Analog Switches
Quick Select Guide

Texas Instruments

2015
ti.com/analogswitches
Overview

The Texas Instruments (TI) signal switch product portfolio provides high-performance and low-power solutions to solve signal routing issues between DSP's, CPUs, industry standard buses, memory and peripherals. The TI switch portfolio includes general purpose analog switches, high speed switches and specialty switches for applications including USB, LAN, video, audio and PCIe.

Product Families

• General Purpose Switches
  ○ SPST
  ○ SPDT
  ○ SP3T/SP4T

• Switches with Detection Capability
  ○ Audio jack
  ○ Micro-USB

• High-speed (> 1 Ghz) Switches
  ○ Video
  ○ Memory
  ○ Data

Our switches support a wide range of supply voltages (.8 -12 V) and signal voltages (from -2.6 to 12 V), support fast data throughput (>7-Ghz bandwidth) and offer low on-resistance and input capacitance for minimal signal distortion and insertion loss.

Our broad portfolio can be used in any application by offering a variety of:
• Channel counts
• Configurations
• Voltage ranges
• RON resistances
• Bandwidth

Availability in advanced packaging (BGA, QFN, and WCSP) can reduce board space in space-constrained applications.
General Purpose Switches

TI’s broad general purpose analog switch product family encompasses a variety of different channel counts, configurations, supply voltages, ON resistances, and bandwidths to target any application.

### Featured Products

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Key Features</th>
<th>Interface</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>TS3A4741</td>
<td>Dual 0.9-Ω low-voltage SPST analog switch</td>
<td>General Purpose</td>
<td>Released</td>
</tr>
<tr>
<td>TS5A23159</td>
<td>Dual 1-Ω SPDT analog switch</td>
<td>General Purpose</td>
<td>Released</td>
</tr>
<tr>
<td>TS12A4516</td>
<td>Single 25-Ω SPST analog switch, ±1-V to ±6-V dual-supply operation</td>
<td>General Purpose</td>
<td>Released</td>
</tr>
<tr>
<td>TS5A3166-Q1</td>
<td>Automotive 1-Ω SPST analog switch 5-V/3.3-V single-channel analog switch</td>
<td>Automotive - General Purpose</td>
<td>Released</td>
</tr>
<tr>
<td>TS5A22364-Q1</td>
<td>Automotive 0.65-Ω dual SPDT analog switch with negative rail capability</td>
<td>Automotive - General Purpose</td>
<td>Preview</td>
</tr>
</tbody>
</table>

- **SPST**
  - 1, 2, 4 channel
  - Single / dual supply
  - 3.3-, 5-, and 12-V supply
  - No and NC

- **SPDT**
  - 1, 2, 4 channel
  - Single / dual supply
  - 3.3-, 5-, and 12-V supply
  - No and NC

- **SP3T / SP4T**
  - 1, 2 channel
  - 3.3-, 5-, and 12-V supply
Signal Switches with Detection Capability

TI offers switches specialized to target specific applications requiring detection capability including audio jack and micro-USB switches. Audio jack switches can be used to enhance end user experience through features like accessory detection, click/pop noise removal, key press detection and low crosstalk. Micro-USB switches are used to integrate multiple switches into a single device supporting various types of signals including USB 2.0, UART, audio, microphone and video.

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<tr>
<td>TS3A227E</td>
<td>Accessory configuration detection, power-off noise removal, key press detection, low power sleep mode, ultra low Ron ground FETs,</td>
<td>Audio Jack</td>
<td>Released</td>
</tr>
<tr>
<td>TS3A226AE</td>
<td>Ultra low Ron ground FETs, FM transmission capability, accessory configuration detection</td>
<td>Audio Jack</td>
<td>Released</td>
</tr>
<tr>
<td>TSU6721</td>
<td>USB port multimedia switch supports USB, UART, audio, ID, MIC and load switch</td>
<td>Micro-USB</td>
<td>Released</td>
</tr>
<tr>
<td>BQ24392</td>
<td>Single USB 2.0 HS/UART path, BCv1.2 charger detection</td>
<td>Micro-USB</td>
<td>Released</td>
</tr>
</tbody>
</table>

Audio Jack
- Supports 3 and 4 pole audio accessories
- Low crosstalk
- Click / pop noise removal
- Key press detection

Micro-USB
- SPST, SP4T, SPDT
- USB, UART, Mic, audio, video paths
- Accessory ID
- Charger detection
High-Speed (>1 GHz) Switches

TI offers a portfolio of high-speed (>1 GHz) switches specialized for a variety of applications including USB, PCIe, HDMI, DP, MHL, and DDR memory.

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<tr>
<td>TS3DDR4000</td>
<td>12-Ch bidirectional switch, 1.8 V compatible control, 6.4 Ghz BW, low skew</td>
<td>DDR4</td>
<td>Sampling</td>
</tr>
<tr>
<td>TS3USB3000</td>
<td>MHL/USB mux/demux, 6.1 Ghz BW</td>
<td>USB</td>
<td>Released</td>
</tr>
<tr>
<td>TS3DV642</td>
<td>12-Ch 2:1 bidirectional mux/demux, 7.5 GHz BW</td>
<td>HDMI</td>
<td>Released</td>
</tr>
<tr>
<td>TS2PCIE412</td>
<td>3-Ch 2:1 mux/demux, 2.1 GHz, 3 Gbps data rate</td>
<td>PCIe</td>
<td>Released</td>
</tr>
</tbody>
</table>

**Standards**
- USB 3.0
- PCIe
- TB
- SATA
- LAN
- HDMI
- DP
- VGA
- MHL
- TB
- MIPI
- DDR2
- DDR3
- DDR4
Design Resources, References and Support

TI provides many resources to help you design systems faster, including TI Designs and guides. We also offer world-wide support to ensure your questions are answered fast.

Guides
• Analog Switch Selection Guide (SLYB125)

Jump start your design process
• Comprehensive reference designs
• Complete schematics/block diagrams
• BOMs
• Design files and test reports

ti.com/tidesigns

Featured TI Designs
• TIDA-00006: Headset Detection Switch to Detect 3-Pole or 4-Pole 3.5 mm Accessories
• TIDEP0006: Data Concentrator Reference Design
• TIDEP0014: Dual Camera Reference Design with AM437x – SITARA
• TIDEP0018: Temperature Sensor Interface Module for Programmable Logic Controllers (PLC) - ADC
• PMP7977: Xilinx Artix 7 FPGA Power Management Reference Design

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TI has specifically designated certain components as meeting ISO/TS16949 requirements, mainly for automotive use. In any case of use of non-designated products, TI will not be responsible for any failure to meet ISO/TS16949.

Products
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