



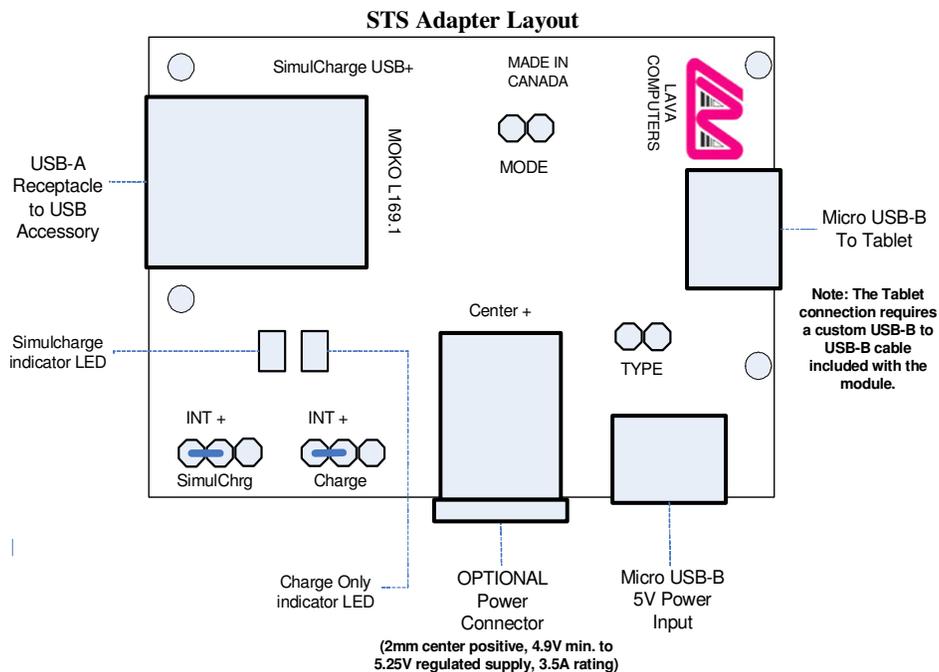
STS ADAPTER BOARD Quick Start

May 24, 2016
Revision A01

The LAVA product referred to as simply the “STS” is a 1-Port USB member of the LAVA STS Family of devices.

The STS has the ability to place the tablet in SimulCharge Mode or Charge-Only Mode. This board allows select Samsung Tablets to work with USB accessories while power is being supplied to the tablet, which is referred to as SimulCharge Mode. The board defaults to SimulCharge Mode when power is applied. In Charge-Only Mode, the tablet charges at the highest rate permitted by the tablet; however no USB accessories are supported. Charge-Only Mode is useful when recovering a tablet, which has a fully depleted battery.

The STS has no required setup in the tablet. The STS board should be connected to the tablet before power is connected to the STS. Reliable entry into SimulCharge Mode when the power is applied is a key feature of the STS.



The board and tablet are typically powered through the Micro USB-B power input using the same USB power supply provided with the tablet. The standard Samsung USB Power Supply is rated at 5 volts and 2 amperes, which nominally provides 5.0 to 5.1 volts at the STS input.

The power connectors have no protection against over voltage or reversed connections. Application of the wrong voltage can result in **immediate** damage to the board and possibly other components in the system.

The 2-pin headers allow the TYPE, MODE, and LEDs to be extended via a wire harness to user provided components. Soldering to the pins is not recommended as excessive heat could damage the board. Unauthorized soldering to the pins or any other point on the STS board does violate LAVA’s manufacturer warranty.

STS Revision Identification

Remove jumpers shorting the TYPE and MODE pins. Ensure the LED jumpers are set as shown in the STS Adapter Layout. With power applied, the Charge-Only LED will flash for the first 2 to 3 seconds. If the flash pattern is continuous, the STS is revision 1. If the pattern is flash-flash-pause with several repeats, the STS is revision 2.

Note: The circuit board part number does not identify the STS revision. The circuit board will be either MOKO L169.1 or MOKO L169.2. The L169.2 board uses improved Micro USB connectors.

STS Revision 1 – TYPE and MODE pin behavior	
TYPE Jumper	Description
Removed	The MODE pins are set for edge sensitive operation. When shorting the MODE pins for at least ¼ second then releasing it, the mode is toggled between SimulCharge Mode and Charge-Only Mode. If the button is pressed for more than 4 seconds, the button is ignored until released then pressed again.
Installed	The MODE pins are set for level sensitive operation. Shorting the pins place the tablet in Charge-Only Mode. Not shorting the pins places the tablet in SimulCharge Mode.
The MODE pin behavior is dependant on the TYPE Jumper selection as described above.	
Note: Changes to the TYPE jumper are only sampled when the unit is powered up.	
Note: When the board is powered on the Charge-Only LED will flash with a continuous pattern for 2 to 3 seconds.	
Note: The Tab 4 can only be powered on if Charge-Only Mode is selected.	
Note: When a Tab 4 is turned off, it only charges if Charge-Only Mode is selected.	
Note: Supports operation with Tab 4, Tab Pro, Tab S, Note Pro, and Note 10.1 tablets described in the tablet adapter compatibility table on the LAVA website. The Tab S2, Tab E, and Tab A tablets require the STS revision 2.	

STS Revision 2 – TYPE and MODE pin behavior	
TYPE Jumper	Description
Removed	Operation set for Tab E, Tab A, and Tab S2 tablets described in the tablet adapter compatibility table on the LAVA website.
	When the device is powered on the Charge-Only LED will report a distinctive flash-flash-pause pattern for 2 to 3 seconds.
Installed	Operation set for Tab 4, Tab Pro, Tab S, Note Pro, and Note 10.1 tablets described in the tablet adapter compatibility table on the LAVA website.
	When the device is powered on the Charge-Only LED will Flash on and off in a continuous pattern for 2 to 3 seconds.
The MODE pin behavior prevents the tablet from remaining in SimulCharge Mode for an extended period of time. When power is applied the board defaults to SimulCharge mode. Shorting the MODE pins for 5 seconds or more, places the tablet into Charge-Only Mode. The tablet remains in Charge-Only Mode for about 7 minutes before automatically changing back to SimulCharge Mode, even if the MODE pins remain shorted. The 7-minute Charge-Only window can be cancelled by double clicking the MODE pins. To “click” the pin, short for 1 second, release for 1 second and then repeat once more.	
Note: Changes to the TYPE jumper are only sampled when the unit is powered up.	
Note: The Tab 4 can only be powered on if Charge-Only Mode is selected.	
Note: When a Tab 4 is turned off, it only charges if Charge-Only Mode is selected.	
Note: Supports operation with all tablets described in the tablet adapter compatibility table on the LAVA website provided the correct TYPE jumper selection is used.	

The default jumpers shown in the diagram enable the on-board LEDs. To disable use on the on-board LEDs, remove the related jumper. An external LED can be driven from these connector blocks. The center pin on the jumper block is positive. The “right” pin as viewed on the diagram is the negative pin. A 680 ohm current limit resistor is always present. When using an external LED, the left 2 pins remain open.

Option 1: Internal LED



Option 2: External LED



On power up the Charge-Only LED is flashed for 2 to 3 seconds.