

FSUSB45 — Hi-Speed USB2.0 (480Mbps) Switch with Dedicated Charger Port Detect

Features

- Low On Capacitance: 7.0pF Typical
- Low On Resistance: 3.9Ω Typical
- Low Power Consumption: 1μA Maximum
 - 15μA Maximum I_{OCT} over an Expanded Voltage Range ($V_{IN}=1.8V$, $V_{CC}=4.3V$)
- Wide -3db Bandwidth: > 720MHz
- Packaged in:
 - 10-Lead MicroPak™ (1.6 x 2.1mm)
 - 10-Lead UMLP (1.4 x 1.8mm)
- 8kV ESD Rating, >16kV Power/GND ESD Rating
- Power-Off Protection on All Ports When $V_{CC}=0V$
 - D+/D- Pins Tolerate up to 5.25V

Applications

- Cell Phone, PDA, Digital Camera, and Notebook
- LCD Monitor, TV, and Set-top Box

IMPORTANT NOTE:

For additional performance information, please contact analogswitch@fairchildsemi.com.

Description

The FSUSB45 is a bi-directional, low-power, two-port, Hi-Speed, USB2.0 switch. Configured as a double-pole, double-throw (DPDT) switch, it is optimized for switching between two Hi-Speed (480Mbps) sources or a Hi-Speed source and a Full-Speed (12Mbps) source.

The FSUSB45 is compatible with the requirements of USB2.0 and features an extremely low on capacitance (C_{ON}) of 7.0pF. The wide bandwidth of this device (720MHz) exceeds the bandwidth needed to pass the third harmonic, resulting in signals with minimum edge and phase distortion. Superior channel-to-channel crosstalk also minimizes interference.

The FSUSB45 contains special circuitry on the switch I/O pins for applications where the V_{CC} supply is powered-off ($V_{CC}=0$), which allows the device to withstand an over-voltage condition. This device is designed to minimize current consumption even when the control voltage applied to the SEL pin is lower than the supply voltage (V_{CC}). This feature is especially valuable to mobile applications, such as cell phones, allowing for direct interface with the general-purpose I/Os of the baseband processor. An additional feature is the detection of the 1,1 state on D+/D- to signal an interrupt (INT) to the processor when entering a dedicated charging port mode of operation.

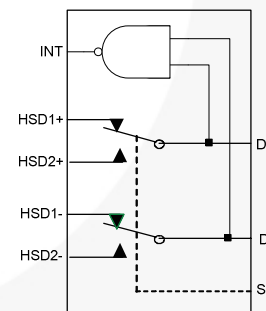


Figure 1. Analog Symbol

Ordering Information

Part Number	Top Mark	Operating Temperature Range	Package
FSUSB45L10X	JA	-40 to +85°C	10-Lead MicroPak™ 1.6 x 2.1mm, JEDEC MO-255B
FSUSB45UMX	JB	-40 to +85°C	10-Lead, Quad, Ultrathin Molded Leadless Package (UMLP), 1.4 x 1.8mm






MicroPak™ is a trademark of Fairchild Semiconductor Corporation.

All packages are lead free per JEDEC: J-STD-020B standard.



TRADEMARKS

The following includes registered and unregistered trademarks and service marks, owned by Fairchild Semiconductor and/or its global subsidiaries, and is not intended to be an exhaustive list of all such trademarks.

- | | | | |
|---|---|---|---|
| ACEx [®] | FPST [™] | PDP SPM [™] | The Power Franchise [®] |
| Build it Now [™] | F-PFS [™] | Power-SPM [™] |  |
| CorePLUS [™] | FRFET [®] | PowerTrench [®] | TinyBoost [™] |
| CorePOWER [™] | Global Power Resource SM | Programmable Active Droop [™] | TinyBuck [™] |
| CROSSVOLT [™] | Green FPST [™] | QFET [®] | TinyLogic [®] |
| CTL [™] | Green FPST [™] e-Series [™] | QS [™] | TINYOPTO [™] |
| Current Transfer Logic [™] | GTO [™] | Quiet Series [™] | TinyPower [™] |
| EcoSPARK [®] | IntelliMAX [™] | RapidConfigure [™] | TinyPWM [™] |
| EfficientMax [™] | ISOPLANAR [™] | Saving our world, 1mW at a time [™] | TinyWire [™] |
| EZSWITCH [™] * | MegaBuck [™] | SmartMax [™] | μSerDes [™] |
|  | MICROCOUPLER [™] | SMART START [™] |  |
|  | MicroFET [™] | SPM [®] | UHC [®] |
| Fairchild [®] | MicroPak [™] | STEALTH [™] | Ultra FRFET [™] |
| Fairchild Semiconductor [®] | MillerDrive [™] | SuperFET [™] | UniFET [™] |
| FACT Quiet Series [™] | MotionMax [™] | SuperSOT [™] -3 | VCX [™] |
| FACT [®] | Motion-SPM [™] | SuperSOT [™] -6 | VisualMax [™] |
| FAST [®] | OPTOLOGIC [®] | SuperSOT [™] -8 | |
| FastvCore [™] | OPTOPLANAR [®] | SupreMOS [™] | |
| FlashWriter [®] * | | SyncFET [™] | |
| | |  | |

* EZSWITCH[™] and FlashWriter[®] are trademarks of System General Corporation, used under license by Fairchild Semiconductor.

DISCLAIMER

FAIRCHILD SEMICONDUCTOR RESERVES THE RIGHT TO MAKE CHANGES WITHOUT FURTHER NOTICE TO ANY PRODUCTS HEREIN TO IMPROVE RELIABILITY, FUNCTION, OR DESIGN. FAIRCHILD DOES NOT ASSUME ANY LIABILITY ARISING OUT OF THE APPLICATION OR USE OF ANY PRODUCT OR CIRCUIT DESCRIBED HEREIN; NEITHER DOES IT CONVEY ANY LICENSE UNDER ITS PATENT RIGHTS, NOR THE RIGHTS OF OTHERS. THESE SPECIFICATIONS DO NOT EXPAND THE TERMS OF FAIRCHILD'S WORLDWIDE TERMS AND CONDITIONS, SPECIFICALLY THE WARRANTY THEREIN, WHICH COVERS THESE PRODUCTS.

LIFE SUPPORT POLICY

FAIRCHILD'S PRODUCTS ARE NOT AUTHORIZED FOR USE AS CRITICAL COMPONENTS IN LIFE SUPPORT DEVICES OR SYSTEMS WITHOUT THE EXPRESS WRITTEN APPROVAL OF FAIRCHILD SEMICONDUCTOR CORPORATION.

As used herein:

1. Life support devices or systems are devices or systems which, (a) are intended for surgical implant into the body or (b) support or sustain life, and (c) whose failure to perform when properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in a significant injury of the user.
2. A critical component in any component of a life support, device, or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.

PRODUCT STATUS DEFINITIONS

Definition of Terms

Datasheet Identification	Product Status	Definition
Advance Information	Formative / In Design	This datasheet contains the design specifications for product development. Specifications may change in any manner without notice.
Preliminary	First Production	This datasheet contains preliminary data; supplementary data will be published at a later date. Fairchild Semiconductor reserves the right to make changes at any time without notice to improve design.
No Identification Needed	Full Production	This datasheet contains final specifications. Fairchild Semiconductor reserves the right to make changes at any time without notice to improve the design.
Obsolete	Not In Production	This datasheet contains specifications on a product that is discontinued by Fairchild Semiconductor. The datasheet is for reference information only.

Rev. I34