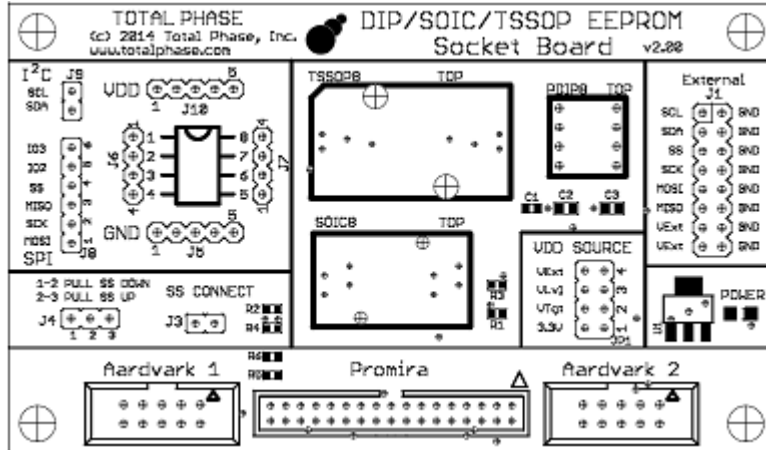


EEPROM Socket Board - 10/34



Features

- Programming of stand-alone I²C and SPI based EEPROM and Flash memory chips
- DIP-8 socket
- SOIC-8 socket
- TSSOP-8 socket
- Multiple voltage options
- Multiple SPI Slave Select options

Summary

The EEPROM Socket Board - 10/34 allows a developer to flash and burn stand-alone I²C or SPI based EEPROM and Flash memory chips by using either Promira™ Serial Platform with I²C/SPI Active - Level 1 application, Aardvark™ I²C/SPI Host Adapter or a Cheetah™ SPI Host Adapter as an interface from a Windows or Linux computer. The EEPROM Socket Board - 10/34 supports three different standard chip packages: DIP8, SOIC8, and TSSOP8.



Supported products:



EEPROM Socket Board - 10/34
User Manual v1.00
November 17, 2014

1 Overview

The EEPROM Socket Board - 10/34 provides embedded systems engineers with an easy and cost-effective method of programming I²C- and SPI-based memory devices. Using Total Phase's industry-leading host adapters and software, engineers can take full advantage of the Flash Center™ programming software along with the Promira™ Serial Platform with I²C/SPI Active - Level 1 application, Aardvark™ I²C/SPI Host Adapter and the Cheetah™ SPI Host Adapter to program their Serial EEPROM/flash memory chips.

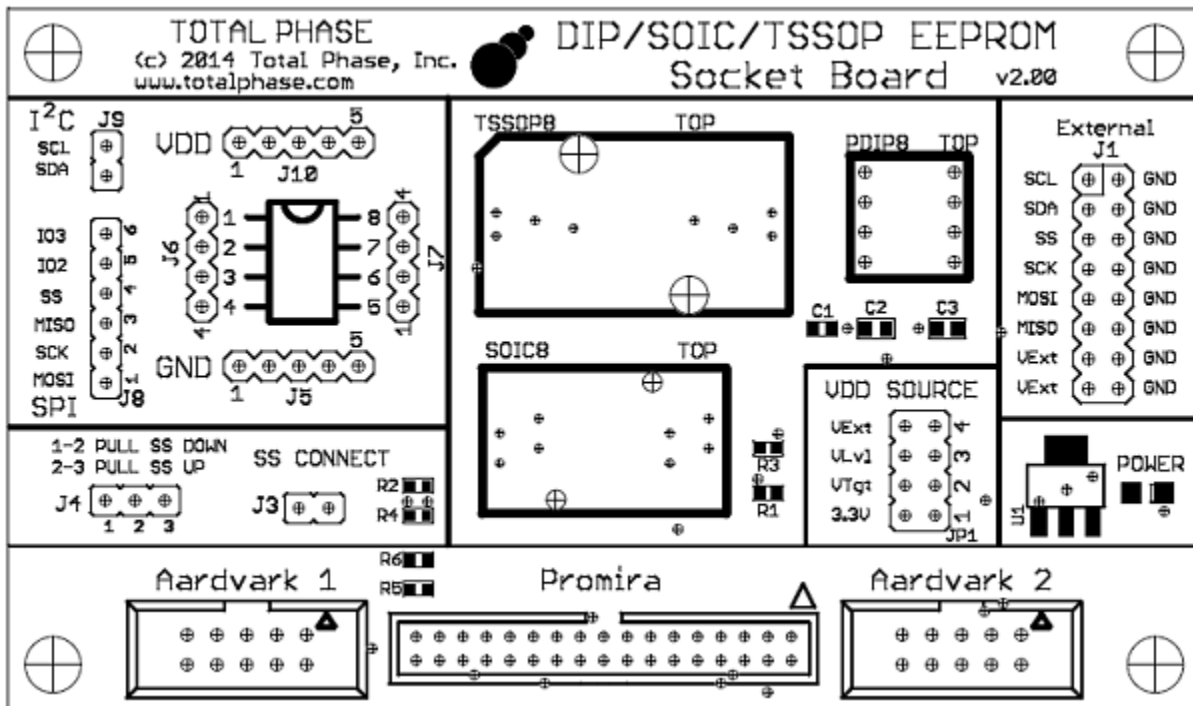


Figure 1 : EEPROM Socket Board - 10/34

1.1 Features

- Flash and burn I²C and SPI EEPROM and flash memories that are in any of these standard chip packages: DIP8, SOIC8 or TSSOP8.
- Provide to target device 0.9 V - 5 V power supply from the adapter or external power source.
- Connect or disconnect Slave Select (SS) and change the polarity of SS.
- 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 EEPROM Socket Board - 10/34 comes complete with:

- EEPROM Socket Board - 10/34
- 8-pin split ribbon cable

1.3 Flash Center Software

The Flash Center Software is a free software package that allows engineers to quickly erase, program, and verify I²C- and SPI-based EEPROM and Flash memory chips that are interfaced through Promira Serial Platform, Aardvark I²C/SPI Host Adapter and/or Cheetah SPI Host Adapter.



Figure 2 : Flash Center Software

1.3.1 Features

- **Fast speeds programming.**
- **Gang programming support** – the Flash Center Software can program multiple devices in parallel by connecting to multiple Promira Serial Platforms, Aardvark I²C/SPI Host Adapters and/or Cheetah 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 I²C- 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, Aardvark I²C/SPI Host Adapters and/or Cheetah SPI Host Adapters

1.4 Promira Serial Platform

The Promira Serial Platform with I²C/SPI Active - Level 1 application is an I²C/SPI adapter that is capable of communicating over I²C from 1 KHz to 1.02 MHz and over SPI from 31 KHz to 12.5/8 MHz in master/slave mode. The Promira platform 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 3 : Promira Platform

1.4.1 Features

- I²C 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 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 in 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

1.5.1 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

1.6 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 5 : Cheetah SPI Host Adapter

1.6.1 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

2 Sockets

The EEPROM Socket Board - 10/34 offers three different sockets to interface with your memory chip: DIP8, SOIC8 and TSSOP8. Please note that only one can be used at a time as they are all cross-connected.

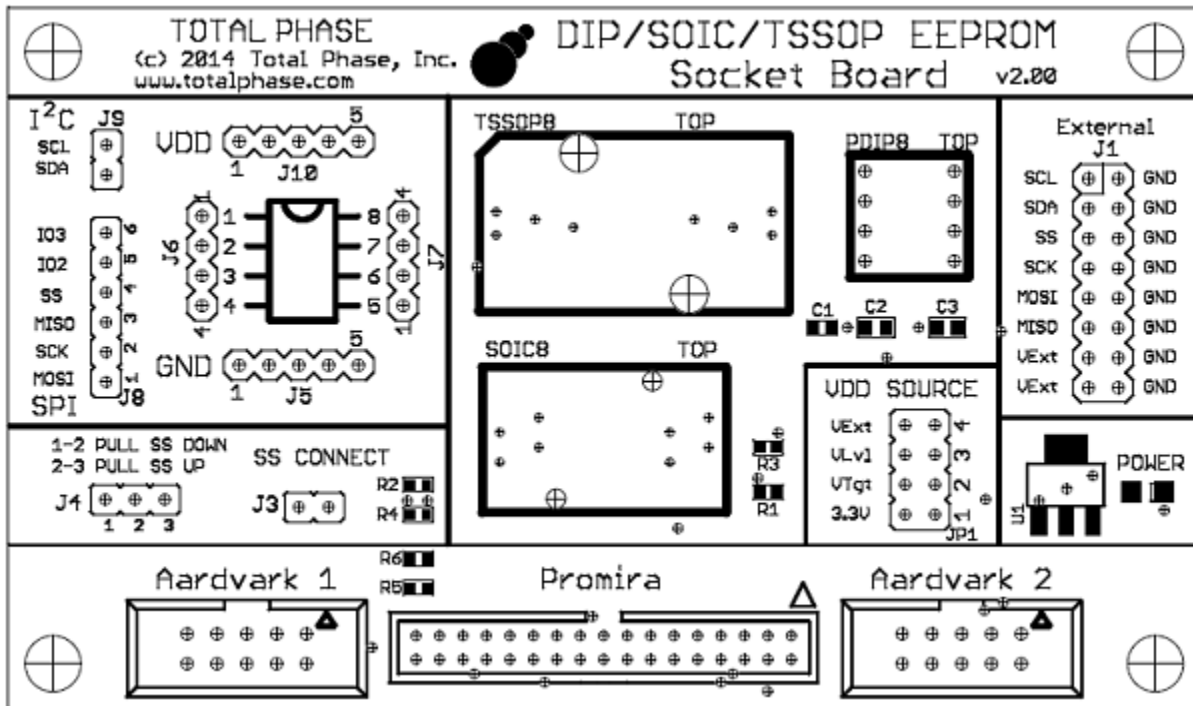


Figure 1 : The EEPROM Socket Board - 10/34 provides three different sockets for interfacing with your stand-alone memory chip.

2.1 Compatible Chip Sizes

The three sockets of the EEPROM Socket Board are compatible 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).

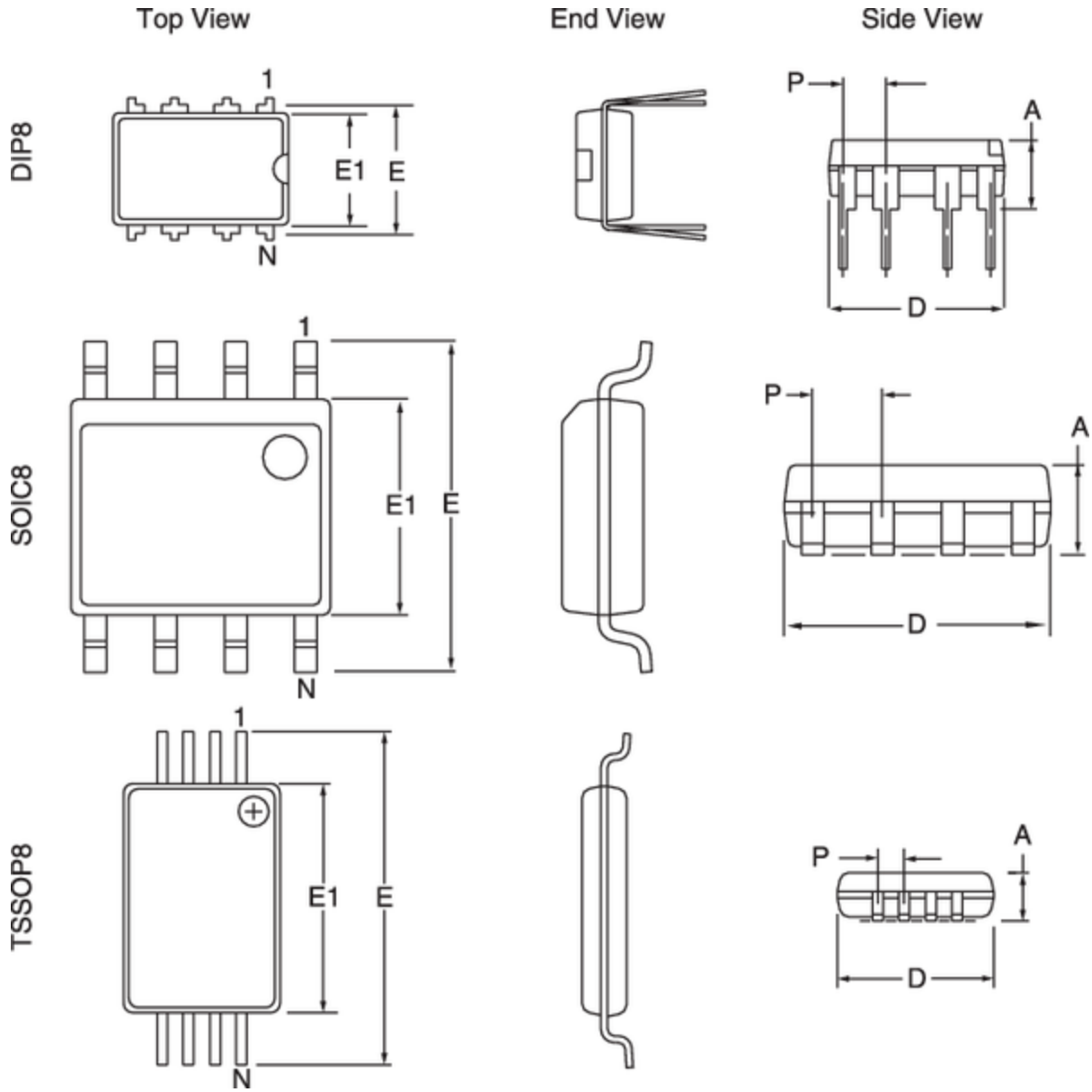


Figure 7 : *Diagrams of the supported package sizes. Please note that the diagrams are not to scale.*

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

		DIP8	SOIC8	TSSOP8
Pitch	(P)	2.54	1.27	0.65
Thickness	(A)	3.94	1.90	1.00
Lead Tip-to-Tip Width	(E)	7.94	6.00	6.40

Molded Package Width	(E1)	6.35	3.90	4.40
Overall Length	(D)	9.46	5.40	3.00

3 Connectors

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

The sockets are connected to 34-pin boxed connector and to 10-pin boxed connectors which are located directly beneath it. The 34-pin boxed connector (Promira) is used to connect the sockets to Promira Serial Platform to program the target device. The 10-pin boxed connectors (Aardvark 1 and Aardvark 2) are used to connect the sockets to Cheetah SPI Host Adapter or Aardvark I²C/SPI Host Adapter to program the target device. The two 10-pin boxed connectors are cross-connected, so it does not matter which one is used. In most cases, you will only want to connect a single adapter to the EEPROM Socket Board at a time.

The second 10-pin boxed connector is available to connect to a protocol analyzer or to cross connect with another adapter for testing purposes. For example, an Aardvark adapter or a Cheetah adapter can be connected to the board through **Aardvark 1** connector to program the memory chip. At the same time, a Beagle I²C/SPI Protocol Analyzer can be attached to **Aardvark 2** connector to monitor the bus while the chip is being programmed to ensure that the data on the bus is correct.

3.2 External Connector

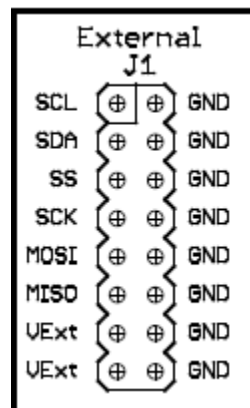


Figure 8 : The External Connector (J1) provides the developer with a quick and easy way to interface or monitor any or all of the EEPROM Socket Board signals.

Some of the signals on the board are available for external monitoring through the **External** connector (J1). The two **VExt** pins allow a user to use an external power source to power the memory device. Please refer to the Programming a Device section for more information.

3.3 VDD Source Connector

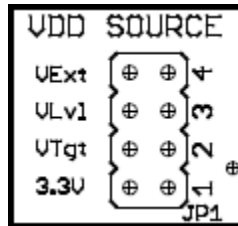


Figure 9 : The EEPROM Socket Board provides to the target device 0.9 V - 5 V from the adapter or from external source.

The VDD source connector (JP1) has 4 jumpers options, which configured the power source to the memory: 3.3V, VTgt, VLvl, and VExt. To select one of these voltages, simply use a jumper to short the pins next to the appropriate voltage on the VDD source 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 - 3.3 V, which is supplied directly from the I/O power pins of the Promira platform.
- **VExt** – The power voltage to the memory is from external 0.9 V - 5 V power supply that is connected to the External connector (J1) pins 13, 15 (VExt).

3.4 Powering the EEPROM Socket Board

The EEPROM Socket Board provides 0.9 V - 5 V to the target device from the adapter or from external source. If the power source to the EEPROM Socket Boards is the adapter, then the Promira platform, Cheetah adapter or 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.

3.5 Cross-Connecting Adapters

When cross-connecting two adapters, the board must be powered on. Otherwise, results may be unpredictable. If you experience problems, please make sure that the Power LED on the board is lit.

4 Programming a Device

I²C/SPI EEPROM and Flash memories can be programmed using the Flash Center Software in conjunction with Promira platform, Aardvark adapter or a Cheetah adapter. Detailed technical information about all these products can be found on Total Phase's website.

4.1 Inserting and Removing Device

To program a chip, insert the chip into the appropriate socket. Please note that all the sockets are cross-connected, so it is only possible to use one socket at a time.

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

4.1.1 DIP8

To insert a DIP8 chip, simply align the pins with the socket and firmly press the chip into the socket.

To remove a DIP8 chip, we recommend that a DIP extractor tool is used to prevent damage to the chip and its pins.

4.1.2 SOIC8 and TSSOP8

Both the SOIC8 and TSSOP8 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.

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 Connecting the Pins

Since different chips have different pin configurations, the EEPROM Socket Board includes 8-pin split ribbon cable to allow you to connect the pins to the correct sources.

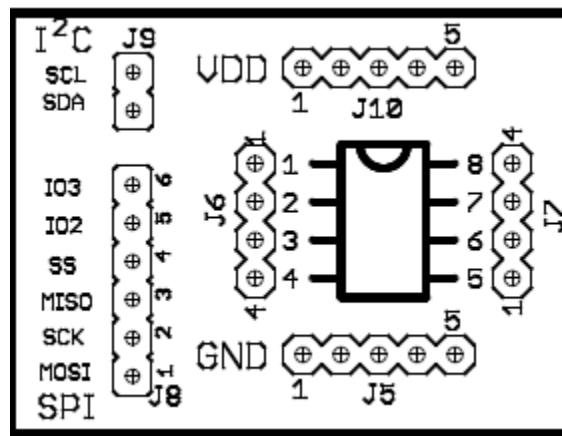


Figure 10 : The Pin Board connector provides the developer with a easy way to connect the correct signals to the appropriate pins of the memory chip that is to be programmed. The included 8-pin split cable can be used to connect the correct signal to the appropriate pin.

In the top left side of the board, you will notice that there is a graphic representation of a chip with numbered pins from 1 to 8 (Figure 10). Along both sides of the drawing are two banks of 4-pin headers. These banks are connected to the eight pins of the chip in the socket. The pins of the chip should be connected to the appropriate sources as described by the chip's datasheet.

Various sources are provided around the chip diagram. Along the top of the chip are five pins for VDD and along the bottom of the chip are five pins for GND. To the left of the chip are sources for the I²C and SPI pins. Each source is labeled along the left.

4.3 Powering the Device

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

4.3.1 External Power Source

It is possible to use an external power supply to provide power to the target chip. To use an external power source, use a jumper to short the pins next to VExt (position 4) on the VDD source connector (JP1). Power should be applied to the VExt pins on the External connector (J1).

4.4 SPI Slave Select

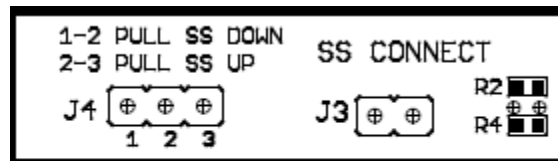


Figure 11 : The developer can connect or disconnect Slave Select (SS) pin as well as configure the polarity of SS on the board.

4.4.1 Connecting SS

Some SPI-based memory chips do not require the use of the Slave Select pin. In these cases, the SS pin can be disconnected. To do this, simply remove the jumper from the SS Connect connector (J3).

4.4.2 SS Pull-down/Pull-up Resistors

The EEPROM Socket Board provides the ability to either pull-down or pull-up the Slave Select line depending on the requirements of the target device by using a jumper to short pins on J4 connector.

To pull SS down, short pins 1 and 2.

To pull SS up, short pins 2 and 3.

5 Legal / Contact

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