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1. Description

The Backup Boot Flash (BBF) is an innovative SPI tool created by DediProg to force the application controller to work (read, program, update..) on the backup memory inserted in the BBF Tool socket and no more on the main memory soldered on board. Actually, the main Serial Flash is disabled automatically by the BBF tool so that the application controller communicates with the Backup flash instead of the Main Serial Flash.

Fig1: Backup Boot Flash description

1.1. Benefits

Software development:
This tool offers the highest flexibility for software development as the Serial Flash can be easily changed in the socket with different parts, suppliers, densities and also easily updated with different codes by connecting our SF100 or SF100+ programmer. Software engineers can perform different trials in a very short time without unsoldering the Main serial Flash from the board.

Our BBF tool is working with most of the application in the market using Serial Flash as the only hardware requirement is a pull-up resistor on the Hold pin (most of the design).

Computer Repairing:
The BBF tool can be used to make the computer boot on the backup memory in case of corrupted Bios in the main memory soldered on the motherboard. After Boot, the Flash utility tool of the computer can be used to update the corrupted memory and fix the computer (for more information on this method, please refers to our dedicated Application note: AN0106).

1.2. The Sockets

The socket(s) is used to insert and remove easily the backup Serial Flash.
A complete portfolio of BBF tools is available to support the different Serial Flash packages and also support up to 2 Backup memories.
Single Socket: SO8W, SO16W or SO8N
Dual Socket: Two SO8W, two SO16W or two SO8N

The Serial Flash must been inserted with the Pin 1 on the Dot printed in the BBF tool.

Single SO8W:

Dual SO8W:

Single SO16W

Dual SO16W:

1.3. The Switch

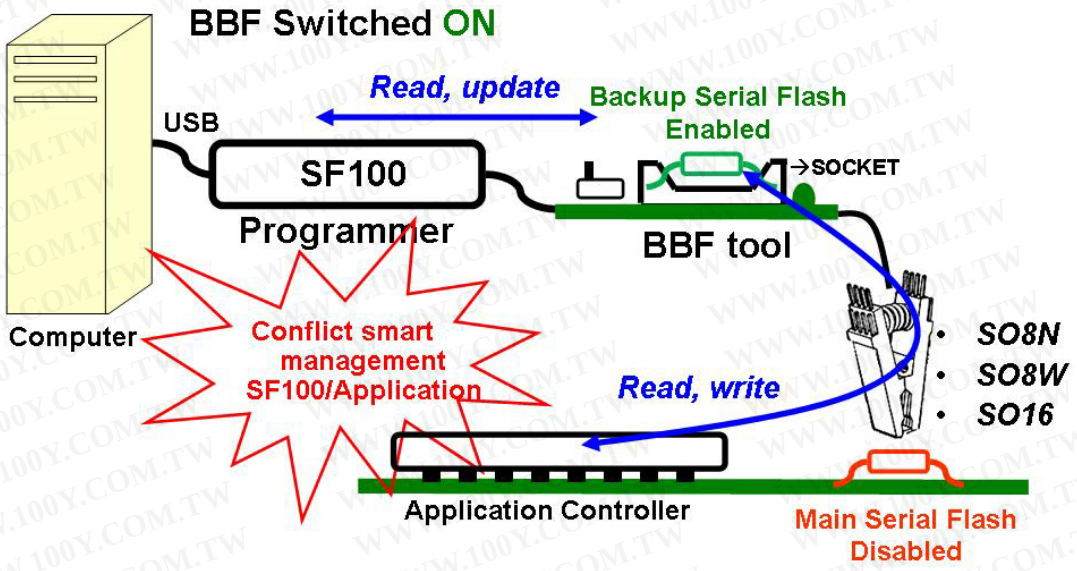
A “Switch” can be used to force the application to work on the backup memory or to work on the main memory soldered on board:

Switch ON (LED ON)

The Backup memory is enabled and the Main memory on board disabled

➔ Application controller and programmer are working on the backup Serial Flash

Fig2: Backup Boot Flash switched ON

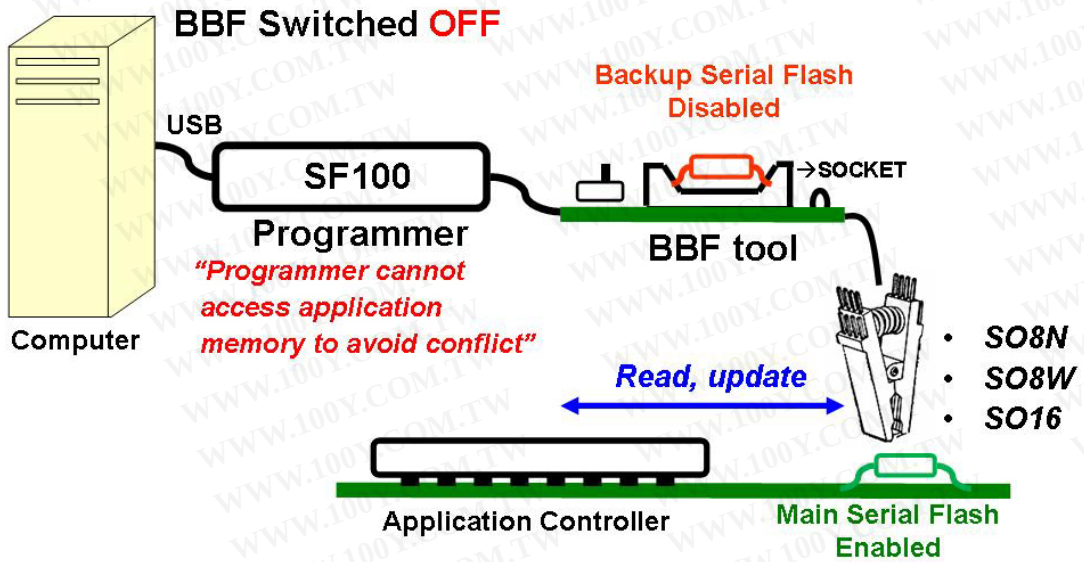


Switch OFF (LED OFF)

The Backup memory is disabled and the Main memory on board enabled.

➔ Application controller is working on the Main Serial Flash soldered on board

Fig3: Backup Boot Flash switched OFF



The LED is used to visualize if the Backup memory is enabled or disabled

1.4. The Backup Flash update

The BBF tool can be connected to our SF100 or SF300 programmer so that user can update or read easily the Backup Flash memory inserted in the socket. This feature is very convenient to test different codes in the target application.

Fig4: Backup Flash update with the SF100 programmer

The SF100 programmer can support one or two Backup memories update by selecting the target memory on the DediProg software (Chip1 or Chip2).

Fig5: Chip selection

The programmer can be kept connected to the BBF tool during your application testing without any interference (transparent for the application) as the BBF Tool embeds a smart conflict management (see fig2). When the user is requesting for a Backup memory update on the programmer software, then the Backup memory is automatically isolated from the application for the update operation duration. When the programmer operation is finished then the Backup Flash is again driven by the application controller.

Remark 1: The BBF switch must be ON to allow the programmer to access the Backup Memory.

Remark 2: The Programmer cannot access or work on the Main memory soldered on board even if the BBF switch is OFF. To update directly the Application memory with the programmer, designer must consider our In System Programming method. Refer to our ISP dedicated documentation to know how to avoid conflict between the programmer and the application controller.

1.5. The BBF connector

The BBF connector pins assignment is similar than a standard Serial Flash SO8 pin out. The BBF is supplied by the application itself via the Vcc pin or by the programmer when in update. The connector must be connected to the application SPI bus (CS, Clock, MOSI and MISO) and also on the Hold signal of the main memory soldered on board.

The Hold signal must been pulled high in the application to the Vcc trough a resistor and not driven by the application controller.

The BBF header pin-out is as follow:

Table 1: Backup boot flash Header

1	Hold	CS2	2
3	CS	VCC	4
5	MISO	Hold	6
7	x	CLK	8
9	GND	MOSI	10

Note1: *The pin 1 and 2 don't need to be wired if the application used only one Serial Flash.*

Note2: *The pin 1 and 2 are used to drive the Chip select and hold pin of the Application second Serial Flash supposing that the SPI bus is common between the two Serial Flash on the board..*

2. The BBF tools

2.1. BBF SO8W Single

The BBF SO8W Single is composed of:

- One SO8W socket to insert the Backup Serial Flash
- One application Pin header to connect different type of cables to the application
- One Programmer cable to connect the BBF tool to the SF100 programmer and update or read the Backup Flash content inserted in the socket (cannot update the application memory directly)
- One Switch to enable the Backup memory and disable the main Serial Flash on application board.
- One LED to indicate the BBF status (ON or OFF).

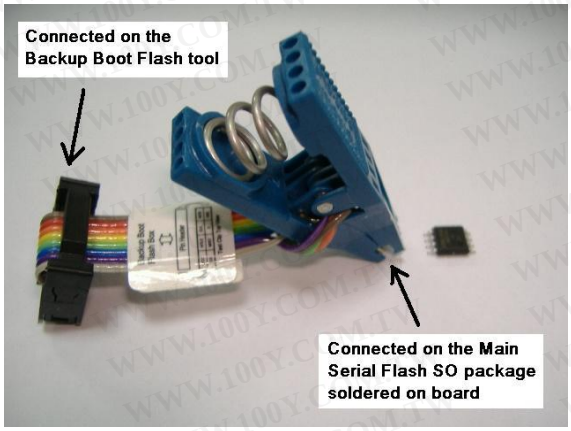
Fig6: BBF Single SO8W

The BBF SO8W can be connected to the application by three different methods as described below:

2.1.1. BBF SO8 Test Clip (SO8 package)

The BBF SO Test Clip is used to connect the BBF tool directly on the Main Serial Flash package soldered on the application board. This solution offers the advantage to be compliant with all the application using the Serial Flash in SO8 package (SO8N, SO8W) without any hardware modification. Actually, the main Serial Flash is kept soldered on board and is used to connect the BBF tool to the SPI bus (no need of application connector).

Fig7: SO8 Test Clip



Note 1: DediProg's connector has been optimized to minimize the parasitic capacitance added on the SPI bus and ensure a good SPI signal.

Note 2: The test clip must be connected carefully on the main Serial Flash to prevent from conflicts. A marking on the test Clip indicate the pin 1 that must been connected on the Serial flash pin 1 (Chip select).

Fig8: SO8 Pin out

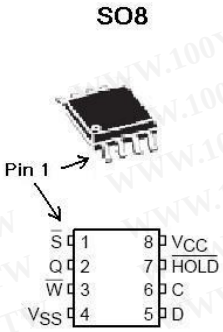
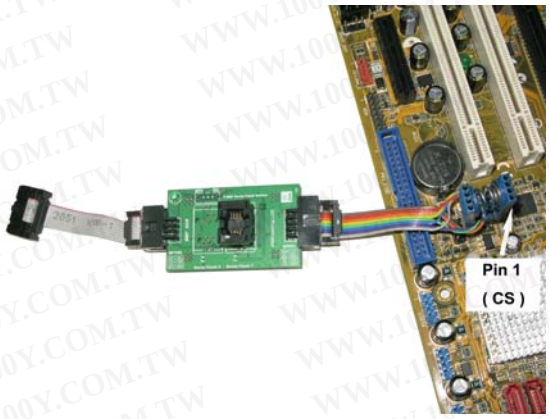


Fig9: SO8 Test Clip connection on the application Serial Flash package



2.1.2. Application through holes connector

To offer an easy and safe connection, the application can be designed with a 2.54mm BBF pin header connector. DediProg is proposing a standard reference pin-out connector adapted to each BBF tool (SO8N, SO8W or SO16W single socket).

Table 2: Backup boot flash connector in the application board (Top view)

1	CS	VCC	2
3	MISO	Hold	4
5	x	CLK	6
7	GND	MOSI	8

The Standard BBF connector is equivalent to the SO8 Serial flash pin out.
The pin 5 (not connected) can be used as a mistake proof pin to avoid any wrong connection from the users.

Fig10: BBF connection on the application 2.54mm pin header

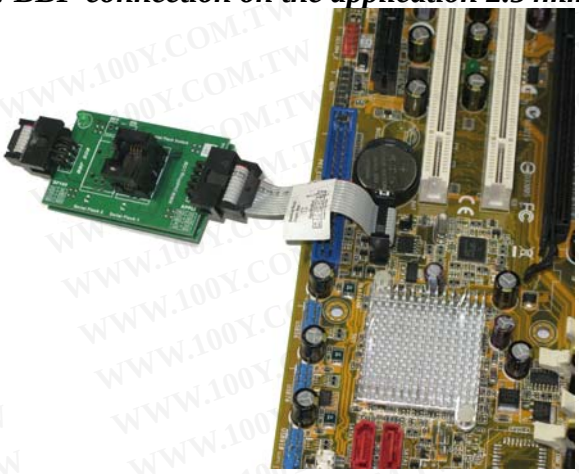
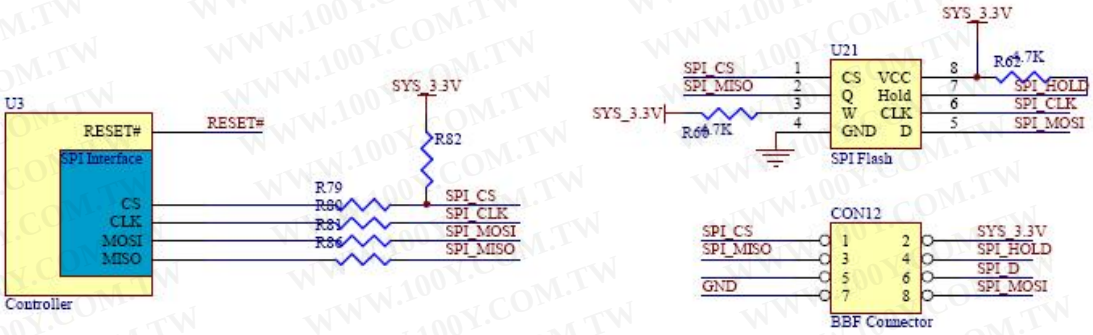


Fig11: BBF application schematic for 2.54mm pin header



BBF Cable maintenance

If the Backup Boot Flash tool is often used, the female connector of the BBF cable on the application side will be step by step wear down (numerous contact with application pin header). So in this case, the BBF cable must be time to time changed.

It is also possible to make your own BBF cable.
You will then have to follow the following instructions:

1) Check if your application BBF connector is as compliant with our standard connector (Top view):

Table 3:

1	CS	VCC	2
3	MISO	Hold	4
5	x	CLK	6
7	GND	MOSI	8

2) Prepare the Female connector on the BBF Side:
You need a 10 pins 2.54mm pitch female connector to be fixed on the flat cable.
The BBF header pin-out is as follow:

Table 4: Backup boot flash Header (Top view)

1	Hold	CS2	2
3	CS	VCC	4
5	MISO	Hold	6
7	x	CLK	8
9	GND	MOSI	10

Note: *The pin 1 and 2 don't need to be wired if the motherboard used only one Serial Flash.*

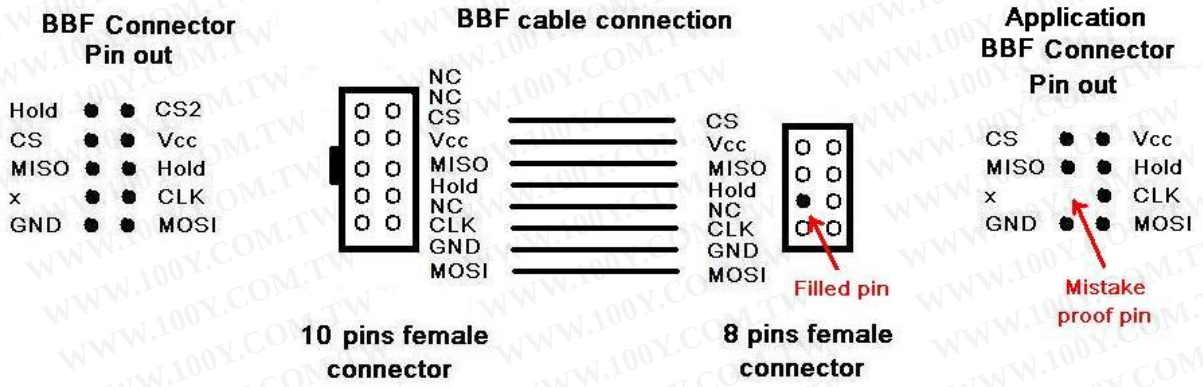
3) Prepare the female connector on the Application side:
You need a 8 pins 2.54mm pitch female connector to be fixed on the flat cable.

Table 5: BBF header pin-out to be compliant with the application (Top view)

1	CS	VCC	2
3	MISO	Hold	4
5	x	CLK	6
7	GND	MOSI	8

4) Prepare the Flat cable or Ribbon cable
You need a Flat cable of 8 lines with a length of 8 cm maximum.
The length of the BBF cable must be minimized to ensure the quality of the SPI signals.

Fig 12: BBF Cable connection (Top view)



NC means "Not Connected"
The two first signals (hold and CS2) of the BBF connector don't need to be wired if the application used only one Serial flash.

2.1.3. 1.27mm SMT connector (SO8 package)

In case, the application board has not been designed with a BBF connector, DediProg is proposing an innovative solution to offer a better contact stability versus the SO Test Clip fixed on the main serial Flash package. The 1.27mm SMT connector can be soldered in place of the Main Serial Flash on board as they have the same footprint and the BBF can be connected with the appropriate cable.

Fig 13: Solder the 1.27mm SMT Pin header in place of the Serial Flash

- The 1.27mm SMT connector method is recommended when engineer works on the same board for a significant number of times (software development, trials..). The time spend on the reworking (unsolder the main flash and solder the SMT connector) will be rewarded by a better stability during the different trials.

- The SO Test Clip is really convenient when the numbers of trials on the same board are limited and operator needs to work on many boards (no need to unsolder the main flash and replaced it by the connector).

2.2. BBF SO8N Single

The BBF SO8N Single is composed of:

- One SO8N socket to insert the Backup Serial Flash
- One application Pin header to connect different type of cables to the application
- One Programmer cable to connect the BBF tool to the SF100 programmer and update or read the Backup Flash content inserted in the socket (cannot update the application memory)
- One Switch to enable the Backup memory and disable the main Serial Flash on application board.
- One LED to indicate the BBF status (ON or OFF).

Fig14: BBF Single SO8N

The BBF SO8N can be connected to the application by three different methods as described below:

2.2.1. BBF SO8 Test Clip (SO8 package)

The BBF SO Test Clip is used to connect the BBF tool directly on the Main Serial Flash package soldered on the application board. This solution offers the advantage to be compliant with all the application using the Serial Flash in SO8 package (SO8N, SO8W) without any hardware modification. Actually, the main Serial Flash is kept soldered on board and is used to connect the BBF tool to the SPI bus (no need of application connector).

The BBF SO8 Test clip is common for the SO8W and SO8N.
For more detailed information please refer to the **section 2.1.2**

2.2.2. Application through holes connector

To offer an easy and safe connection, the application can be designed with a 2.54mm BBF pin header connector. DediProg is proposing a standard reference pin-out connector adapted to each BBF tool (Single). This connection method is similar what ever the Serial flash package used (Single SO8W, Single SO8N or Single SO16W). So for more detailed information on the connector and cable maintenance please refer to the **section 2.1.2.**

2.2.3. 1.27mm SMT connector (SO8 package)

In case, the application board has not been designed with a BBF connector, DediProg is proposing an innovative solution to offer a better contact stability versus the SO Test Clip fixed on the main serial Flash package. The 1.27mm SMT connector can be soldered in place of the Main Serial Flash on board as they have the same footprint and the BBF can be connected with the appropriate cable.

This connecting method is common for the SO8W and SO8N.
For more detailed information please refer to the **section 2.1.3**

2.3. BBF SO16 Single

The BBF SO16W Single offers:

- One SO16W socket to insert the Backup Serial Flash
- One application Pin header to connect different types of cable to the application
- One Programmer connector to connect the BBF tool to the SF100 programmer and update or read the Backup Flash content inserted in the socket (cannot update the application memory)
- One Switch to enable the Backup memory and disable the main Serial Flash on application board.
- One LED to indicate the BBF status (ON or OFF).

Fig15: BBF Single SO16W

The BBF SO16W can be connected to the application by three different methods as described below:

2.3.1. BBF SO16 Test Clip

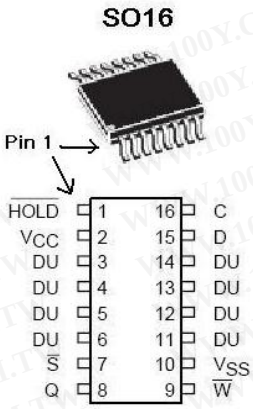
The BBF SO Test Clip is provided by DediProg to connect the BBF tool directly on the Main Serial Flash package soldered on the application board. This solution offers the advantage to be compliant with all the application using the Serial Flash in SO16W package without any hardware modification. Actually, the main Serial Flash is kept soldered on board and is used to connect the BBF tool to the SPI bus (no need of application connector).

Fig16: SO16 Test Clip

Note 1: DediProg's connector has been optimized to minimize the parasitic capacitance added on the SPI bus and ensure a good SPI signal.

Note 2: The test clip must be connected carefully on the main Serial Flash to prevent from conflicts. A marking on the test Clip indicate the pin 1 that must been connected on the Serial flash pin 1 (Hold).

Fig17: SO16 Pin out



2.3.2. Application through holes connector

To offer an easy and safe connection, the application can be designed with a 2.54mm BBF pin header connector. DediProg is proposing a standard reference pin-out connector adapted to each BBF tool (Single).

This connection method is similar what ever the Serial flash package used (Single SO8W, Single SO8N or Single SO16W).
So for more detailed information on the connector and cable maintenance please refer to the **section 2.1.2.**

2.3.3. 1.27mm SMT connector (SO16 package)

In case, the application board has not been designed with a BBF connector, DediProg is proposing an innovative solution to offer a better contact stability versus the SO Test Clip fixed on the main serial Flash package. The 1.27mm SMT connector can be soldered in place of the Main Serial Flash on board as they have the same footprint and the BBF can be connected with the appropriate cable.

- The 1.27mm SMT connector method is recommended when engineer works on the same board for a significant number of times (software development, trials..). The time spend on the reworking (unsolder the main flash and solder the SMT connector) will be rewarded by a better stability during the different trials.
- The SO Test Clip is really convenient when the numbers of trials on the same board are limited and operator needs to work on many boards (no need to unsolder the main flash and replaced it by the connector).

2.4. BBF SO8W Dual

The BBF SO8W Dual is composed of:

- Two SO8W sockets to insert the two Backup Serial Flashes
- One application Pin header to connect different type of cables to the application
- One Programmer cable to connect the BBF tool to the SF100 programmer and update or read the Backup Flashes content inserted in the sockets (cannot update the application memories)
- One Switch to enable the Backup memories and disable the main Serial Flashes on application board.
- One LED to indicate the BBF status (ON or OFF).

The BBF Dual is used when application works on two Serial Flashes on board sharing the same SPI bus. Once the BBF Dual is connected, the application controller will works on the two Backup Serial Flashes inserted in the BBF tool sockets.

Fig18: BBF Dual SO8W

The BBF Dual SO8W can be connected to the application by three different methods as described below:

2.4.1. BBF Dual SO8 Test Clip (SO8 package)

The BBF Dual SO Test Clip is used to connect the BBF Dual tool directly on the Main Serial Flashes packages soldered on the application board. This solution offers the advantage to be compliant with all the application using the Serial Flash in SO8 package (SO8N, SO8W) without any hardware modification. Actually, the main Serial Flashes are kept soldered on board and are used to connect the BBF tool to the SPI bus (no need of application connector).

Fig19: SO8 Dual Test Clip

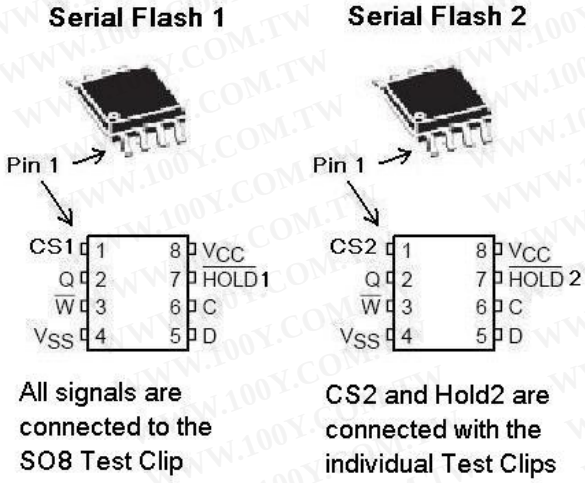
Note 1: DediProg's connector has been optimized to minimize the parasitic capacitance added on the SPI bus and ensure a good SPI signal.

Note 2: The test clip must be connected carefully on the main Serial Flashes to prevent from conflicts. A marking on the SO8 test Clip indicate the pin 1 that must been connected on the Serial flash pin 1 (Chip select 1).

The SO8 Dual test clip used only one SO8 Test clip to minimize the total capacitance added on the SPI bus as it is common between the two flashes.
It must be connected as follow:

- The SO8 Test clip is connected to the first Serial Flash package (Vcc, Ground, Hold1, Clock, MOSI, MISO and CS1)
- The two other individual Test clips are used to connect the CS2 and the Hold2 of the second Serial Flash.

Fig20: Serial flashes connection if hold signals are not common



If hold1 signal is common with Hold2 signal on the application board then it is not necessary to connect the Individual Test clip on the Hold2 pin.

Fig21: Serial flashes connection if hold signals are common (Hold1 connected to Hold2 in the application board)

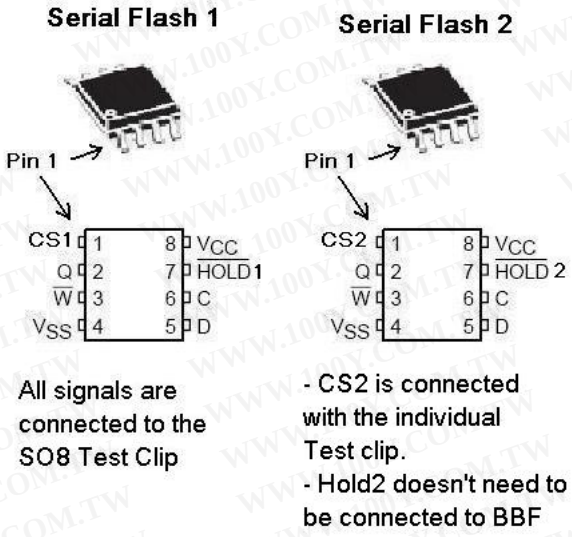
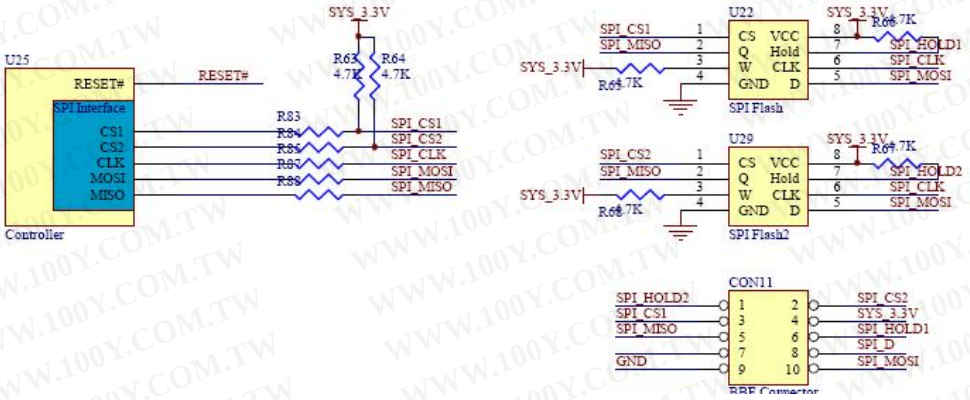


Fig22: Application Dual flashes schematic



2.4.2. Application through holes connector

To offer an easy and safe connection, the application can be designed with a 2.54mm BBF pin header connector. DediProg is proposing a standard reference pin-out connector adapted to each BBF tool (SO8N, SO8W or SO16W Dual sockets).

Table 6: Backup boot flash connector in the application board for Dual flashes (top view)

1	Hold	CS2	2
3	CS1	VCC	4
5	MISO	Hold1	6
7	x	CLK	8
9	GND	MOSI	10

The pin 5 (not connected) can be used as a mistake proof pin to avoid any wrong connection from the users.

BBF Cable maintenance

If the Backup Boot Flash tool is often used, the female connector of the BBF cable on the application side will be step by step wear down (numerous contact with application pin header). So in this case, the BBF cable must be time to time changed.

It is also possible to make your own BBF cable.
You will then have to follow the following instructions:

1) Check if your application BBF connector is as compliant with our standard connector (top view):

Table 7:

1	Hold	CS2	2
3	CS1	VCC	4
5	MISO	Hold1	6
7	x	CLK	8
9	GND	MOSI	10

2) Prepare the cable Female connector on the BBF Side:
You need a 10 pins 2.54mm pitch female connector to be fixed on the flat cable.
The BBF header pin-out is as follow:

Table 8: Backup boot flash Header (top view)

1	Hold	CS2	2
3	CS1	VCC	4
5	MISO	Hold1	6
7	x	CLK	8
9	GND	MOSI	10

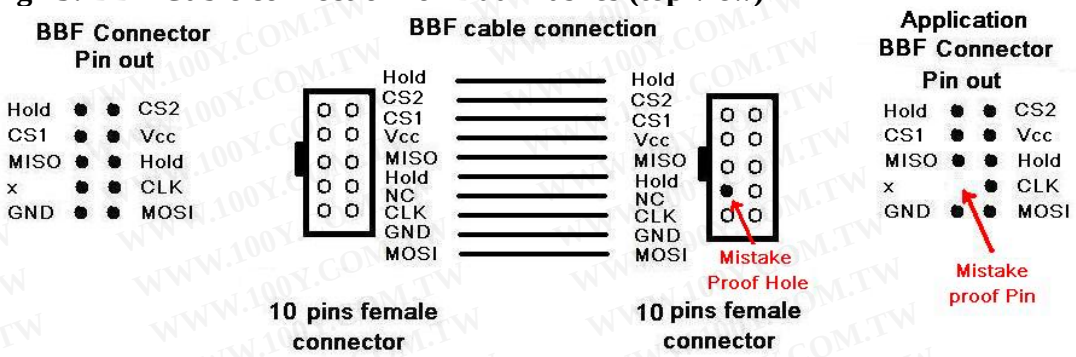
3) Prepare the cable female connector on the Application side:
You need a 8 pins 2.54mm pitch female connector to be fixed on the flat cable.

Table 9: BBF header pin-out to be compliant with the application (top view)

1	Hold	CS2	2
3	CS1	VCC	4
5	MISO	Hold1	6
7	x	CLK	8
9	GND	MOSI	10

4) Prepare the Flat cable or Ribbon cable
You need a Flat cable of 10 lines with a length of 8 cm maximum.
The length of the BBF cable must be minimized to ensure the quality of the SPI signals.

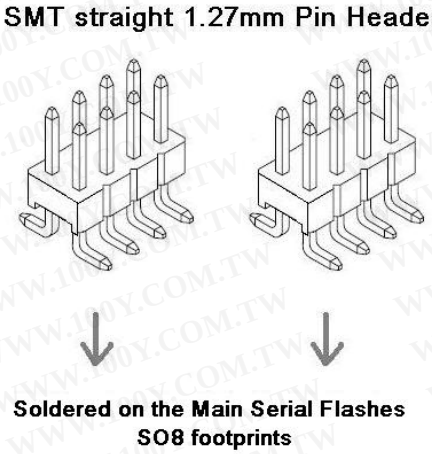
Fig 23: BBF Cable connection for Dual flashes (top view)



2.4.3. 1.27mm SMT connector (SO8 package)

In case, the application board has not been designed with a BBF connector, DediProg is proposing an innovative solution to offer a better contact stability versus the SO Test Clip fixed on the main serial Flashes packages. The two 1.27mm SMT connectors can be soldered in place of the two Main Serial Flashes on board as they have the same footprint and the BBF can be connected with the appropriate cable.

Fig 24: Solder the 1.27mm Pin header in place of the two Serial Flashes



- The 1.27mm SMT connector method is recommended when engineer works on the same board for a significant number of times (software development, trials..). The time spend on the reworking (unsolder the two main flashes and solder the two SMT connectors) will be rewarded by a better stability during the different trials.

- The SO Test Clip is really convenient when the numbers of trials on the same board are limited and operator needs to work on many boards (no need to unsolder the two main flashes and replaced it by the two connectors).

2.5. BBF SO8N Dual

The BBF SO8N Dual is composed of:

- Two SO8N sockets to insert the two Backup Serial Flashes
- One application Pin header to connect different type of cables to the application
- One Programmer cable to connect the BBF tool to the SF100 programmer and update or read the Backup Flashes content inserted in the sockets (cannot update the application memories)
- One Switch to enable the Backup memories and disable the main Serial Flashes on application board.
- One LED to indicate the BBF status (ON or OFF).

The BBF Dual is used when application works on two Serial Flashes on board sharing the same SPI bus. Once the BBF Dual is connected, the application controller will works on the two Backup Serial Flashes inserted in the BBF tool sockets.

Fig25: BBF Dual SO8N

The BBF SO8N Dual can be connected to the application by three different methods as described below:

2.5.1. BBF SO8 Test Clip (SO8 package)

The BBF Dual SO Test Clip is used to connect the BBF Dual tool directly on the two Main Serial Flashes packages soldered on the application board. This solution offers the advantage to be compliant with all the application using the Serial Flash in SO8 package (SO8N, SO8W) without any hardware modification. Actually, the two main Serial Flashes are kept soldered on board and are used to connect the BBF tool to the SPI bus (no need of application connector).

The BBF SO8 Test clip is common for the SO8W and SO8N.
For more detailed information please refer to the **section 2.4.1**

2.5.2. Application through holes connector

To offer an easy and safe connection, the application can be designed with a 2.54mm BBF pin header connector. DediProg is proposing a standard reference pin-out connector adapted to each BBF tool (SO8N, SO8W or SO16W Dual sockets).
This connection method is similar what ever the Serial flash packages used (Dual SO8W, Dual SO8N or Dual SO16W).
So, for more detailed information on the connector and cable maintenance please refer to the **section 2.4.2.**

2.5.3. 1.27mm SMT connector (SO8 package)

In case, the application board has not been designed with a BBF connector, DediProg is proposing an innovative solution to offer a better contact stability versus the SO Test Clip fixed on two main serial Flashes packages. The 1.27mm SMT connectors can be soldered in place of the two Main Serial Flashes on board as they have the same footprint and the BBF can be connected with the appropriate cable.

This connecting method is common for the SO8W and SO8N.
For more detailed information please refer to the **section 2.4.3**

2.6. BBF SO16 Dual

The BBF SO16W Dual offers:

- Two SO16W sockets to insert the two Backup Serial Flashes
- One application Pin header to connect different types of cable to the application
- One Programmer connector to connect the BBF tool to the SF100 programmer and update or read the Backup Flashes content inserted in the sockets (cannot update the application memory)
- One Switch to enable the Backup memories and disable the main Serial Flashes on application board.
- One LED to indicate the BBF status (ON or OFF).

Fig26: BBF Dual SO16W

The BBF SO16W can be connected to the application by three different methods as described below:

2.6.1. BBF SO16 Dual Test Clip

The BBF Dual SO16 Test Clip is used to connect the BBF Dual tool directly on the two Main Serial Flashes packages soldered on the application board. This solution offers the advantage to be compliant with all the application using the Serial Flash in SO16W package without any hardware modification. Actually, the main Serial Flashes are kept soldered on board and are used to connect the BBF tool to the SPI bus (no need of application connector).

Fig27: SO16W Dual Test Clip

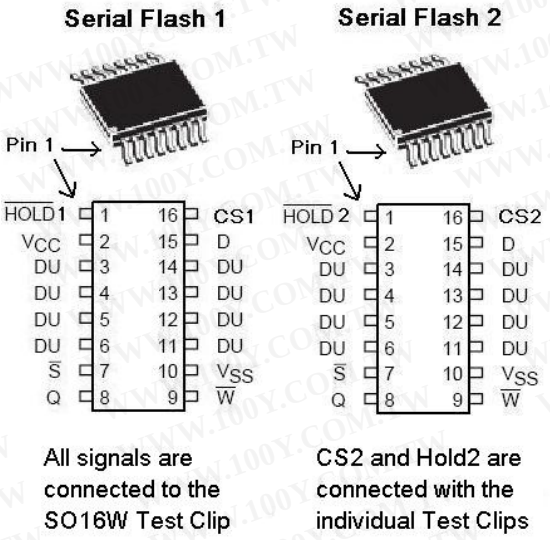
Note 1: DediProg's connector has been optimized to minimize the parasitic capacitance added on the SPI bus and ensure a good SPI signal.

Note 2: The test clip must be connected carefully on the main Serial Flashes to prevent from conflicts. A marking on the test Clip indicate the pin 1 that must been connected on the Serial flash pin 1 (Hold1).

The SO16W Dual test clip used only one SO16W Test clip to minimize the total capacitance added on the SPI bus as it is common between the two flashes.
It must be connected as follow:

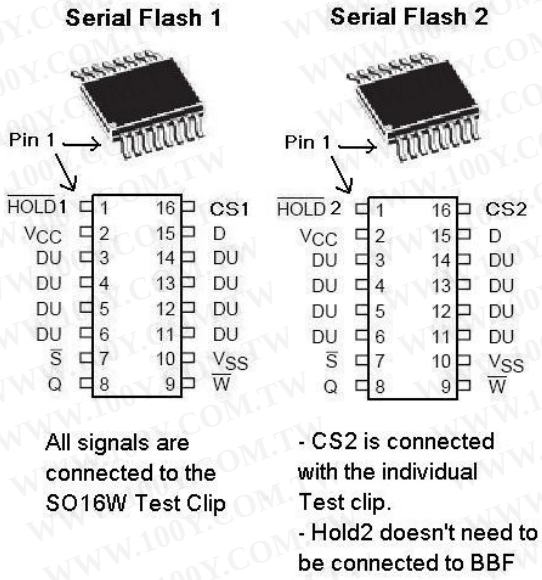
- The SO16W Test clip is connected to the first Serial Flash package (Vcc, Ground, Hold1, Clock, MOSI, MISO and CS1)
- The two other individual Test clips are used to connect the CS2 and the Hold2 of the second serial flash.

Fig28: Serial flashes connection if hold signals are not common



If hold1 signal is common with Hold2 signal on the application board then it is not necessary to connect the Individual Test clip on the Hold2 pin.

Fig29: Serial flashes connection if hold signals are common (Hold1 connected to Hold2 in the application board)



2.6.2. Application through holes connector

To offer an easy and safe connection, the application can be designed with a 2.54mm BBF pin header connector. DediProg is proposing a standard reference pin-out connector adapted to each BBF tool (Single or dual Serial Flash).

This connection method is similar what ever the Serial flash package used (Dual SO8W, Dual SO8N or Dual SO16W).
So for more detailed information on the connector and cable maintenance please refer to the **section 2.4.2.**

2.6.3. 1.27mm SMT connector (SO16 package)

In case, the application board has not been designed with a BBF connector, DediProg is proposing an innovative solution to offer a better contact stability versus the SO Test Clip fixed on the main serial Flashes packages. The two 1.27mm SMT connectors can be soldered in place of the two Main Serial Flashes on board as they have the same footprint and the BBF can be connected with the appropriate cable.

- The 1.27mm SMT connector method is recommended when engineer works on the same board for a significant number of times (software development, trials..). The time spend on the reworking (unsolder the two main flashes and solder the two SMT connectors) will be rewarded by a better stability during the different trials.

- The SO Test Clip is really convenient when the numbers of trials on the same board are limited and operator needs to work on many boards (no need to unsolder the two main flashes and replaced it by the two connectors).

3. The Products

Product Name: Backup Boot Flash Module-SO8W socket

Model Name: **BBF-8W**

Content:

- 1 x Backup Boot Flash Module with SO8W socket(BBF-8W)
- 1 x BBF cable with 2.54mm pitch 2x5 female header
- 1 x 2.54mm 2x5 to 1.27mm 2x4 cable adaptor
- 2 x 1.27mm 2x4 SMT male header

Product Name: Backup Boot Flash Module-SO16W Socket

Model Name: **BBF-16W**

Content:

- 1 x Backup Boot Flash Module with SO16W socket (BBF-16)
- 1 x BBF cable with 2.54mm pitch 2x5 female header
- 1 x 2.54mm 2x5 to 1.27mm 2x8 cable adaptor
- 2 x 1.27mm 2x8 SMT male header

Product Name: Backup Boot Flash Module-Dual SO8W Sockets

Model Name: **BBF-D8W**

Content:

- 1 x Backup Boot Flash with two SO8W sockets (BBF-D8W)
- 1 x BBF cable with 2.54mm pitch 2x5 female header
- 1 x 2.54mm 2x5 to 1.27mm 2x4 cable adaptor
- 2 x 1.27mm 2x4 SMT male header
- 2 x cables with test clip

Product Name: Backup Boot Flash Module-Dual SO16W Sockets

Model Name: **BBF-D16W**

Content:

- 1 x Dual Backup Boot Flash with two SO16W sockets (BBF-D16W)
- 1 x BBF cable with 2.54mm pitch 2x5 female header
- 1 x 2.54mm 2x5 to 1.27mm 2x8 cable adaptor
- 2 x 1.27mm 2x8 SMT male header
- 2 x cables with test clip

Product Name: Backup Boot Flash Module-SO8N Socket

Model Name: **BBF-8N**

Content:

- 1 x Backup Boot Flash Module with SO8N socket(BBF-8N)
- 1 x BBF cable with 2.54mm pitch 2x5 female header
- 1 x 2.54mm 2x5 to 1.27mm 2x4 cable adaptor
- 2 x 1.27mm 2x4 SMT male header

Product Name: Backup Boot Flash Module-Dual SO8N Sockets

Model Name: **BBF-D8N**

Content:

- 1 x Backup Boot Flash with two SO8N sockets (BBF-D8N)
- 1 x BBF cable with 2.54mm pitch 2x5 female header
- 1 x 2.54mm 2x5 to 1.27mm 2x4 cable adaptor
- 2 x 1.27mm 2x4 SMT male header
- 2 x cables with test clip

Product Name: Backup Boot Flash Kit-SO8W

Model Name: **SBK01**

Content:

- 1 x SF100 Programmer (SF100)
- 1 x Backup Boot Flash with SO8W socket (BBF-8W)
- 1 x BBF test clip (BBF-TC-8)
- 1 x BBF cable with 2.54mm pitch 2x5 female header
- 2 x 1.27mm pitch 2x4 SMT male header
- 1 x 2.54mm 2x5 to 1.27mm 2x4 cable adaptor
- 1 x SF100 ISP Cable (ISP1-CB)
- 1 x USB cable

Product Name: Backup Boot Flash Kit-SO16W

Model Name: **SBK03**

Contents:

- 1 x SF100 Programmer (SF100)
- 1 x Backup Boot Flash-SO16W(BBF-16)
- 1 x BBF test clip-SO16W(BBF-TC-16)
- 1 x BBF cable with 2.54mm pitch 2x5 female header
- 2 x 1.27mm pitch 2x4 SMT male header
- 1 x 2.54mm 2x5 to 1.27mm 2x8 cable adaptor
- 1 x SF100 ISP Cable (ISP1-CB)
- 1 x USB cable

Product Name: Backup Boot Flash Kit-Dual SO8W

Model Name: **SBK05**

Contents:

- 1 x SF100 Programmer (SF100) to update both Backup Serial Flashes
- 1 x Backup Boot Flash Module-Dual SO8W sockets (BBF-D8W)
- 1 x BBF test clip-Dual SO8 Flash (BBF-2TC-8) for two Serial Flashes: SO8N and SO8W compatible
- 1 x BBF cable with 2.54mm pitch 2x5 female header
- 2 x 1.27mm pitch 2x4 SMT male header
- 1 x 2.54mm 2x5 to 1.27mm 2x4 cable adaptor
- 2 x cables with test clip
- 1 x SF100 ISP Cable (ISP1-CB)
- 1 x USB cable

Product Name: Backup Boot Flash Kit-Dual SO16W

Model Name: **SBK07**

Contents:

- 1x SF100 Programmer (SF100) to update both Backup Serial Flashes
- 1x Backup Boot Flash Module-Dual SO16W sockets (BBF-D16W)
- 1x BBF test clip-Dual Flash(SO16W) (BBF-2TC-16) for two Serial Flashes
- 1 x BBF cable with 2.54mm pitch 2x5 female header
- 2 x 1.27mm pitch 2x4 SMT male header
- 1 x 2.54mm 2x5 to 1.27mm 2x8 cable adaptor
- 2 x cables with test clip
- 1 x SF100 ISP Cable (ISP1-CB)
- 1 x USB cable

Product Name: Backup Boot Flash Kit-SO8N

Model Name: **SBK09**

Contents:

- 1x SF100 Programmer (SF100)
- 1 x Backup Boot Flash with SO8N socket(BBF-8N)
- 1 x BBF test clip(BBF-TC-8)
- 1 x BBF cable with 2.54mm pitch 2x5 female header
- 2 x 1.27mm pitch 2x4 SMT male header
- 1 x 2.54mm 2x5 to 1.27mm 2x4 cable adaptor
- 1 x SF100 ISP Cable (ISP1-CB)
- 1 x USB cable

Product Name: Backup Boot Flash Kit-Dual SO8N

Model Name: **SBK11**

Contents:

- 1 x SF100 Programmer (SF100) to update both Backup Serial Flash
- 1 x Backup Boot Flash Module-Dual SO8N sockets (BBF-D8N)
- 1 x BBF Test Clip-Dual SO8 Flash (BBF-2TC-8) for two Serial Flash: SO8N and SO8W compatible
- 1 x BBF cable with 2.54mm pitch 2x5 female header
- 2 x 1.27mm pitch 2x4 SMT male header
- 1 x 2.54mm 2x5 to 1.27mm 2x4 cable adaptor
- 2 x cables with test clip
- 1 x SF100 ISP Cable (ISP1-CB)
- 1 x USB cable