**

**Related Documents: For a complete list, [click here](#).**

AN218686 describes the development tools available for the Traveo™ family S6J3360/S6J3370 series.

### 1 Introduction

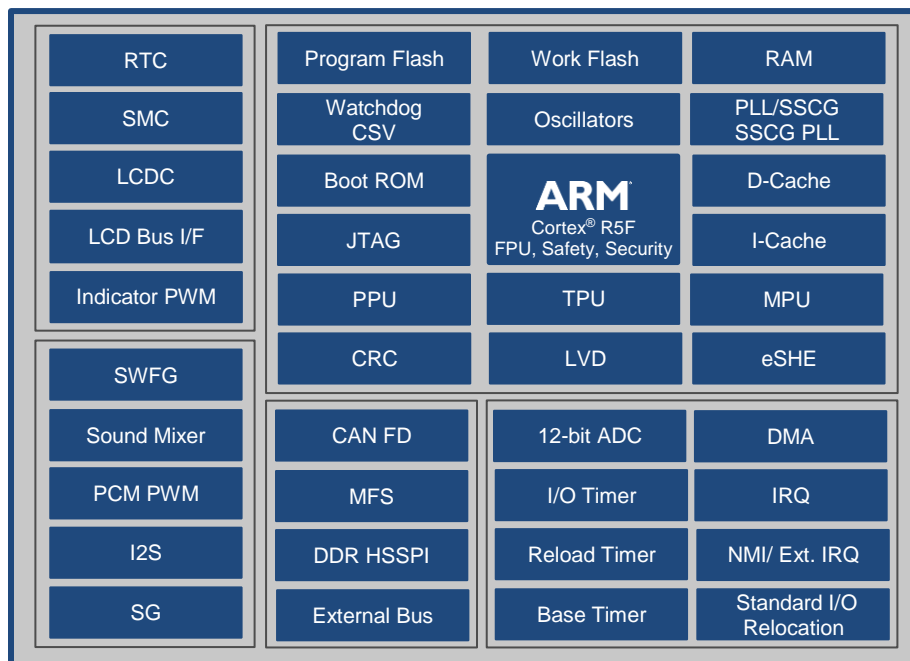
This application note describes the development environment and tools to get started with the Traveo family S6J3360/S6J3370 series.

S6J3360/S6J3370 series are products for automotive cluster applications which have needles and segment LCD. Automotive cluster applications in general provide the driver with displays such as speedometer, tachometer, temperature meter, and fuel gauge. The S6J3360/S6J3370 series MCUs embed meter control functions such as stepper motor controller and LCD controller. In addition, these products embed next-generation functions such as Controller Area Network with Flexible Data rate (CAN FD) and Enhanced Secure Hardware Extension (eSHE) and high-quality sound function targeted to PCM audio level.

### 2 Traveo Family S6J3360/S6J3370 Series Feature Set

The Traveo family S6J3360/S6J3370 series has a cluster feature and other resources, as [Figure 1](#) shows.

Figure 1. Traveo Family S6J3360/S6J3370 Series Functional Diagram



The following are the major features of the Traveo family S6J3360/S6J3370 series.

- 32-bit ARM® Cortex®-R5F CPU core at up to 132 MHz
  - 80-MHz internal flash memory access speed

- Flash memory size (max)
  - TC-Flash: 2,112 KB
  - Work-Flash: 112 KB
- RAM size (max)
  - TC-RAM: 128 KB
  - System-RAM: 128 KB (this includes 16 KB + 8 KB back-up area)
- 5 V or 3.3 V power supply voltage
- Packages
  - LQFP packages (176-pin/ 144-pin/ 120-pin/ 100-pin)
  - TEQFP packages (176-pin/ 144-pin/ 120-pin/ 100-pin)
- ASIL-B support for ISO26262 specification
- CMOS 40-nm technology
- JTAG debug interface
- Operating temperature: -40 to 105 °C

#### Peripheral Functions

- System
  - External interrupt
  - I/O timer (Free-run timer/ Input capture/ Output compare)
  - 12-bit A/D converter
  - Base timer
  - Reload timer
  - DMA controller
- Applications
  - Stepper motor controller
  - LCD controller
  - Real time clock
  - LCD bus interface
  - Indicator PWM
- Sound function
  - Sound waveform generator
  - Sound mixer
  - PCM-PWM
  - I2S
  - Sound generator
- External device and memory interface
  - CAN FD controller
  - Multi-Function Serial Interface (UART, CSIO, LIN and I2C)
  - DDR-HSSPI
  - External bus interface
- Security and Safety
  - Enhanced Secure Hardware Extension (eSHE)
  - Safety features such as MPU, TPU, ECC, and others
  - Watchdog timer
  - Low-voltage detector
  - Clock supervisor

## 3 Development Environment and Tools

### 3.1 Evaluation Board

Cypress provides a wealth of evaluation boards to help you get started with an MCU. The S6J3360/S6J3370 series evaluation boards work by connecting the main board and sub-board. Contact your sales representative or [Cypress Technical Support](#) if you want to buy the evaluation board.

[Table 1](#) lists the functions that can be used by the Traveo board connection and the current part numbers for the evaluation boards in the S6J3360/S6J3370 series for the 176-pin, 144-pin, 120-pin, and 100-pin packages with MCU.

Table 1. Evaluation Boards

Part Number	S6T3J200361A 176A2	S6T3J200361A 144A2	S6T3J200361A 145A2	S6T3J200361A 120A2	S6T3J200361A 100A2
Pin	176 pin	144 pin (0.5mm pitch)	144 pin (0.4mm pitch)	120 pin	100 pin
ADC	48 ch	40 ch	40 ch	29 ch	17 ch
I2S	1 ch	1 ch	1 ch	–	–
CAN FD	4 ch	4 ch	4 ch	3 ch	1 ch
LIN	1 ch	1 ch	1 ch	1 ch	1 ch
UART-USB	1 ch	1 ch	1 ch	1 ch	1 ch
PCMPWM	2 ch (L/R stereo)	2 ch (L/R stereo)	2 ch (L/R stereo)	–	–
DDR HSSPI	1 ch	1 ch	1 ch	1 ch	–
LCD BUS	18 bit	18 bit	18 bit	8 bit	–
Ext BUS	Address 22bit	Address 15bit	Address 15bit	–	–

### 3.2 Sample Software

Contact your sales representative or [Cypress Technical Support](#) if you want to use the sample software.

### 3.3 Debugging Tools

Debugging tools are provided by third parties, as listed in [Table 2](#). Cypress provides sample software (template project and sample driver) for each tool. The template project includes I/O header files, startup settings, and some sample sources. It is recommended to start using the S6J3360/S6J3370 series with the evaluation board and tools. The sample driver includes some sources for peripheral features of the S6J3360/S6J3370 series.

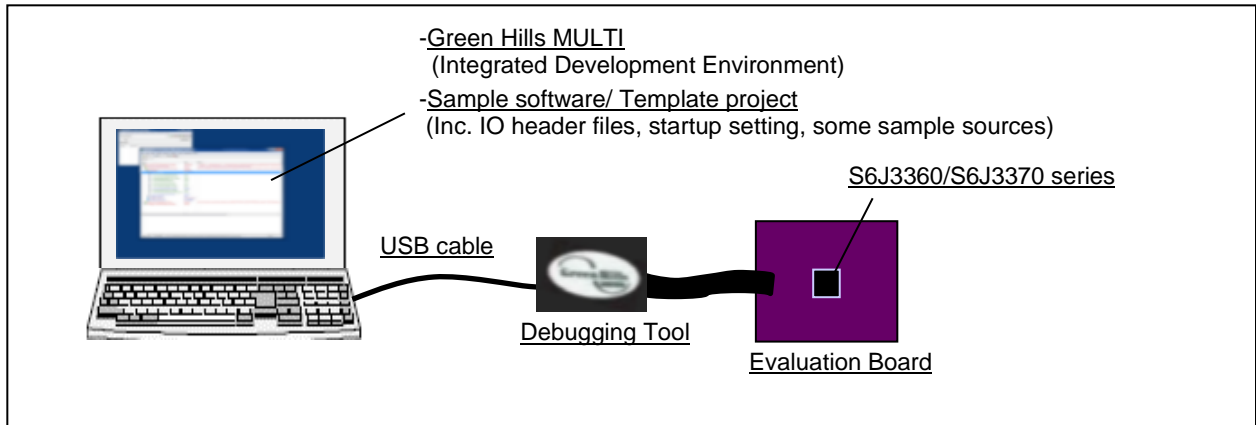
Table 2. Debugging Tools

Vendor	Software (Integrated Development Environment)	Hardware (Debugging Tools)
Green Hills Software	MULTI v2015.1.6 or later	Green Hills Probe
IAR Systems	IAR Embedded Workbench for ARM (EWARM) v7.30.4 or later	I-jet

### 3.4 How to Use of Development Environment

You can develop software by using the sample software or template project on a PC that has an integrated development environment installed. The following are use image of development environment. (Example. Green Hills Probe)

Figure 2. Example of Development Environment



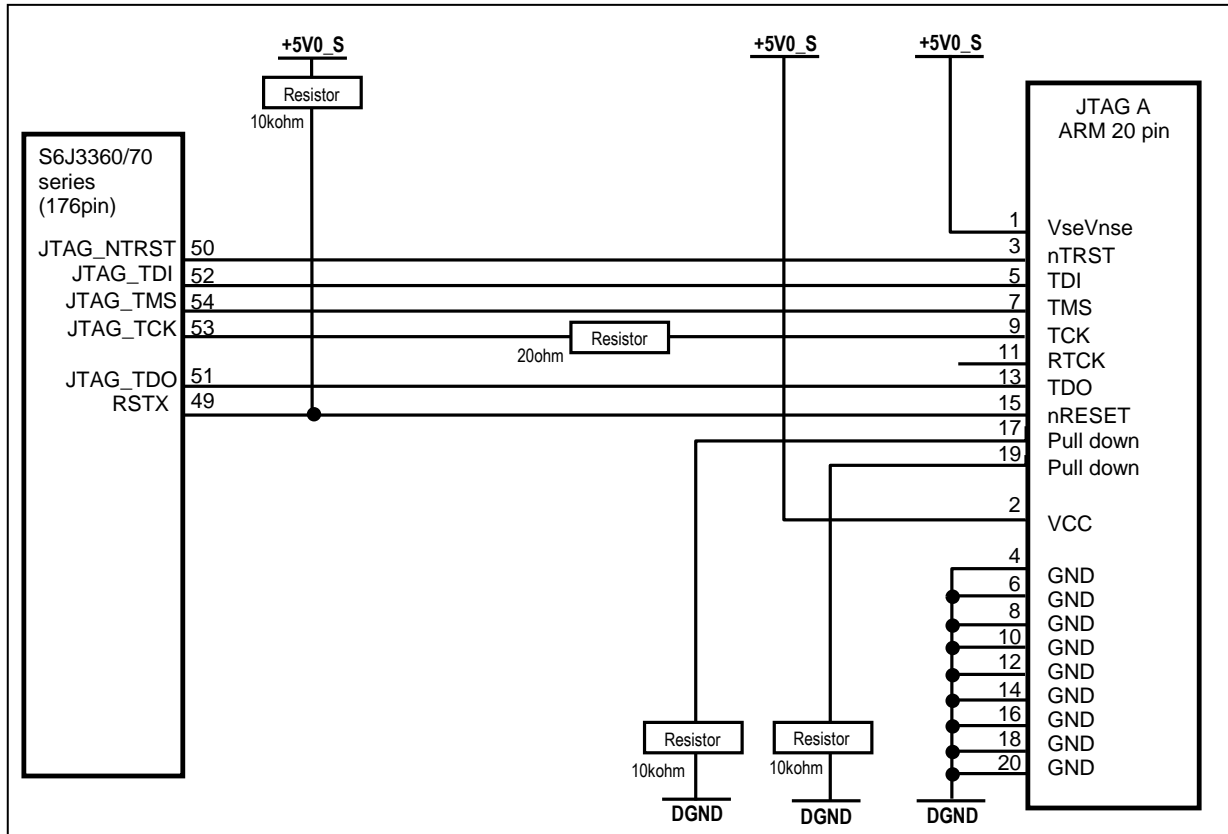
In general, do the following to get started with your firmware development:

1. Install the integrated development environment (IDE) in your PC.
2. Prepare sample software files or template project files on your computer.
3. Connect the debugging tool between your computer and the evaluation board.
4. Start the IDE on your PC.
5. Power ON the debugging tool and evaluation board. The operation mode of S6J3360/S6J3370 series is user mode at this time.
6. Start your software development.

## 4 Connection Diagram and Operation Modes

The S6J3360/S6J3370 series has JTAG ports to connect with a debugging tool, but the nRESET JTAG port is not supported in this series. Therefore, nRESET should be connected to the RSTX port of this product, if needed. Figure 3 shows an example of a basic connection diagram for S6J3360/S6J3370 series.

Figure 3. Example of Basic Connection Diagram for S6J3360/S6J3370 Series with ARM JTAG 20



The S6J3360/S6J3370 series has a User mode and Serial programming modes. The Serial programming modes use P1\_12 and P1\_14 with the MODE port. Table 3 lists the operation modes combined with the MODE, P1\_12 and P1\_14 ports.

The Serial programming modes (sync and async) support programming a user software to the flash memory included in the MCU through the UART connection. The PC and target MCU are connected via a serial cable. Cypress provides flash program software that works on the PC, and the evaluation board has an UART port. Contact your sales representative or [Cypress Technical Support](#) if you want to evaluate the flash program software.

In addition, a flash memory programmer provided by Yokogawa Digital Computer (YDC) supports programming a user software to the flash memory using a serial port in the S6J3360/S6J3370 series.

Table 3. Operation Modes

Operation Mode	MODE	P1_12	P1_14
User mode	1	–	–
Serial programming mode (sync)	0	1	0
Serial programming mode (async)	0	1	1

## 5 Summary

Cypress provides a wealth of evaluation boards and sample software to help you get started with Traveo. To evaluate the S6J3360/S6J3370 series evaluation boards, contact your sales representative or [Cypress Technical Support](#).

## 6 Related Documents

- [S6J3360/70 Series Datasheet \(Doc.No.002-03359\)](#)
- [S6J3360/70 Series Hardware Manual \(Doc.No.002-18302\)](#)
- [Traveo Family Hardware Manual Platform Part for S6J3360/3370 Series \(Doc.No.002-07884\)](#)

## Document History

Document Title: AN218686 – Getting Started with Traveo™ Family S6J3360/70 Series

Document Number: 002-18686

Revision	ECN	Orig. of Change	Submission Date	Description of Change
**	5687384	TANO	05/08/2017	New application note.



## Worldwide Sales and Design Support

Cypress maintains a worldwide network of offices, solution centers, manufacturer's representatives, and distributors. To find the office closest to you, visit us at [Cypress Locations](#).

### Products

ARM® Cortex® Microcontrollers	<a href="http://cypress.com/arm">cypress.com/arm</a>
Automotive	<a href="http://cypress.com/automotive">cypress.com/automotive</a>
Clocks & Buffers	<a href="http://cypress.com/clocks">cypress.com/clocks</a>
Interface	<a href="http://cypress.com/interface">cypress.com/interface</a>
Internet of Things	<a href="http://cypress.com/iot">cypress.com/iot</a>
Memory	<a href="http://cypress.com/memory">cypress.com/memory</a>
Microcontrollers	<a href="http://cypress.com/mcu">cypress.com/mcu</a>
PSoC	<a href="http://cypress.com/psoc">cypress.com/psoc</a>
Power Management ICs	<a href="http://cypress.com/pmic">cypress.com/pmic</a>
Touch Sensing	<a href="http://cypress.com/touch">cypress.com/touch</a>
USB Controllers	<a href="http://cypress.com/usb">cypress.com/usb</a>
Wireless Connectivity	<a href="http://cypress.com/wireless">cypress.com/wireless</a>

### PSoC® Solutions

[PSoC 1](#) | [PSoC 3](#) | [PSoC 4](#) | [PSoC 5LP](#) | [PSoC 6](#)

### Cypress Developer Community

[Forums](#) | [WICED IOT Forums](#) | [Projects](#) | [Videos](#) | [Blogs](#) | [Training](#) | [Components](#)

### Technical Support

[cypress.com/support](http://cypress.com/support)

All other trademarks or registered trademarks referenced herein are the property of their respective owners.



Cypress Semiconductor  
198 Champion Court  
San Jose, CA 95134-1709

© Cypress Semiconductor Corporation, 2017. This document is the property of Cypress Semiconductor Corporation and its subsidiaries, including Spansion LLC ("Cypress"). This document, including any software or firmware included or referenced in this document ("Software"), is owned by Cypress under the intellectual property laws and treaties of the United States and other countries worldwide. Cypress reserves all rights under such laws and treaties and does not, except as specifically stated in this paragraph, grant any license under its patents, copyrights, trademarks, or other intellectual property rights. If the Software is not accompanied by a license agreement and you do not otherwise have a written agreement with Cypress governing the use of the Software, then Cypress hereby grants you a personal, non-exclusive, nontransferable license (without the right to sublicense) (1) under its copyright rights in the Software (a) for Software provided in source code form, to modify and reproduce the Software solely for use with Cypress hardware products, only internally within your organization, and (b) to distribute the Software in binary code form externally to end users (either directly or indirectly through resellers and distributors), solely for use on Cypress hardware product units, and (2) under those claims of Cypress's patents that are infringed by the Software (as provided by Cypress, unmodified) to make, use, distribute, and import the Software solely for use with Cypress hardware products. Any other use, reproduction, modification, translation, or compilation of the Software is prohibited.

TO THE EXTENT PERMITTED BY APPLICABLE LAW, CYPRESS MAKES NO WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, WITH REGARD TO THIS DOCUMENT OR ANY SOFTWARE OR ACCOMPANYING HARDWARE, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. To the extent permitted by applicable law, Cypress reserves the right to make changes to this document without further notice. Cypress does not assume any liability arising out of the application or use of any product or circuit described in this document. Any information provided in this document, including any sample design information or programming code, is provided only for reference purposes. It is the responsibility of the user of this document to properly design, program, and test the functionality and safety of any application made of this information and any resulting product. Cypress products are not designed, intended, or authorized for use as critical components in systems designed or intended for the operation of weapons, weapons systems, nuclear installations, life-support devices or systems, other medical devices or systems (including resuscitation equipment and surgical implants), pollution control or hazardous substances management, or other uses where the failure of the device or system could cause personal injury, death, or property damage ("Unintended Uses"). A critical component is any component of a device or system whose failure to perform can be reasonably expected to cause the failure of the device or system, or to affect its safety or effectiveness. Cypress is not liable, in whole or in part, and you shall and hereby do release Cypress from any claim, damage, or other liability arising from or related to all Unintended Uses of Cypress products. You shall indemnify and hold Cypress harmless from and against all claims, costs, damages, and other liabilities, including claims for personal injury or death, arising from or related to any Unintended Uses of Cypress products.

Cypress, the Cypress logo, Spansion, the Spansion logo, and combinations thereof, WICED, PSoC, CapSense, EZ-USB, F-RAM, and Traveo are trademarks or registered trademarks of Cypress in the United States and other countries. For a more complete list of Cypress trademarks, visit [cypress.com](http://cypress.com). Other names and brands may be claimed as property of their respective owners.