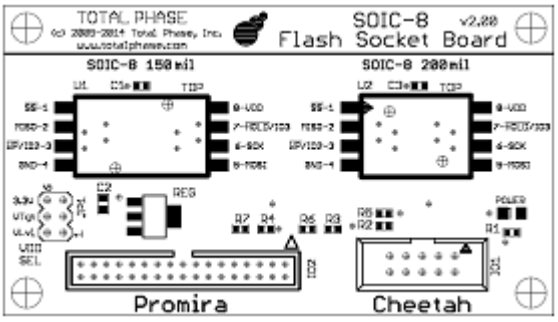
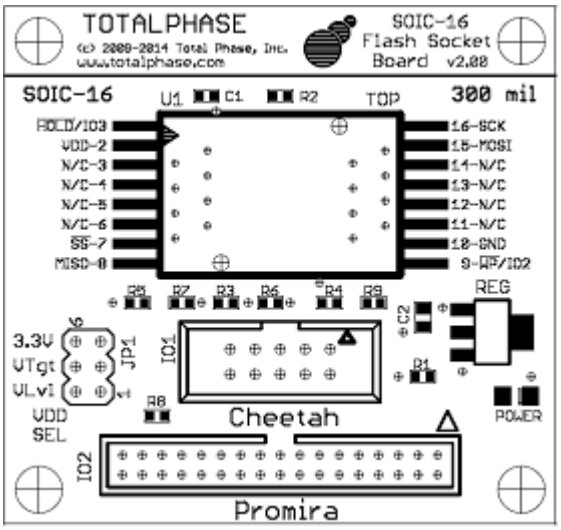
Flash SOIC-8 Socket Board - 10/34



Flash SOIC-16 Socket Board - 10/34



Summary

The Flash Socket Boards allow a developer to flash and burn stand-alone SPI Serial Flash memory chips by using Promira™ Serial Platform with I²C/SPI Active - Level 1 application, Cheetah™ SPI Host Adapter or Aardvark™ I²C/SPI Host Adapter as an interface from a Windows or Linux computer. The Flash SOIC-8 Socket Board - 10/34 supports SOIC-8 and SOIC-8W chip packages. The Flash SOIC-16 Socket Board - 10/34 supports the SOIC-16 chip package.

TOTAL PHASE

Supported products:

PROMIRA

CHEETAH SPI

AARDVARK I²C/SPI

Flash Socket Boards - 10/34
User Manual v1.00
November 17, 2014

1 Overview

The Flash Socket Boards provide embedded systems engineers with an easy and cost-effective method of programming SPI Serial Flash memory chips. Using Total Phase's industry-leading Promira™ Serial Platform with I^{2}C/SPI Active - Level 1 application, Cheetah™ SPI Host Adapter or Aardvark I^{2}C/SPI Host Adapter, engineers can take full advantage of the Flash Center™ programming software to program their SPI Serial Flash memory chips.

1.1 Features

- Flash and burn SPI Serial Flash chips that have a standard pinout and are in any of these standard chip packages: SOIC-8, SOIC-8W, or SOIC-16
- Provide to target device 0.9 V - 5 V power supply from the adapter or external power source
- Gang-program multiple devices by using multiple socket board and programming adapter sets in parallel on the same host computer.

1.2 What's Included

The Flash SOIC-8 Socket Board - 10/34 and Flash SOIC-16 Socket Board - 10/34 are sold separately.

1.3 Flash Center Software

The Flash Center Software is a free software package that allows engineers to quickly erase, program, and verify SPI Serial Flash memory chips that are interfaced through a Promira Serial Platform, Cheetah SPI Host Adapter or Aardvark I^{2}C/SPI Host Adapter.

***Figure 1** : Flash Center Software*

1.3.1 Features

- **Fast speeds programing.**
- **Gang programming support** – the Flash Center Software can program multiple devices in parallel by connecting to multiple Promira Serial Platforms, Cheetah SPI Host Adapters, and/or Aardvark I^{2}C/SPI Host Adapters on the same computer.
- **Extensible device support** – the Flash Center Software has an extensible XML-based memory device library. By adding or modifying the XML descriptions of target memory devices, developers can instantly support almost any I^{2}C- or SPI-based EEPROM or Serial Flash memory.

1.3.2 Minimum Requirements

- Windows or Linux (64 or 32 bit)
  - Windows: Windows 7, Windows 8, Windows 8.1
  - Linux: Red Hat, SuSE, Ubuntu, Fedora
- One or more available high-speed USB 2.0 ports
- One or more Promira Serial Platforms, Cheetah SPI Host Adapters and/or Aardvark I^{2}C/SPI Host Adapters

1.4 Promira Serial Platform

The Promira Serial Platform with I^{2}C/SPI Active - Level 1 application is an I^{2}C/SPI adapter that is capable of communicating over I^{2}C from 1 KHz to 1.02/0.5 MHz and over SPI from 31 KHz to 12.5/8 MHz in master/slave mode. The Promira platform is designed to communicate with I^{2}C/SPI based EEPROM and Flash memories. It is a convenient tool to develop, prototype, debug, and program {{i2c}/SPI based systems.

***Figure 2** : Promira Serial Platform*

1.4.1 Features

- I^{2}C Master/Slave signaling from 1 KHz to 1.02/0.5 MHz
- Master/Slave SPI signaling from 31 KHz to 12.5/8 MHz
- Built-in voltage level shifter
- General Purpose I/O
- Windows and Linux support
- Free software and royalty-free API

1.5 Cheetah SPI Host Adapter

The Cheetah SPI Host Adapter is a high-speed SPI adapter that is capable of communicating over SPI from 100 KHz to 40+ MHz. The Cheetah adapter is specifically designed to communicate with high-speed, SPI-based Flash memory. It is an ideal tool to develop, debug, and program SPI-based systems.

***Figure 3** : Cheetah SPI Host Adapter*

1.5.1 Features

- SPI Master signaling from 100 KHz to 40+ MHz
- Maximum throughput with no inter-byte delays
- User-configurable timing delays
- Windows and Linux support
- Free software and royalty-free API

1.6 Aardvark I²C/SPI Host Adapter

The Aardvark I²C/SPI Host Adapter is an I²C/SPI adapter that is capable of communicating over I²C from 1 KHz to 800 KHz and over SPI from 125/100 KHz to 8/4 MHz (master/slave mode). The Aardvark adapter is designed to communicate with I²C/SPI based EEPROM and Flash memories. It is a convenient tool to develop, prototype, debug, and program I²C/SPI based systems.

***Figure 4** : Aardvark I²C/SPI Host Adapter*

1.6.1 Features

- I²C Master/Slave signaling from 1 KHz to 800 KHz
- SPI Master/Slave signaling from 125/100 KHz to 8/4 MHz
- General Purpose I/O
- Windows and Linux support
- Free software and royalty-free API

2 Sockets

The Flash Socket Boards offer different sockets to interface with your memory chip.

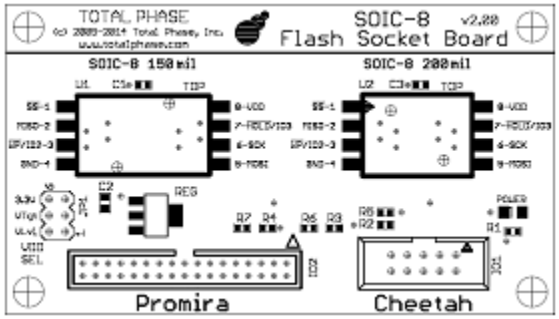


Figure 5 *: The Flash SOIC-8 Socket Board - 10/34 provides SOIC-8 (150mil) and SOIC-8W (200mil) sockets for interfacing with your stand-alone memory chip.*

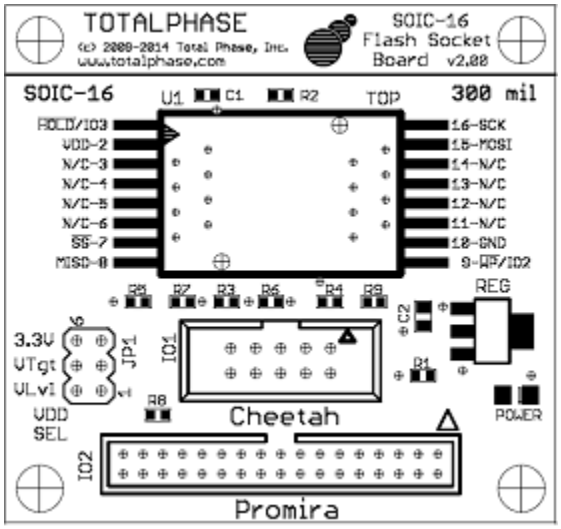


Figure 6 *: The Flash SOIC-16 Socket Board - 10/34 provides a SOIC-16 socket for interfacing with your stand-alone memory chip.*

Please note that each socket has its own dedicated 34-pin boxed header for connecting Promira Serial Platform, and 10-pin boxed header for connecting Cheetah SPI Host Adapter or Aardvark I^2C/SPI Host Adapter.

2.1 Compatible Chip Sizes

The sockets of the Flash Socket Boards are with standard sized chip packages. Figure 7 provides information about the supported sizes for all the sockets. Please note that all measurements are in millimeters (mm).

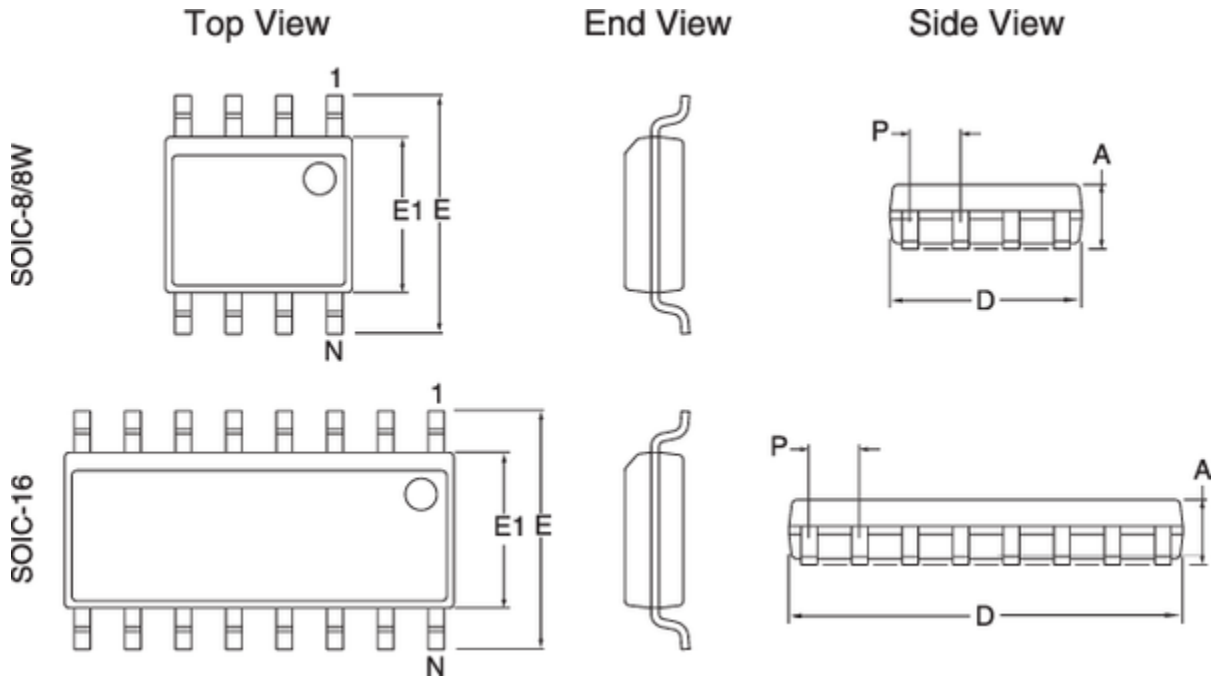


***Figure 7** : Diagrams of the supported package sizes.*
Please note that the diagrams are not to scale.

Compatible chip sizes for each of the sockets available on the Flash Socket Boards. All measurements are in millimeters (mm).

		SOIC-8W	SOIC-8	SOIC-16
Pitch	(P)	1.27	1.27	1.27
Thickness	(A)	1.90	1.90	1.90
Lead Tip to Tip Width	(E)	8.00	6.00	10.40
Molded Package Width	(E1)	5.23	3.90	7.50
Overall Length	(D)	5.23	5.40	10.50

2.2 Pinouts

The sockets of the Flash Socket Boards are compatible with standard SPI Serial Flash chip pinout configurations. Each socket is labeled with the specific pinout. Please verify that the Serial Flash memory chip that is to be programmed is compatible with the pinouts as seen in Figure 8 and Figure 9.

On the Flash Socket Boards, VDD is nominally 0.9 V - 5 V and the HOLD and WP lines are tied to VDD through a weak pull-up resistor.

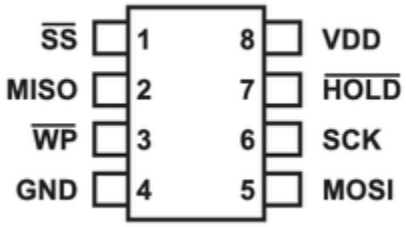


***Figure 8** : Pinouts for the SOIC-8 and SOIC-8W sockets on the Flash SOIC-8 Socket Board - 10/34.*

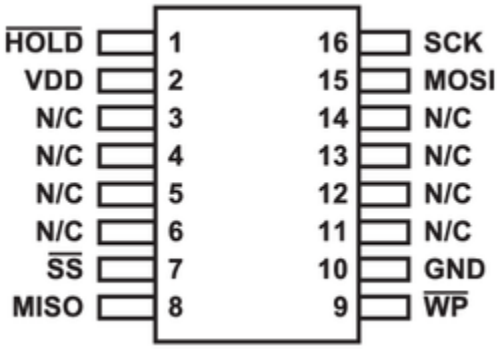


***Figure 9** : Pinout for the SOIC-16 socket on the Flash SOIC-16 Socket Board - 10/34.*

If your Serial Flash memory chip has a non-standard pinout configuration, please consider using the EEPROM Socket Board - 10/34. It is possible to arbitrarily assign signals to different pins with this board using its 8-pin split cable.

3 Connectors

3.1 34-pin Boxed Connector and 10-pin Boxed Connector

The sockets are connected to 34-pin boxed connector and to 10-pin boxed connector which are located directly beneath it. The 34-pin boxed connector is used to connect the sockets to Promira Serial Platform to program the target device. The 10-pin boxed connector is used to connect the sockets to Cheetah SPI Host Adapter or Aardvark I^2C/SPI Host Adapter to program the target device.

The connectors' HOLD and WP signals are pulled-up to VDD.

VDD Selector Connector

The VDD selector connector (JP1) has 3 jumpers options, which configured the power source to the memory: 3.3V, VTgt, and VLvl. To select one of these voltages, simply use a jumper to short the pins next to the appropriate voltage on the VDD selector connector

- **3.3V** – The power voltage to the memory is 3.3V. The target power pins of the Promira platform, Cheetah adapter, or Aardvark adapter supply 5V to the board voltage regulator.
- **VTgt** – The power voltage to the memory is 3.3 V or 5V, which is supplied directly from the target power pins of the Promira platform, Cheetah adapter, or Aardvark adapter.
- **VLvl** – The power voltage to the memory is 0.9 V - 3.45 V, which is supplied directly from the I/O power pins of the Promira platform.
- **No Jumpers** – The power voltage to the memory is from external 0.9 V - 5 V power supply that is connected to the VDD Selector connector (JP1) pins 2, 4, or 6.

Powering the Flash Socket Boards

The Flash Socket Boards provide 0.9 V - 5 V to the target device from the adapter or from external source. If the power source to the Flash Socket Boards is the adapter, then the Promira platform, Cheetah adapter or the Aardvark adapter must be configured to send target power to the board. This can be accomplished via the Rosetta Language Bindings, the Flash Center software, the Control Center Software or the Cheetah GUI Software. When powered-on, the board's Power LED will be lit.

4 Programming a Device

SPI Serial Flash memory can be programmed using the Flash Center Software in conjunction with Promira platform, Cheetah adapter or Aardvark adapter. Detailed technical information about all these products can be found on Total Phase's website.

4.1 Inserting a Device

To program a chip, insert the chip into the appropriate socket.

Whenever handling chips, always be sure to follow safe handling procedures to ensure that the chips are not damaged.

All sockets are zero insertion force sockets and work on the same principle.

To insert a chip:

1. Press down on the top of the socket to raise the contact pins.
2. While pressing down on the socket, carefully place the chip into the socket and make sure that the orientation of the chip is correct (pin 1 should always be in the top left corner).
3. Once the chip is in place, release the top of the socket to allow the contact pins to drop and hold the chip in place.

At this point, the chip should be held securely in place. Please make sure that all the contact pins have made contact with the correct pins on the chip.

Removing a Device

When removing the chip, we recommend using a vacuum pickup tool to prevent damage to the chip and its pins.

To remove a chip:

1. Press down on the top of the socket to raise the contact pins.
2. Carefully remove the chip using a vacuum pickup tool or equivalent tool.

3. Release the top of the socket.

4.2 Powering the Device

To configure the power source to the memory, select one of the three voltage options (3.3V, VTgt, and VLvl) on the VDD selector connector (JP1).

4.3 Supported Vendors

The Flash Socket Boards support SPI Serial Flash memory from these leading manufacturers:

- Atmel
- Chingis
- Intel
- Macronix
- Numonyx/ST Micro
- Spansion
- SST
- Winbond
- Micron

SPI Serial Flash memory chips from other vendors may also be supported as long as they conform to the standard pinout as described in the previous sections.

5 Legal / Contact

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