

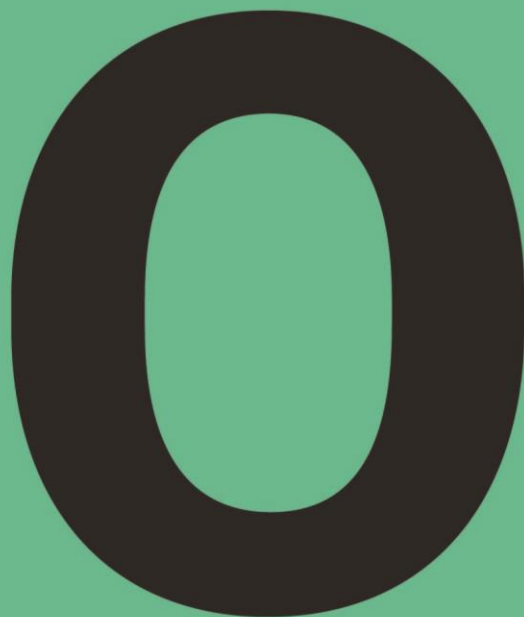


**THE DATASHEET OF
SIP-KITNXF001**





SAMSUNG
ARTIKTM Modules



053 Development Board User Guide

DRAFT

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STARTER KIT OVERVIEW

FEATURES

The ARTIK 053 Starter Kit consists of a Starter Board an Interposer Board and an ARTIK 053 Module. The ARTIK 053 Module is plugged into the Interposer Board. The Interposer Board in turn is plugged into the Starter Board.

The ARTIK 053 Starter Kit is an affordable approach for developing an IoT solution. *Figure 1* shows a picture of the ARTIK 053 Starter Kit that includes the Starter Board, the Interposer Board and the ARTIK 053 Module.

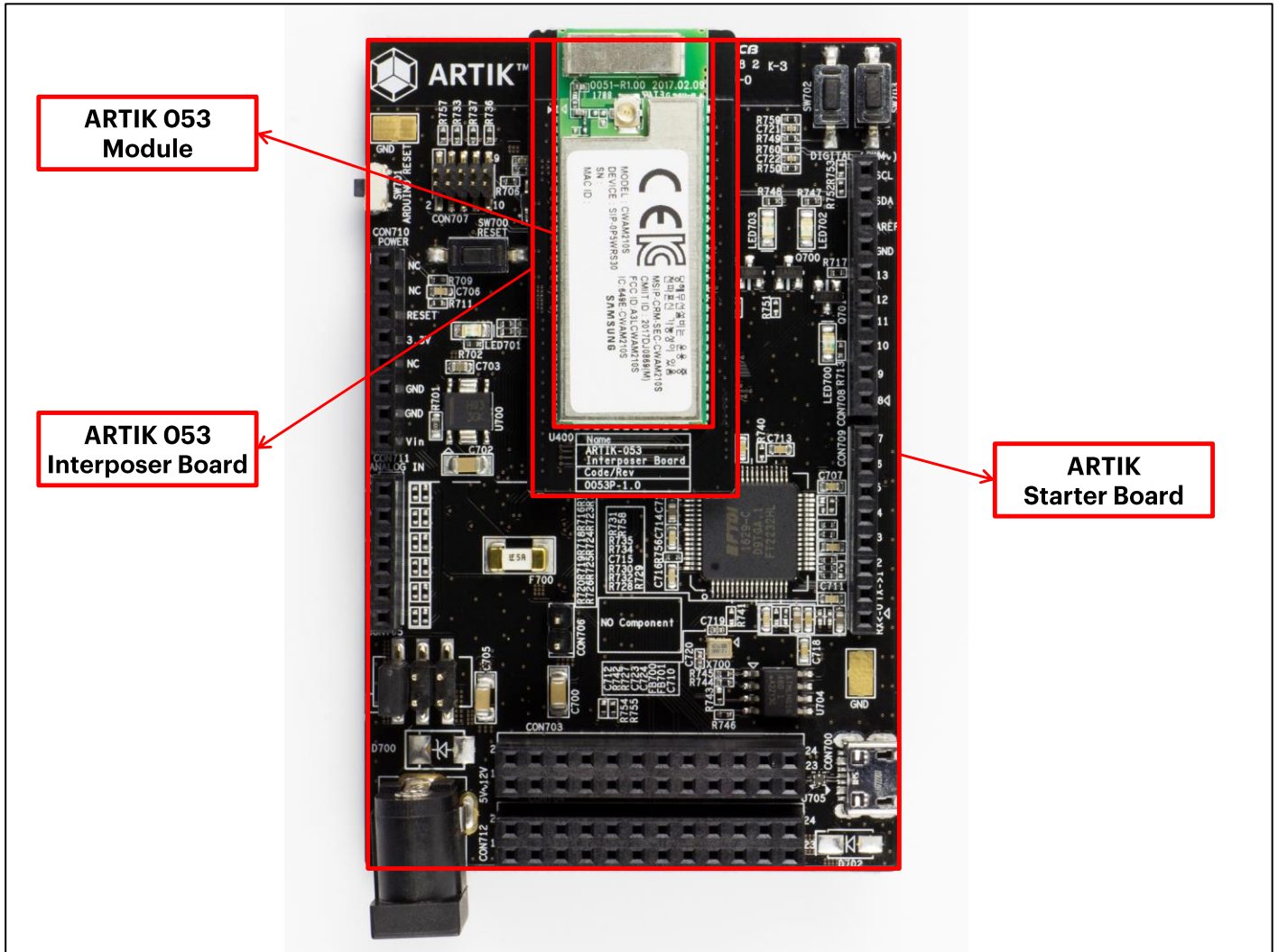


Figure 1. Preview of the ARTIK 053 Starter Kit

BLOCK DIAGRAM

Figure 2 shows the block diagram of the ARTIK 053 Starter Kit. For more information on the ARTIK 053 Module please consult the ARTIK 053 Module Datasheet.

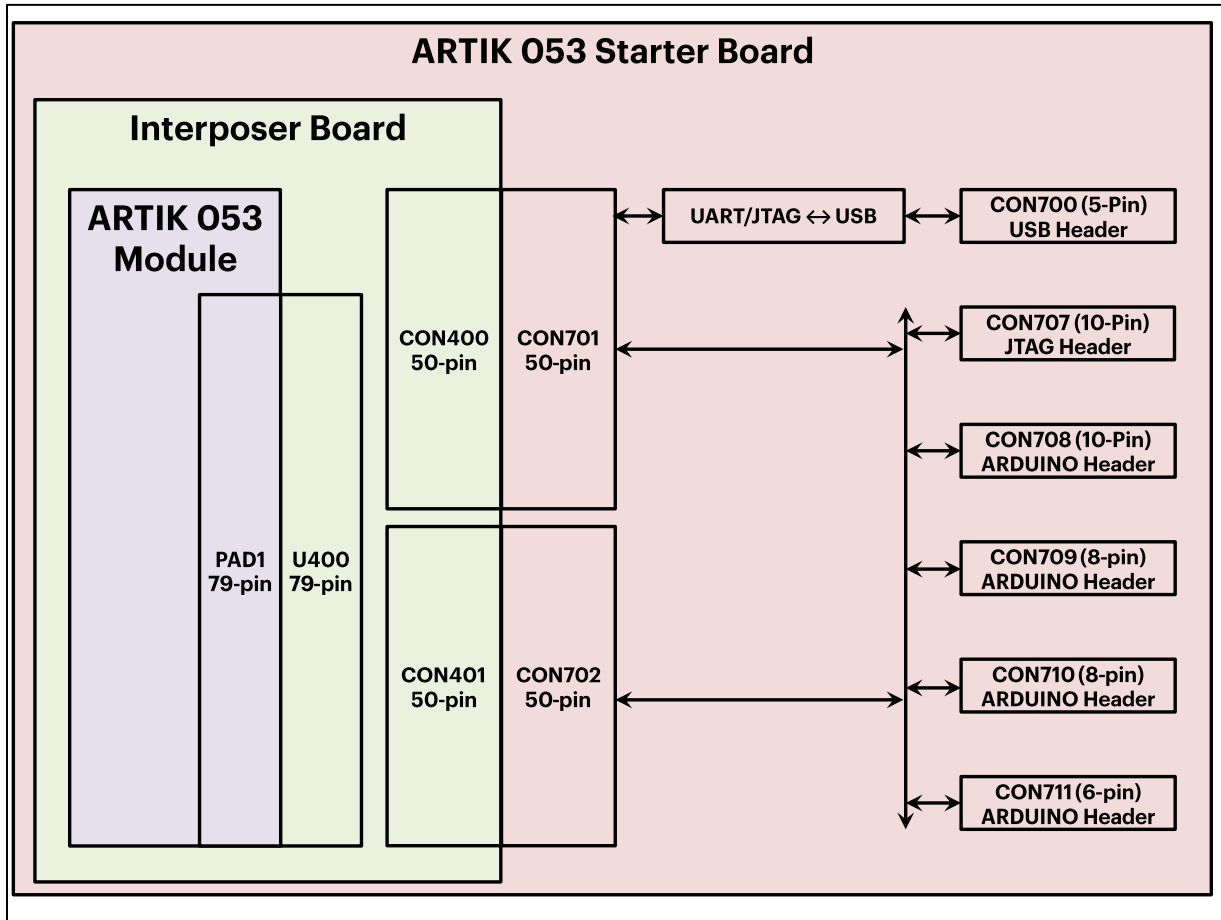


Figure 2. ARTIK 053 Starter Kit block diagram

MECHANICAL DIMENSIONS

Figure 3 and Figure 4 show the mechanical dimensions of the ARTIK 053 Starter Kit and the Interposer Board.

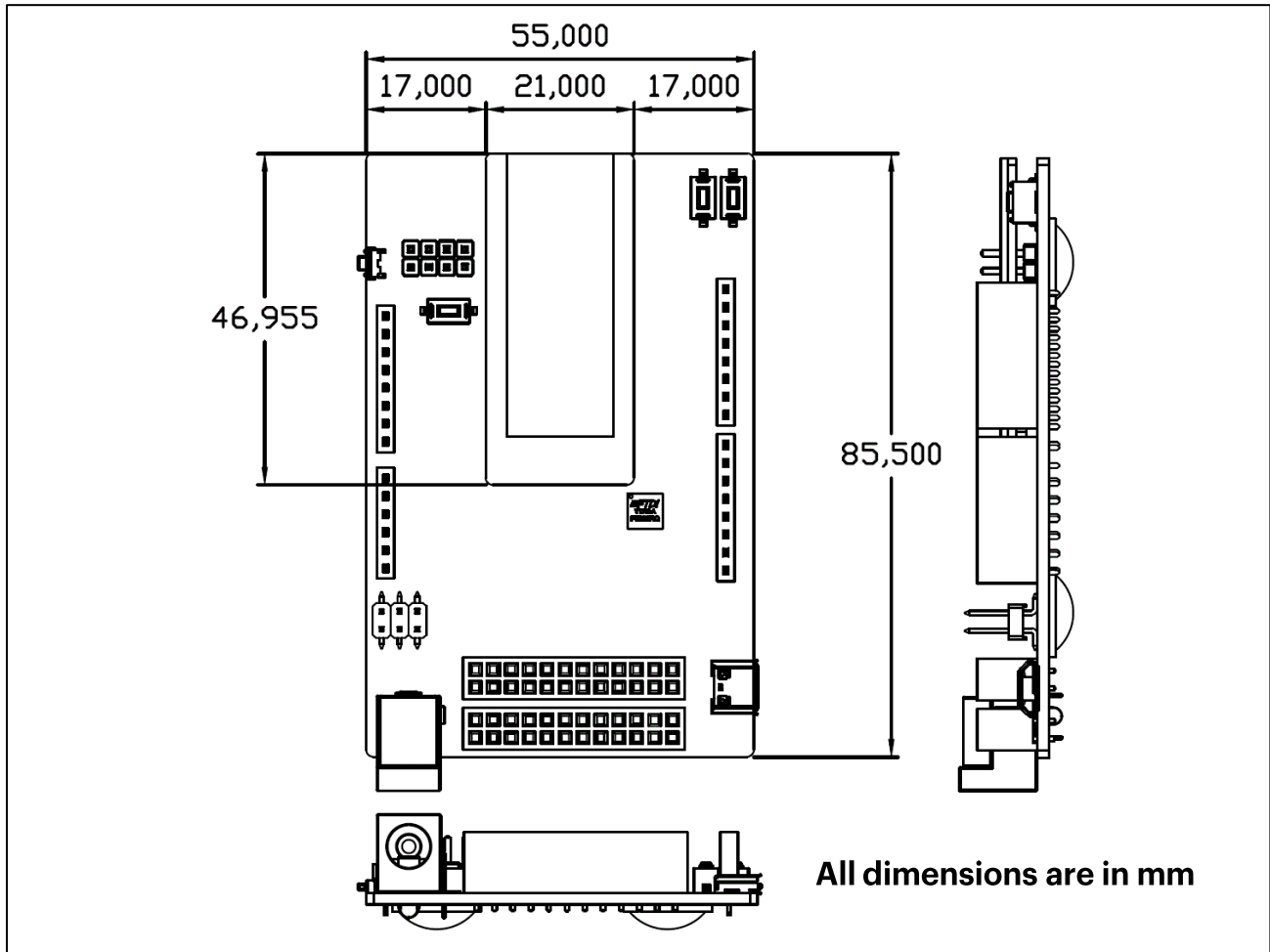


Figure 3. Mechanical Dimensions ARTIK 053 Starter Kit

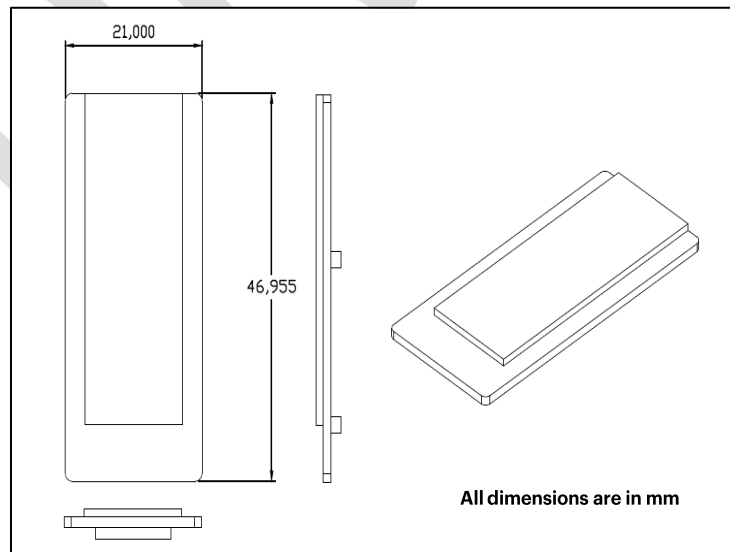


Figure 4. Mechanical Dimensions Interposer Board

STARTER BOARD HEADER LOCATIONS

The Starter Board that hosts the ARTIK 053 Module through the Interposer Board as depicted in *Figure 5*, also provides a number of headers tailored specifically for development.

In subsequent sections the functionality of the various headers and the ARTIK 053 Module will be explained in greater detail.

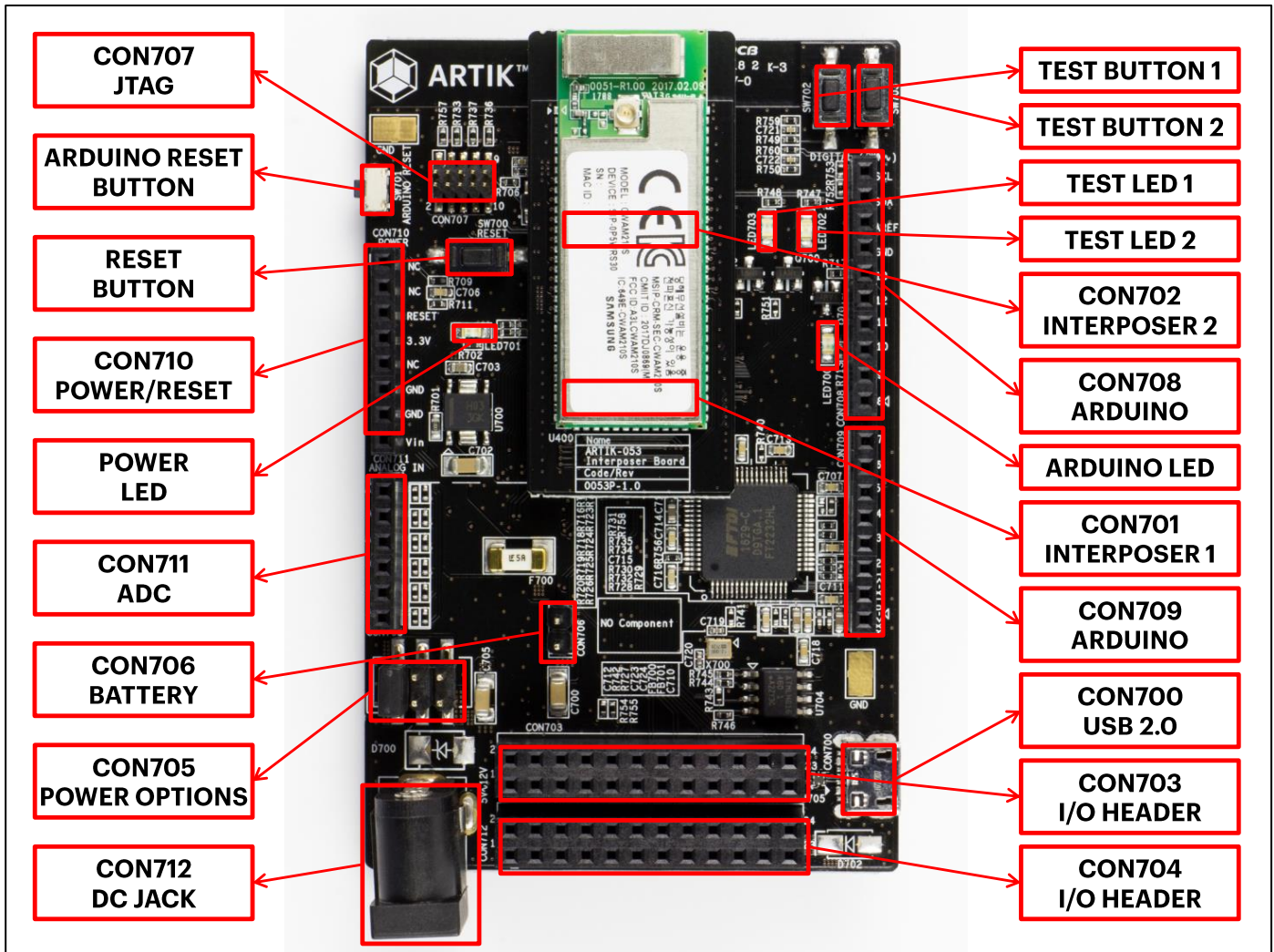


Figure 5. ARTIK 053 Starter Kit component placement

HEADER AND CONNECTOR DESCRIPTIONS

This section will describe all the headers, buttons and switches that are available on the Starter Kit.

CON700 HEADER SIGNALS

Table 1. CON700 signal description

| Header CON700 (USB2.0) | | |
|------------------------|--------|------------------|
| Pin Name | Signal | Description |
| 1 | VBUS | VCC_USB5P0 Power |
| 2 | D- | Data Minus |
| 3 | D+ | Data Plus |
| 4 | NC | Not Connected |
| 5 | GND | Ground |
| 6 | GND | Ground |
| 7 | GND | Ground |
| 8 | GND | Ground |
| 9 | GND | Ground |
| 10 | GND | Ground |
| 11 | GND | Ground |

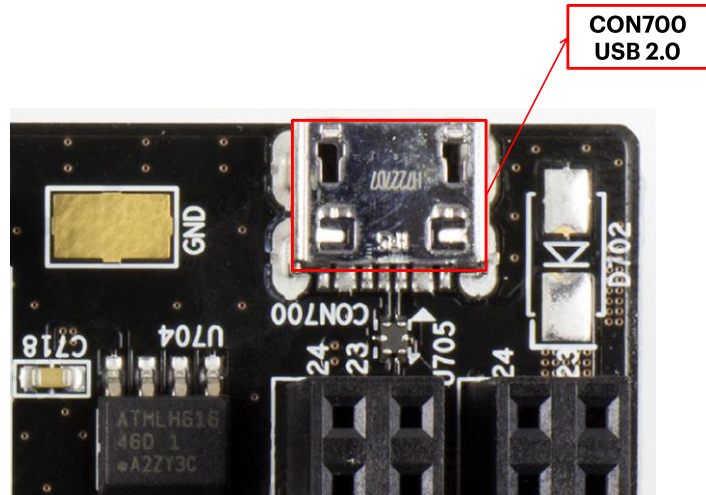


Figure 6. USB 2.0 interface connector location

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CON701 HEADER SIGNALS

The following signals as depicted in [Table 2](#) can be found on connector 701. This connector, together with CON702 connects the ARTIK 053 Module with the Interposer Board.

Table 2. CON701 signal description

| Connector CON701 (CON400 on Interposer) | | | |
|---|-------------|----------|---------------|
| Pin Name | Description | Pin Name | Description |
| 1 | XGPIO26 | 2 | XSPI1_CSN |
| 3 | XGPIO25 | 4 | XSPI1_MOSI |
| 5 | XGPIO24 | 6 | XSPI1_CLK |
| 7 | XGPIO21 | 8 | XSPI1_MISO |
| 9 | XGPIO19 | 10 | GND |
| 11 | XGPIO18 | 12 | Not Connected |
| 13 | XGPIO17 | 14 | XGPIO3 |
| 15 | XGPIO14 | 16 | XGPIO1 |
| 17 | XGPIO13 | 18 | GND |
| 19 | XGPIO16 | 20 | XSPI2_CS |
| 21 | XGPIO15 | 22 | XSPI2_CLK |
| 23 | XGPIO20 | 24 | XGPIO2 |
| 25 | GND | 26 | XSPI2_MOSI |
| 27 | XADC0 | 28 | XGPIO8 |
| 29 | XADC1 | 30 | XSPI2_MISO |
| 31 | XADC2 | 32 | GND |
| 33 | XADC3 | 34 | XGPIO11 |
| 35 | GND | 36 | XGPIO9 |
| 37 | XGPIO23 | 38 | XGPIO10 |
| 39 | XGPIO22 | 40 | XGPIO12 |
| 41 | XADC6 | 42 | GND |
| 43 | XADC7 | 44 | XUART3_TXD |
| 45 | GND | 46 | XUART3_RXD |
| 47 | GND | 48 | GND |
| 49 | GND | 50 | GND |

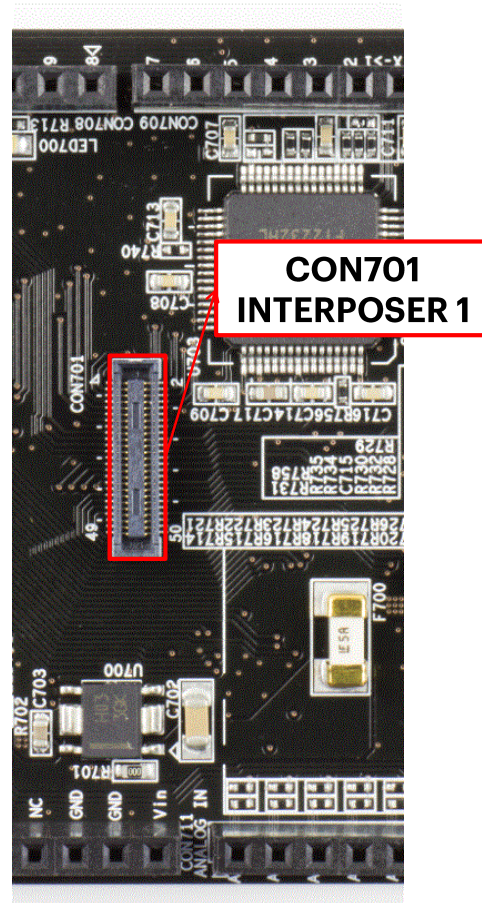


Figure 7. Interposer connector location

When mounting an ARTIK 053 Module on the Starter Board, make certain that you orient the ARTIK 053 Module such that the ARTIK 053 Module Antenna structure is closest to the Samsung ARTIK™ logo located on the Starter Board. See [Figure 5](#) for details.

CON702 HEADER SIGNALS

The following signals as depicted in *Table 3* can be found on connector 702. This connector, together with CON701 connects the ARTIK 053 Module with the Interposer Board.

Table 3. CON702 signal description

| Connector CON702 (CON401 on Interposer) | | | |
|---|----------------------|----------|---------------|
| Pin Name | Description | Pin Name | Description |
| 1 | XRESET_N | 2 | XUART2_TXD |
| 3 | XJTAG_TMS | 4 | XUART2_RXD |
| 5 | XJTAG_TDI | 6 | XUART1_RXD |
| 7 | XJTAG_TCK | 8 | XUART1_TXD |
| 9 | XJTAG_TDO | 10 | GND |
| 11 | XJTAG_TRST_N | 12 | XSPI0_CLK |
| 13 | GND | 14 | XSPI0_MOSI |
| 15 | XEINT0 | 16 | XSPI0_CS |
| 17 | XEINT2 | 18 | XSPI0_MISO |
| 19 | XEINT1 | 20 | GND |
| 21 | N19099929 (XRESET_N) | 22 | XUART0_RX |
| 23 | XI2C0_SCL | 24 | XUART0_TX |
| 25 | XI2C0_SDA | 26 | GND |
| 27 | XI2C1_SCL | 28 | XPWM3_OUT |
| 29 | XI2C1_SDA | 30 | XPWM2_OUT |
| 31 | GND | 32 | XPWM6_OUT |
| 33 | XDEBUG_TXD | 34 | XPWM0_OUT |
| 35 | XDEBUG_RXD | 36 | XPWM1_OUT |
| 37 | XADC4 | 38 | XPWM5_OUT |
| 39 | XADC5 | 40 | Not Connected |
| 41 | Not Connected | 42 | GND |
| 43 | VCC_EXT5P0 | 44 | GND |
| 45 | VCC_EXT5P0 | 46 | GND |
| 47 | VCC_EXT5P0 | 48 | GND |
| 49 | VCC_EXT5P0 | 50 | GND |

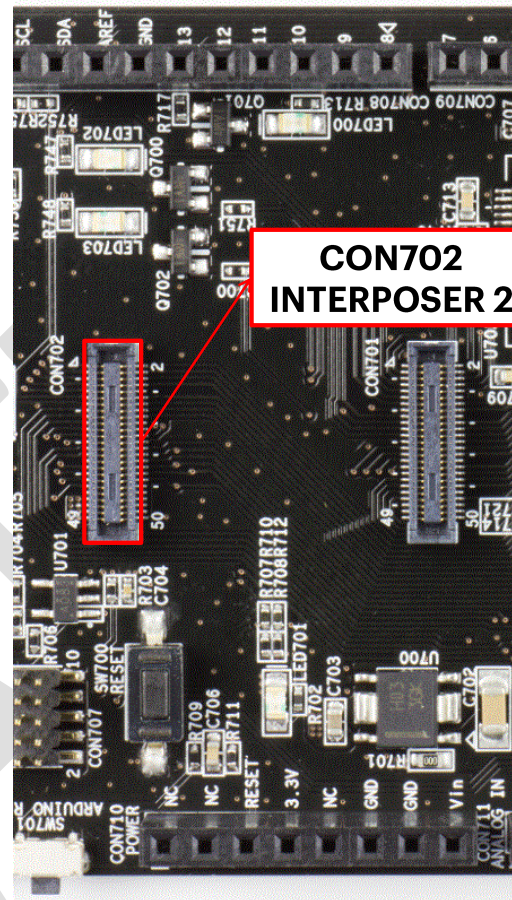


Figure 8. Interposer connector location

When mounting an ARTIK 053 Module on the Starter Board, make certain that you orient the ARTIK 053 Module such that the ARTIK 053 Module Antenna structure is closest to the Samsung ARTIK™ logo located on the Starter Board. See Figure 5 for details.

CON703 HEADER SIGNALS

The following signals as depicted in [Table 4](#) can be found on header CON703. CON703 together with CON704 are both catch-all connectors providing SPI, PWM, ADC, I²C, UART and GPIO functionality.

Table 4. CON703 header signal description

| Header CON703 (Catch-All 1) | | | |
|-----------------------------|-------------|----------|-------------|
| Pin Name | Description | Pin Name | Description |
| 1 | XPWM1_OUT | 2 | VCC_EXT3P3 |
| 3 | XPWM2_OUT | 4 | XADC6 |
| 5 | XPWM3_OUT | 6 | XADC7 |
| 7 | XPWM0_OUT | 8 | XI2C1_SCL |
| 9 | XUART1_RXD | 10 | XI2C1_SDA |
| 11 | XUART1_TXD | 12 | GND |
| 13 | XGPIO26 | 14 | VCC_EXT3P3 |
| 15 | XGPIO25 | 16 | XSPI0_CLK |
| 17 | XGPIO24 | 18 | XSPI0_CS |
| 19 | XGPIO23 | 20 | XSPI0_MISO |
| 21 | XGPIO22 | 22 | XSPI0_MOSI |
| 23 | XEINT0 | 24 | GND |

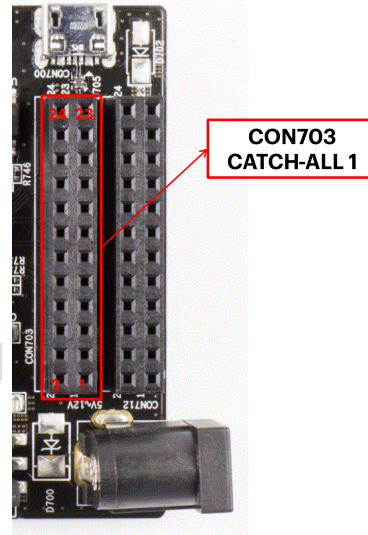


Figure 9. Catch-All 1 connector location

CON704 HEADER SIGNALS

The following signals as depicted in [Table 5](#) can be found on header CON704. CON704 together with CON703 discussed above are both catch-all connectors providing SPI, PWM, ADC, I²C, UART and GPIO functionality.

Table 5. CON704 header signal description

| Header CON704 (Catch-All 2) | | | |
|-----------------------------|-------------|----------|-------------|
| Pin Name | Description | Pin Name | Description |
| 1 | XPWM5_OUT | 2 | VCC_EXT3P3 |
| 3 | XPWM6_OUT | 4 | XUART2_RXD |
| 5 | XEINT2 | 6 | XUART2_TXD |
| 7 | XEINT1 | 8 | XUART3_RXD |
| 9 | XGPIO12 | 10 | XUART3_TXD |
| 11 | XGPIO10 | 12 | GND |
| 13 | XGPIO9 | 14 | VCC_EXT3P3 |
| 15 | XGPIO11 | 16 | XSPI2_CLK |
| 17 | XGPIO8 | 18 | XSPI2_CS |
| 19 | XGPIO2 | 20 | XSPI2_MISO |
| 21 | XGPIO1 | 22 | XSPI2_MOSI |
| 23 | XGPIO3 | 24 | GND |

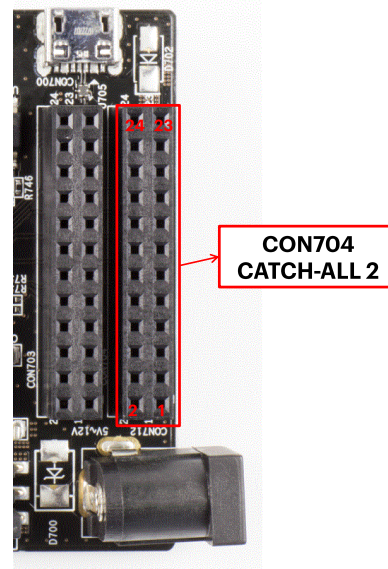
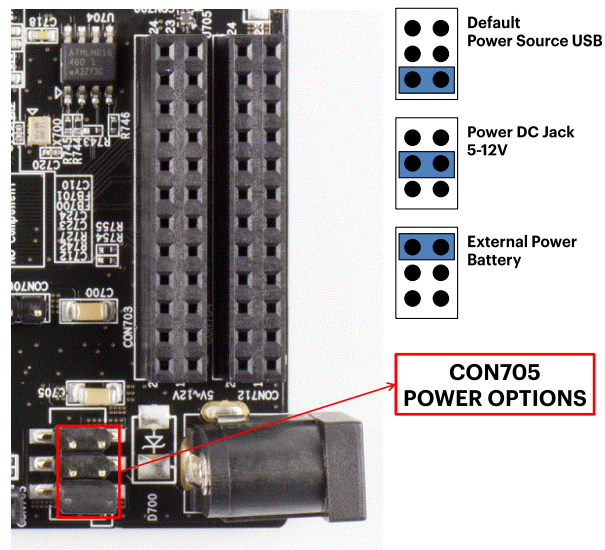


Figure 10. Catch-All 2 connector location

CON705 HEADER SIGNALS

Power to the ARTIK 053 Starter Kit can be sourced from either a USB (default) connector, a 5-12V DC-Jack or an alternate power source like 4x AA batteries. [Table 6](#) shows the correct jumper settings to select each of the power sources.

| Table 6 CON705 header signal description | | |
|--|--------------|--|
| Header CON705 (DC-Jack Control) | | |
| Pin Name | Description | Comment |
| 1 | VCC_USB5P0 | Use USB Power Source, when Pin 1 is connected to Pin 2 using a jumper. |
| 2 | Power Source | Depending on jumper setting, either USB, DC Jack or Battery powered. |
| 3 | DC Jack | Use DC Jack Power Source, when Pin 3 is connected to Pin 4 using a jumper. |
| 4 | Power Source | Depending on jumper setting, either USB, DC Jack or Battery powered. |
| 5 | Battery | User Battery Power Source, when battery is connected to CON706 and Pin 5 is connected to Pin 6 using a jumper. |
| 6 | Power Source | Depending on jumper setting, either USB, DC Jack or Battery powered. |



CON705 POWER OPTIONS




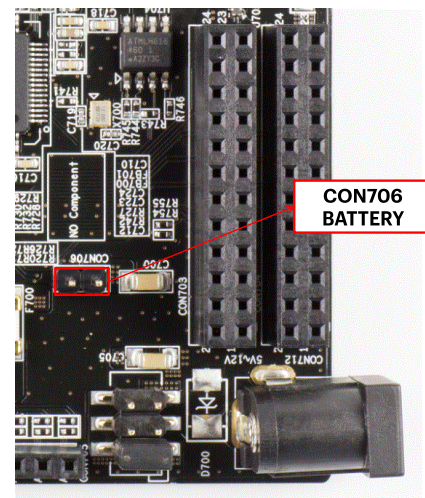
-  Default Power Source USB
-  Power DC Jack 5-12V
-  External Power Battery

Figure 11. Power settings jumper location

CON706 HEADER SIGNALS

Because Pin 5 and Pin 6 of CON705 are bridged by default with a jumper (see [Figure 11](#)), an external power source can be connected to CON706. [Table 7](#) and [Figure 12](#) show the details.

| Table 7 CON706 header signal description | | |
|--|-----------------|--|
| Header CON706 (Battery Power Connector) | | |
| Pin Name | Description | Comment |
| 1 | Plus (Circle) | When using Battery power provide 5.6-6.4V. For instance use 4x AA batteries. |
| 2 | Ground (Square) | When using Battery power |



CON706 BATTERY

Figure 12. Battery connector location

CON707 HEADER SIGNALS

CON707 provides a JTAG interface that is described in detail in *Table 8* and *Figure 13*. In addition *Figure 14* shows the JTAG to SWD interface cable, available from Adafruit®.

Table 8 CON707 header signal description

| Header CON707 (JTAG Header) | | | |
|-----------------------------|-------------|----------|--------------|
| Pin Name | Description | Pin Name | Description |
| 1 | VCC_EXT3P3 | 2 | XJTAG_TMS |
| 3 | GND | 4 | XJTAG_TCK |
| 5 | GND | 6 | XJTAG_TDO |
| 7 | NC | 8 | XJTAG_TDI |
| 9 | GND | 10 | XJTAG_TRST_N |

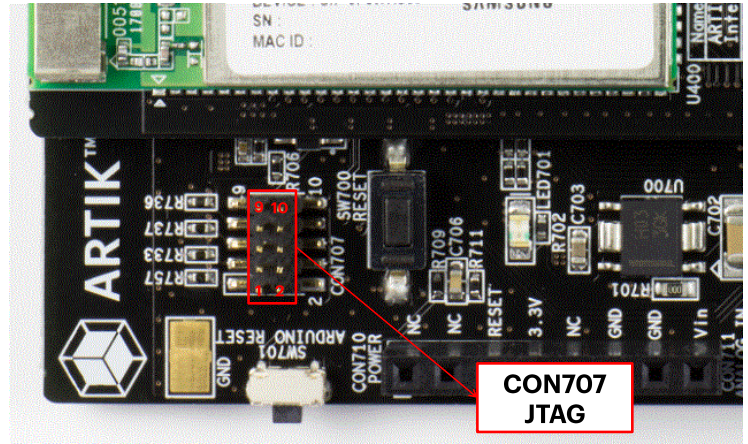


Figure 13. JTAG connector location

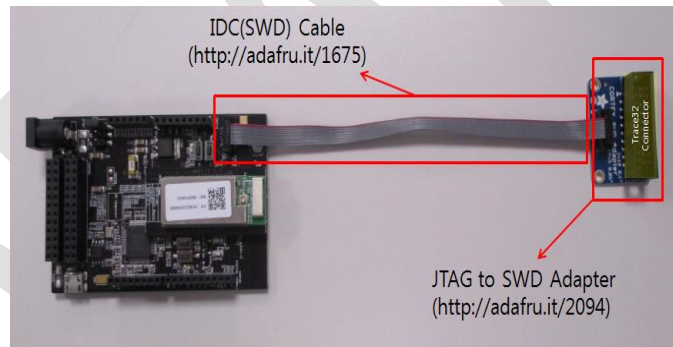


Figure 14. JTAG to SWD adapter

CON708-CON709 HEADER SIGNALS

CON708 and CON709 carry the standard Arduino® interface. Details can be found in [Table 9](#), [Table 10](#) and [Figure 15](#).

Table 9. CON708 header signal description

| Header CON708 (Arduino 1) | |
|---------------------------|-------------|
| Pin Name | Description |
| 1 | XGPIO21 |
| 2 | XPWM5_OUT |
| 3 | XSPI1_CSN |
| 4 | XSPI1_MOSI |
| 5 | XSPI1_MISO |
| 6 | XSPI1_CLK |
| 7 | GND |
| 8 | TP701 |
| 9 | XI2C0_SDA |
| 10 | XI2C0_SCL |

Table 10. CON709 header signal description

| Header CON709 (Arduino 2) | |
|---------------------------|---------------|
| Pin Name | Description |
| 1 | ARD_XUART0_RX |
| 2 | ARD_XUART0_TX |
| 3 | XGPIO17 |
| 4 | XPWM0_OUT |
| 5 | XGPIO18 |
| 6 | XPWM1_OUT |
| 7 | XPWM2_OUT |
| 8 | XGPIO19 |

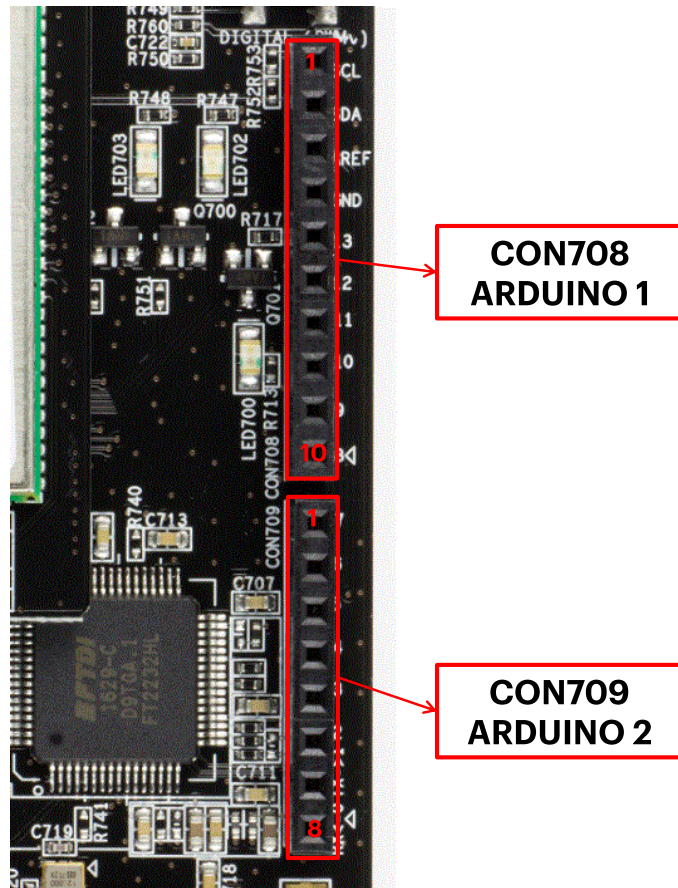


Figure 15. Arduino connectors location

CON710-CON711 HEADER SIGNALS

Table 11. CON710 header signal description

| Header CON710 (Reset) | |
|-----------------------|-------------|
| Pin Name | Description |
| 1 | NC |
| 2 | NC |
| 3 | RESET |
| 4 | VCC_EXT3P3 |
| 5 | NC |
| 6 | GND |
| 7 | GND |
| 8 | NC |

Table 12. CON711 header signal description

| Header CON711 (ADC) | |
|---------------------|-------------|
| Pin Name | Description |
| 1 | XADC0 |
| 2 | XADC1 |
| 3 | XADC2 |
| 4 | XADC3 |
| 5 | XADC4 |
| 6 | XADC5 |

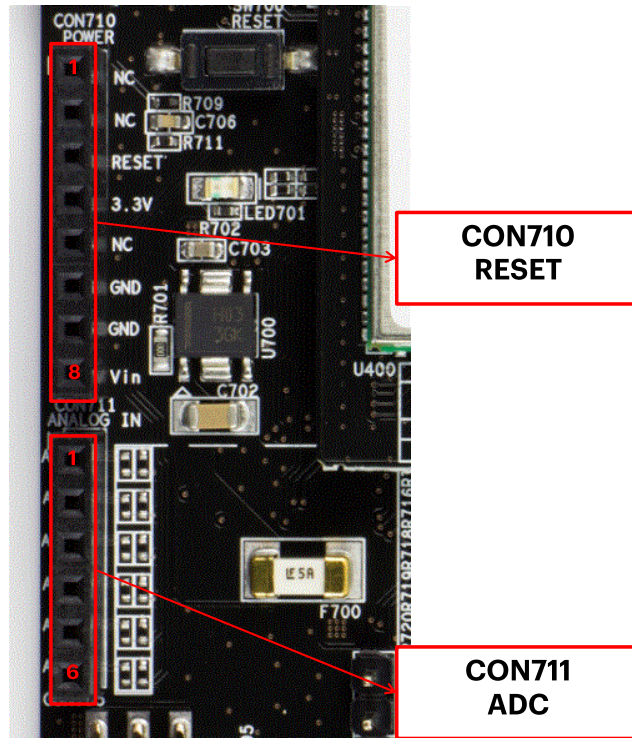


Figure 16. Reset and ADC connector location

CON712 HEADER SIGNALS

Table 13 CON712 header signal description

| Header CON712 (DC Jack Connector) | | |
|-----------------------------------|-------------|--|
| Pin Name | Description | Comment |
| 1 | Plus | When using DC Jack power provide 5V/5A |
| 2 | Ground | When using Battery power |
| 3 | Ground | When using Battery power |

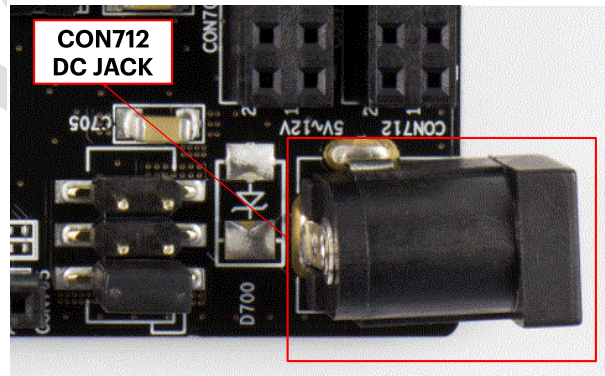


Figure 17. DC Jack connector location

SWITCHES

Table 14. Switch signal descriptions

| Switches | | |
|-------------|-----------------|--|
| Switch Name | Description | Comment |
| SW700 | Reset Switch | When SW700 is pressed the XRESET_N signal will be low on CON702 (pin:1, pin:21). See Table 3 for more details. |
| SW701 | Reset Switch | This switch provides reset signaling for the Arduino environment. The reset signal is part of CON710. See Table 11 for more details. |
| SW702 | Test LED Switch | When SW702 is pressed, the red LED703 will be activated. |
| SW703 | Test LED Switch | When SW703 is pressed, the Blue LED702 will be activated. |

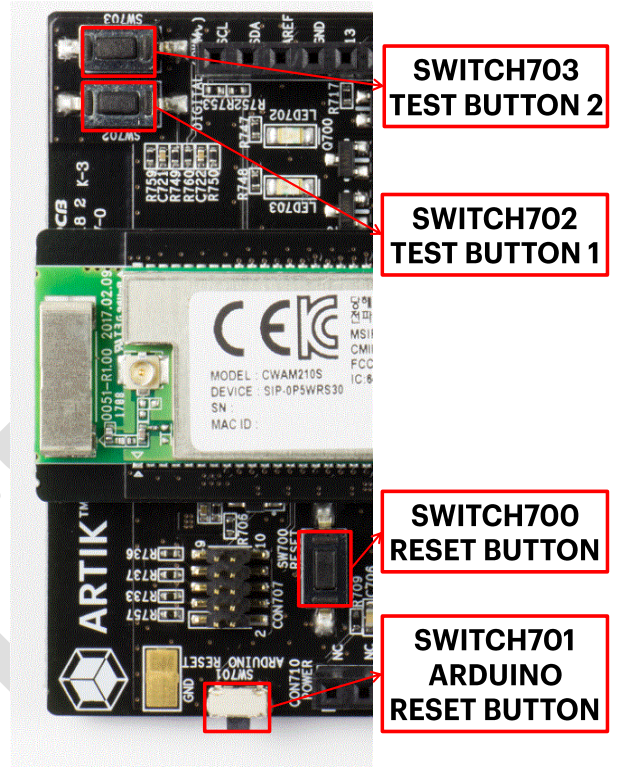


Figure 18. Switches location

INTERPOSER BOARD HEADER DESCRIPTION

The Interposer Board is the bridge between the Starter Board and the ARTIK 053 Module. CON400 and CON401 located on the Interposer Board are connected to CON701 and CON702 of the Starter Board. On the other side U400 located on the Interposer Board is connected to PAD1 on the ARTIK 053 Module.

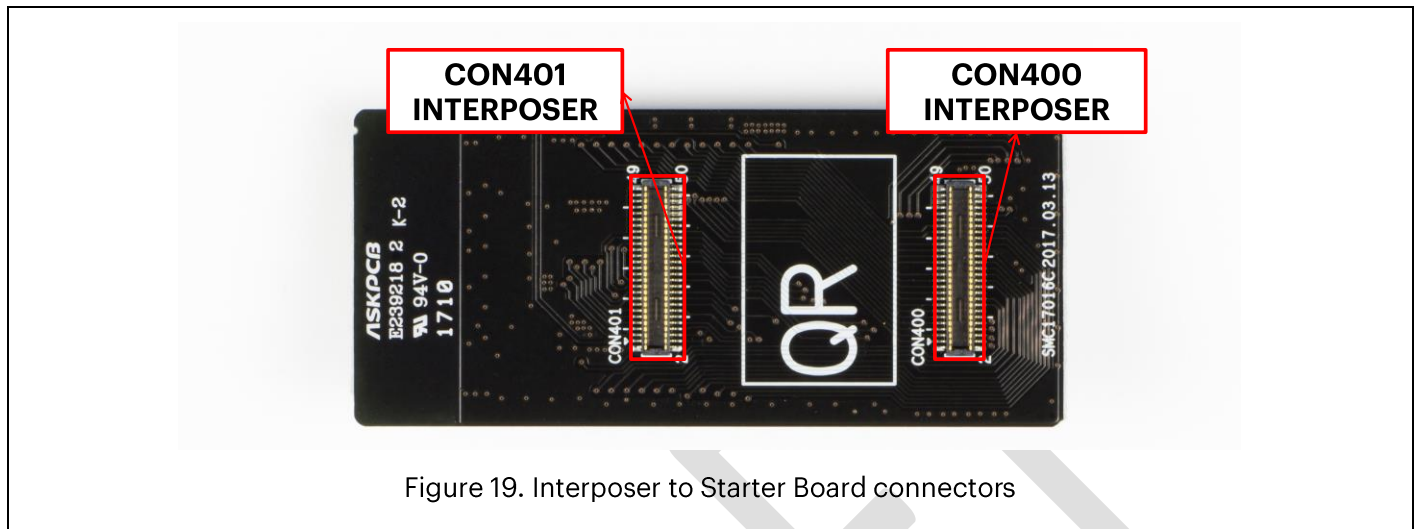


Figure 19. Interposer to Starter Board connectors

Table 15. CON400 signal description

| Connector CON400 | | | |
|------------------|---------------|----------|-------------|
| Pin Name | Description | Pin Name | Description |
| 1 | XGPIO26 | 2 | XSPI1_CSN |
| 3 | XGPIO25 | 4 | XSPI1_MOSI |
| 5 | XGPIO24 | 6 | XSPI1_CLK |
| 7 | XGPIO21 | 8 | XSPI1_MISO |
| 9 | XGPIO19 | 10 | GND |
| 11 | XGPIO18 | 12 | XGPIO0 |
| 13 | XGPIO17 | 14 | XGPIO3 |
| 15 | XGPIO14 | 16 | XGPIO1 |
| 17 | XGPIO13 | 18 | GND |
| 19 | XGPIO16 | 20 | XSPI2_CS |
| 21 | XGPIO15 | 22 | XSPI2_CLK |
| 23 | XGPIO20 | 24 | XGPIO2 |
| 25 | GND | 26 | XSPI2_MOSI |
| 27 | XADC0 | 28 | XGPIO8 |
| 29 | XADC1 | 30 | XSPI2_MISO |
| 31 | XADC2 | 32 | GND |
| 33 | XADC3 | 34 | XGPIO11 |
| 35 | GND | 36 | XGPIO9 |
| 37 | XGPIO23 | 38 | XGPIO10 |
| 39 | XGPIO22 | 40 | XGPIO12 |
| 41 | Not Connected | 42 | GND |
| 43 | Not Connected | 44 | XUART3_TXD |
| 45 | GND | 46 | XUART3_RXD |
| 47 | GND | 48 | GND |
| 49 | GND | 50 | GND |

Table 16. CON401 signal description

| Connector CON401 | | | |
|------------------|---------------|----------|-------------|
| Pin Name | Description | Pin Name | Description |
| 1 | XRESET_N | 2 | XUART2_TXD |
| 3 | XJTAG_TMS | 4 | XUART2_RXD |
| 5 | XJTAG_TDI | 6 | XUART1_RXD |
| 7 | XJTAG_TCK | 8 | XUART1_TXD |
| 9 | XJTAG_TDO | 10 | GND |
| 11 | XJTAG_TRST_N | 12 | XSPI0_CLK |
| 13 | GND | 14 | XSPI0_MOSI |
| 15 | XEINT0 | 16 | XSPI0_CS |
| 17 | XEINT2 | 18 | XSPI0_MISO |
| 19 | XEINT1 | 20 | GND |
| 21 | PWR_RST | 22 | XUART0_RX |
| 23 | XI2C0_SCL | 24 | XUART0_TX |
| 25 | XI2C0_SDA | 26 | GND |
| 27 | XI2C1_SCL | 28 | XPWM3_OUT |
| 29 | XI2C1_SDA | 30 | XPWM2_OUT |
| 31 | GND | 32 | XPWM6_OUT |
| 33 | XDEBUG_TXD | 34 | XPWM0_OUT |
| 35 | XDEBUG_RXD | 36 | XPWM1_OUT |
| 37 | Not Connected | 38 | XPWM5_OUT |
| 39 | Not Connected | 40 | XPWM4_OUT |
| 41 | Not Connected | 42 | GND |
| 43 | DC_5V | 44 | GND |
| 45 | DC_5V | 46 | GND |
| 47 | DC_5V | 48 | GND |
| 49 | DC_5V | 50 | GND |

Table 17, describes signals located on U400 of the Interposer Board, and Table 18 describes signals of PAD1 located on the ARTIK 053 Module. Note that PAD1 will be plugged into U400, but signal names can be different!

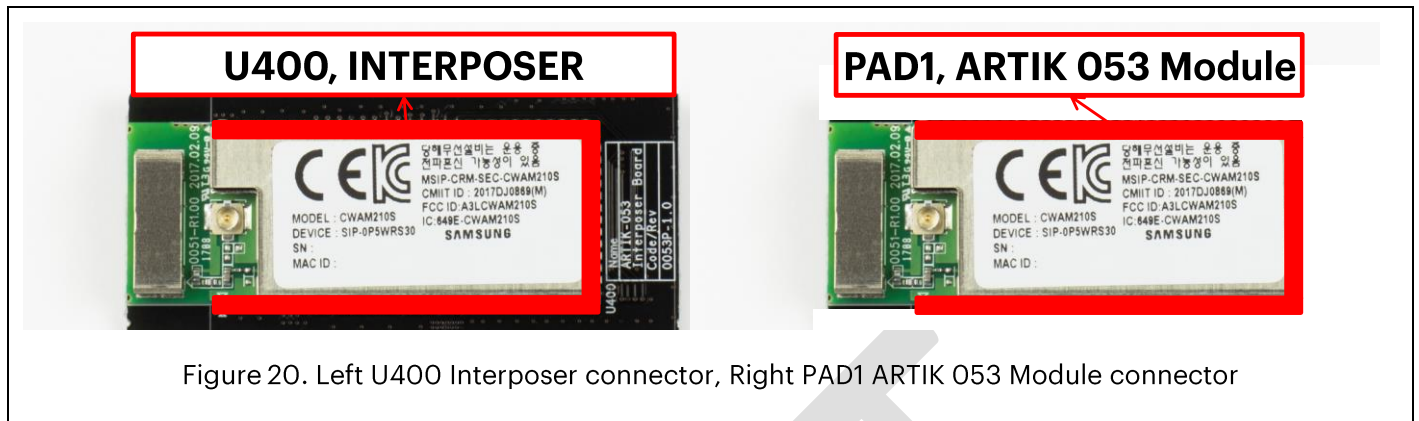


Figure 20. Left U400 Interposer connector, Right PAD1 ARTIK 053 Module connector

Table 17. U400 signal description

| Connector U400 (Interposer Board) | | | |
|-----------------------------------|---------------|----------|--------------|
| Pin Name | Description | Pin Name | Description |
| 1 | GND | 2 | XGPIO26 |
| 3 | XGPIO25 | 4 | XGPIO24 |
| 5 | XGPIO21 | 6 | XGPIO19 |
| 7 | XGPIO18 | 8 | XGPIO17 |
| 9 | XGPIO14 | 10 | XGPIO13 |
| 11 | XGPIO16 | 12 | XGPIO15 |
| 13 | XGPIO20 | 14 | XADC0 |
| 15 | XADC1 | 16 | XADC2 |
| 17 | XADC3 | 18 | XGPIO23 |
| 19 | XGPIO22 | 20 | GND |
| 21 | XRESET_N | 22 | XJTAG_TMS |
| 23 | XJTAG_TDI | 24 | XJTAG_TCK |
| 25 | XJTAG_TDO | 26 | XJTAG_TRST_N |
| 27 | Not Connected | 28 | XEINT0 |
| 29 | XEINT2 | 30 | XEINT1 |
| 31 | PWR_RST | 32 | DC_5V |
| 33 | XI2C0_SCL | 34 | XI2C0_SDA |
| 35 | XI2C1_SCL | 36 | XI2C1_SDA |
| 37 | XDEBUG_TXD | 38 | XDEBUG_RXD |
| 39 | XPWM4_OUT | 40 | XPWM5_OUT |
| 41 | XPWM1_OUT | 42 | XPWM0_OUT |
| 43 | XPWM6_OUT | 44 | XPWM2_OUT |
| 45 | XPWM3_OUT | 46 | XUART0_TX |
| 47 | XUART0_RX | 48 | XSPI0_MISO |
| 49 | XSPI0_CS | 50 | XSPI0_MOSI |
| 51 | XSPI0_CLK | 52 | XUART1_TXD |
| 53 | XUART1_RXD | 54 | XUART2_RXD |
| 55 | XUART2_TXD | 56 | XUART3_RXD |
| 57 | XUART3_TXD | 58 | XGPIO12 |
| 59 | XGPIO10 | 60 | XGPIO9 |
| 61 | XGPIO11 | 62 | XSPI2_MISO |
| 63 | XGPIO8 | 64 | XSPI2_MOSI |
| 65 | XGPIO2 | 66 | XSPI2_CLK |
| 67 | XSPI2_CS | 68 | XGPIO1 |
| 69 | XGPIO3 | 70 | XGPIO0 |
| 71 | XSPI1_MISO | 72 | XSPI1_CLK |
| 73 | XSPI1_MOSI | 74 | XSPI1_CSN |
| 75 | Not Connected | 76 | GND |
| 77 | GND | 78 | GND |
| 79 | GND | | |

Table 18. PAD1 signal description

| Connector PAD1 (ARTIK 053 Module) | | | |
|-----------------------------------|--------------|----------|--------------|
| Pin Name | Description | Pin Name | Description |
| 1 | GND | 2 | XGPIO26 |
| 3 | XGPIO25 | 4 | XGPIO24 |
| 5 | XGPIO21 | 6 | XGPIO19 |
| 7 | XGPIO18 | 8 | XGPIO17 |
| 9 | XGPIO14 | 10 | XGPIO13 |
| 11 | XGPIO16 | 12 | XGPIO15 |
| 13 | XGPIO20 | 14 | XADC0AIN_1 |
| 15 | XADC0AIN_0 | 16 | XADC0AIN_2 |
| 17 | XADC0AIN_3 | 18 | XGPIO23 |
| 19 | XGPIO22 | 20 | GND |
| 21 | XRESET_N | 22 | XJTAG_TMS |
| 23 | XJTAG_TDI | 24 | XJTAG_TCK |
| 25 | XJTAG_TDO | 26 | XJTAG_TRST_N |
| 27 | 3V3_EXT_LDO2 | 28 | XEINT0 |
| 29 | XEINT2 | 30 | XEINT1 |
| 31 | PWR_RST | 32 | DC_5V_12V |
| 33 | XI2C0_SCL | 34 | XI2C0_SDA |
| 35 | XI2C1_SCL | 36 | XI2C1_SDA |
| 37 | XDEBUG_TXD | 38 | XDEBUG_RXD |
| 39 | XGPIO28 | 40 | XPWMTOUT_4 |
| 41 | XPWMTOUT_1 | 42 | XPWMTOUT_0 |
| 43 | XPWMTOUT_5 | 44 | XPWMTOUT_2 |
| 45 | XPWMTOUT_3 | 46 | TXD0 |
| 47 | RXD0 | 48 | XSPI0_MISO |
| 49 | XSPI0_CSN | 50 | XSPI0_MOSI |
| 51 | XSPI0_CLK | 52 | XUART1_TXD |
| 53 | XUART1_RXD | 54 | XUART2_RXD |
| 55 | XUART2_TXD | 56 | XUART3_RXD |
| 57 | XUART3_TXD | 58 | XGPIO12 |
| 59 | XGPIO10 | 60 | XGPIO9 |
| 61 | XGPIO11 | 62 | XGPIO6 |
| 63 | XGPIO8 | 64 | XGPIO7 |
| 65 | XGPIO2 | 66 | XGPIO4 |
| 67 | XGPIO5 | 68 | XGPIO1 |
| 69 | XGPIO3 | 70 | XGPIO0 |
| 71 | XSPI1_MISO | 72 | XSPI1_CLK |
| 73 | XSPI1_MOSI | 74 | XSPI1_CSN |
| 75 | XGPIO27 | 76 | GND |
| 77 | GND | 78 | GND |
| 79 | GND | | |

ARTIK 053 MODULE HEADER DESCRIPTION

This section provides a high level overview of the ARTIK 053 Module. For more detailed information consult the ARTIK 053 Module Datasheet.

ARTIK 053 MODULE SPECIFICATIONS

The high level specifications of the ARTIK 053 Module are provided in [Table 19](#).

Table 19. ARTIK 053 Module specifications

| | |
|--------------------------|---|
| Processor | |
| WLAN CPU | ARM® Cortex® R4, 32-bit with 32KB I-Cache and 32KB D-Cache @ 320MHz |
| Memory | |
| Embedded ROM | 64KB |
| User Embedded RAM | 1280KB 128KB (Shared) |
| FLASH | 8MB SPI FLASH on Module |
| Security | |
| Secure Element | Secure point to point authentication and data transfer |
| Radio | |
| WLAN | IEEE802.11™ b/g/n 2.4GHz radio |
| Power Management | |
| Single Supply | Provides all power of the ARTIK 053 Module using on board bucks and LDO's |
| Interfaces | |
| Digital I/O | UART, I ² C, SPI, PWM, ADC, Tick counter and GPIO |

ARTIK 053 MODULE EDGE CONNECTOR

The ARTIK 053 Module utilizes 79 signal and ground pins providing all the relevant signaling. *Figure 21* shows how the Edge Connector is oriented and how signal-coordinates are assigned to the edge of the ARTIK 053 Module. *Table 18* describes the relation between the edge coordinates and the signal names.

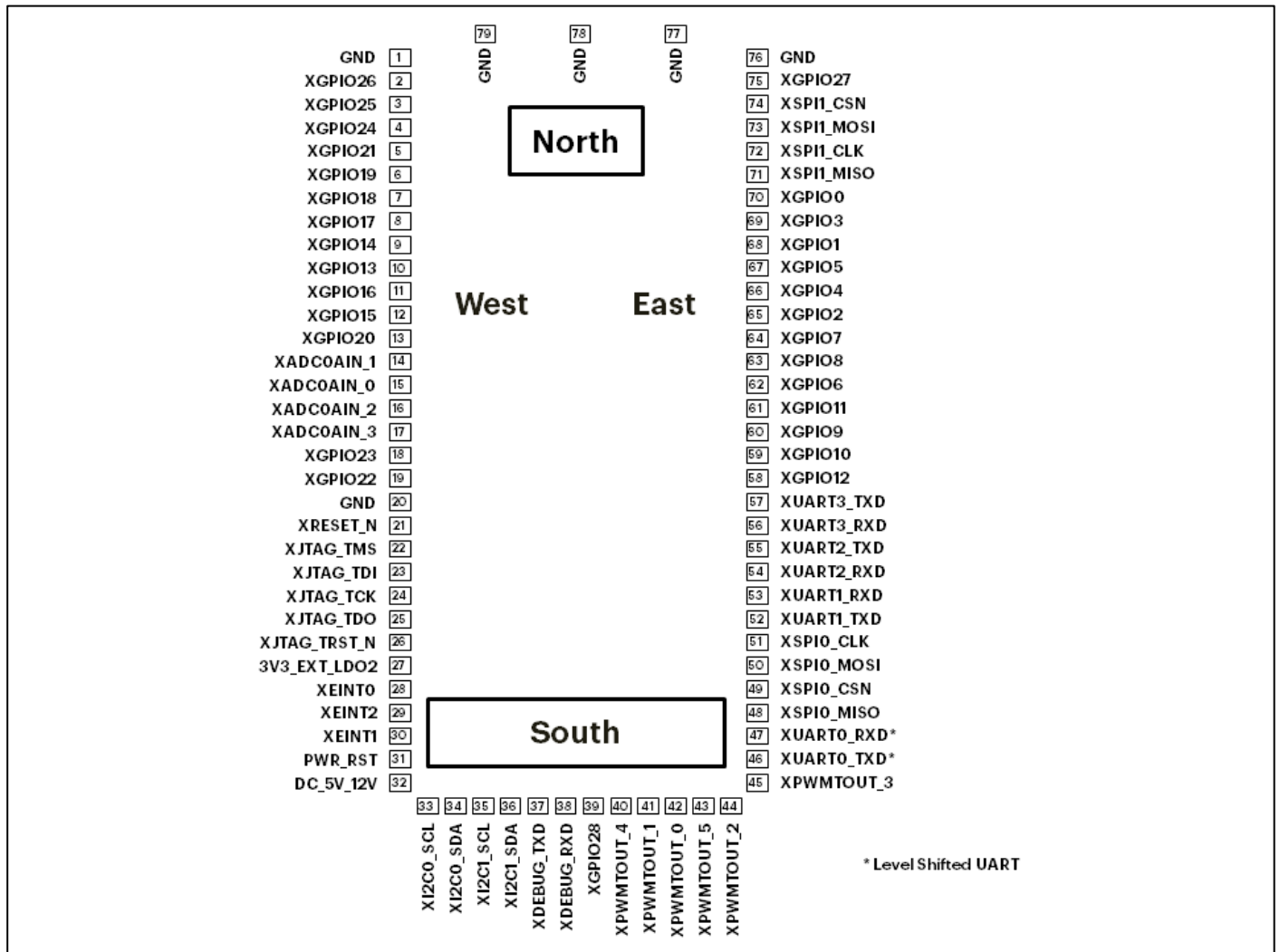


Figure 21. ARTIK 053 Module Edge Connector

ARTIK 053 STARTER KIT BOOTING

This section will describe how to start working with your ARTIK 053 Starter Kit by setting up a connection between your development PC and the ARTIK 053 Starter Kit.

For development purposes the Development machine can be either a Windows® or a Linux® (for instance Ubuntu) environment. In this guide the Windows® path is explained. For further information on developing on a Linux® platform, please consult the ARTIK 053 Software User Guide.

Follow the steps depicted below to setup a connection between the development PC (Windows®) and the ARTIK 053 Starter Kit:

Plug an USB Cable into the ARTIK 053 Starter Kit (CON4, *Figure 5*) and your development PC

Power up the Board

Press Switch 2 (Power Reset)

The USB driver from FTDI will be installed automatically. If not go to the FTDI website at (<http://www.ftdichip.com/FTDrivers.htm>)

If the FTDI driver is installed properly, go to your Windows® device manager to check USB status.



If your ARTIK 053 Starter Kit is recognized, development can start.

Software development for the ARTIK 053 Starter Kit is using the 'OpenOCD' toolkit. For further information on how to start a project using the ARTIK 053 Starter Kit with the 'OpenOCD' development environment, please consult the ARTIK 053 Software User Guide.

HANDLING GUIDE

Precaution against Electrostatic Discharge

When using the ARTIK 053 Starter Kit, ensure that the environment is protected against static electricity:

Contamination

Do not use the ARTIK 053 Starter Kit in an environment exposed to dust or dirt adhesion.

Temperature/Humidity

The ARTIK 053 Starter Kit is sensitive to:

- Environment
- Temperature
- Humidity

High temperature or humidity deteriorates the characteristics of ARTIK 053 Starter Kit, therefore, do not store or use the ARTIK 053 Starter Kit under such conditions.

Mechanical Shock

Do not to apply excessive mechanical shock or force to the ARTIK 053 Starter Kit.

Chemical

Do not expose the ARTIK 053 Starter Kit to chemicals. Exposure to chemicals leads to reactions that deteriorate the characteristics of the ARTIK 053 Starter Kit.

EMS (Electro Magnetic Susceptibility)

Strong electromagnetic waves or magnetic fields may affect the characteristics of the ARTIK 053 Starter Kit during the operation under insufficient PCB circuit design for Electro Magnetic Susceptibility (EMS).

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