

SPI Device Flash Via SOIC Clip Guide v1.0

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Note: The information in this document is not a substitute for the specifications listed in the corresponding device datasheets. In the event of a discrepancy, the datasheet supersedes this document.

Introduction:

In the cases of corrupted data or complete absence of data on a SPI flash device, it may be necessary to flash the device directly. This task becomes more challenging if the flash devices has already been soldered onto a circuit board such as a DLP® EVM. This guide provides a method to flash a SPI devices that has been soldered into place on a Texas Instruments DLP® EVM by the use of a SOIC Clip test clip.

Required Hardware

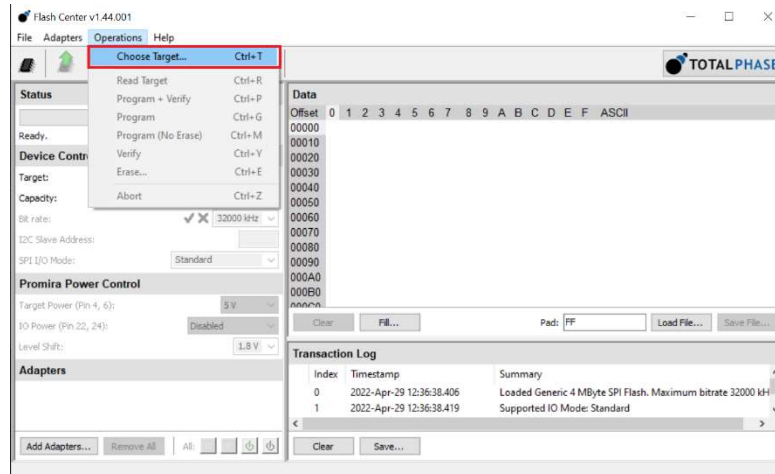
- 1 x Test Clip SOIC 8 (2x4)
 - Recommended: [Pomona® 5250](#)
- 1 x SPI Host Adapter
 - Recommended: [Total Phase Cheetah™ SPI Host Adapter](#)
- 8 x Male to female jumper wires
- 1 x Windows or Linux PC
- 1 x USB Type A / 3.0 to USB Type B Cable

Required Software

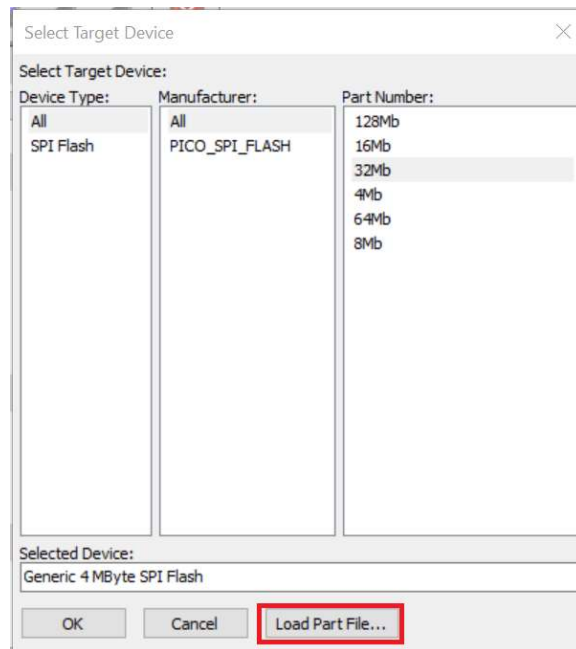
- Flash programming software
 - Recommended: [Total Phase Flash Center™](#)
- Pico SPI Flash XML (titled pico-spi-flash.xml)
 - This XML file should be accessible from the location of this guide. Please contact a Texas Instruments DLP Pico Applications Engineer if this is not the case.
- Firmware image for the targeted EVM
 - Released firmware images are available on the [TI DLP® Pico™ Firmware Selector Tool](#)

Preparing Software (Flash Center™)

1. Download and install [Total Phase Flash Center™](#)
2. Within Flash Center™ open up the target selection menu by selecting Operations/Chooser Target... or Ctrl+T



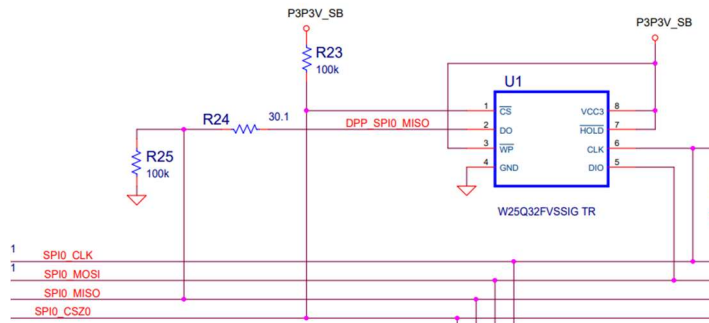
3. Load the pico-spi-flash.xml file into Flash Center™ by selecting Load Part File...



4. Navigate to and select the pico-spi-flash.xml file
 - This should cause the Select Target Device window to include the PICO_SPI_FLASH option under “Manufacturer” as seen above

Setting Up Hardware

1. While referencing the EVM schematic (available on the EVM product page) and the SPI Host Adapter User’s Manual wire the SOIC clip to the SPI adapter
 - a. Most DLP® EVMs use a SPI flash device with the following layout



- i.
- ii. The Cheetah device pinout appears as (taken from the [Cheetah User's Manual](#)):

If you flip your Cheetah adapter over (Figure 4) such that the text on the serial number label is in the proper upright position, the pin order is as shown in the following diagram.

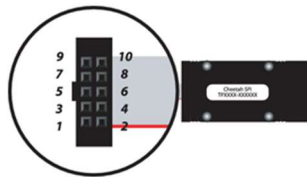


Figure 4: The Cheetah SPI Host Adapter in the upside down position. Pin 1 is located in the lower left corner of the connector and Pin 10 is located in the upper right corner of the connector.

- b. For the [Total Phase Cheetah™](#) (the SOIC pins assume that pin 1 is the upper left most pin)
 - i. GND: Cheetah pin 2 to SOIC Pin 4
 - ii. POCI: Cheetah pin 5 to SOIC pin 2
 - iii. PICO: Cheetah pin 8 to SOIC pin 5
 - iv. SCLK: Cheetah pin 7 to SOIC pin 6
 - v. CSZ: Cheetah pin 9 to SOIC pin 1

2. Place SOIC clip onto the EVM SPI Flash device ensuring that the pins lineup



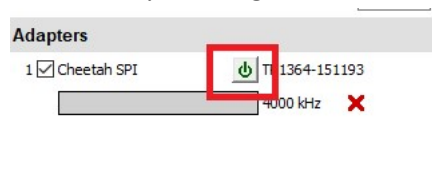
a.

3. Plug in EVM, but DO NOT switch on device

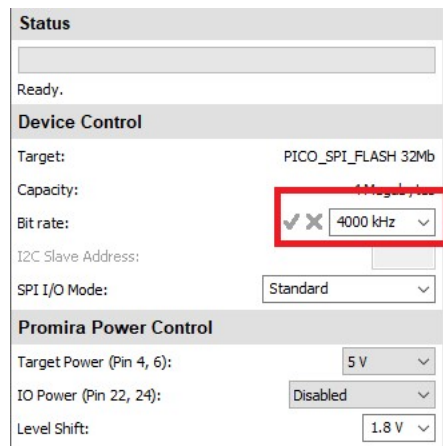
- a. This will allow the reserve power to drive VCC and other necessary pins on the SPI flash device without causing
4. Connect Cheetah dongle to PC

Flashing Device

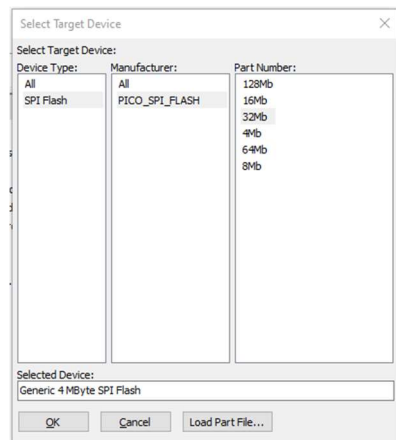
1. Open Flash Center GUI
2. Open firmware image file in Flash Center by navigating to File / Load file (or Ctrl + O) and navigating to saved location of firmware image
3. Connect to Cheetah dongle by navigating to Adapters / Choose Adapter (or Ctrl + D). Select the Cheetah SPI type and click 'Add.'
 - a. Ensure that the device is powered by clicking the power symbol. The device is powered when this symbol is green.



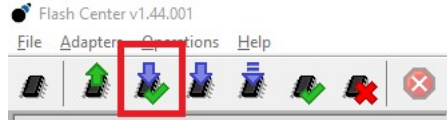
- b.
4. Lower the bit rate to 4000 KHz in the Device Control Menu



- a.
5. Select the target type by navigating to Operations / Chooser Target (or Ctrl + T). Select the part with the correct storage capacity within PICO_SPI_FLASH.

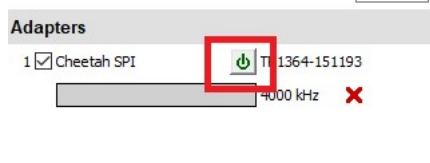


- a.
6. Select Program and Verify in the upper left corner of the GUI (or Ctrl + P).



a.

7. At this point Flash Center will Erase, Write, and then Verify the data onto the SPI flash device. It may take a few minutes for the process to complete
8. Power down SOIC clip by selecting the power button in Flash Center



a.

9. Remove power from the EVM.
10. Remove SOIC Clip.
11. Apply power to EVM and switch board on to test firmware.

Note: In dual ASIC systems, such as the DLP3310 and DLP4710 platforms, this procedure will need to be followed for both flash devices. The same firmware image should be used on both flash devices.

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