DP3T SWITCH WITH IMPEDANCE DETECTION MICRO-USB SWITCH TO SUPPORT USB, UART, AUDIO, AND CHARGER DETECTION

Check for Samples: TSU5611

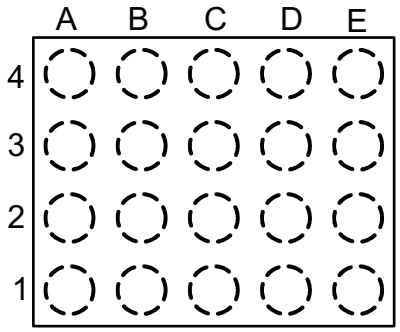
FEATURES

- **Compatible Accessories**
  - **USB Data Cable**
  - **UART Cable**
  - **Charger (Dedicated Charger or Host/Hub Charger)**
  - **Stereo Headset With Mic**
- **Integrated LDOs for VREF and Mic Bias**
- **USB and UART Path Supports USB 2.0 High Speed**
- **Audio Path Provides Negative Rail Support and Click/Pop Reduction**
- **Supports Factory Test Mode**
- **1.8-V Compatible I^2C Interface**
- **ESD Performance Tested Per JESD 22**
  - **1500-V Human-Body Model (A114-B, Class II)**
  - **1000-V Charged-Device Model (C101)**

APPLICATIONS

- **Cell Phones & Smart Phones**
- **Tablet PCs**
- **Digital Cameras & Camcorders**
- **GPS Navigation Systems**
- **Micro USB Interface with USB/UART**

YZP PACKAGE
TOP VIEW



DESCRIPTION

The TSU5611 is designed to interface the cellular phone UART, USB, and audio chips with external peripherals via a micro-USB connector. The switch features impedance detection for identification of various accessories that are attached through DP and DM of the micro-USB port. When an accessory is plugged into the micro-USB port, the switch uses a detection mechanism to identify the accessory (see the State Machine for details). It will then switch to the appropriate channel—data, audio, or UART.

The TSU5611 has an I2C interface for communication with the cellular phone baseband or applications processor. An interrupt is generated when anything plugged into the micro-USB is detected. Another interrupt is generated when the device is unplugged.

ORDERING INFORMATION(1)

T_A	PACKAGE(2)		ORDERABLE PART NUMBER	TOP-SIDE MARKING
–40°C to 85°C	WSCP–YZP (0.5-mm pitch)	Tape and Reel	TSU5611YZPR	A7

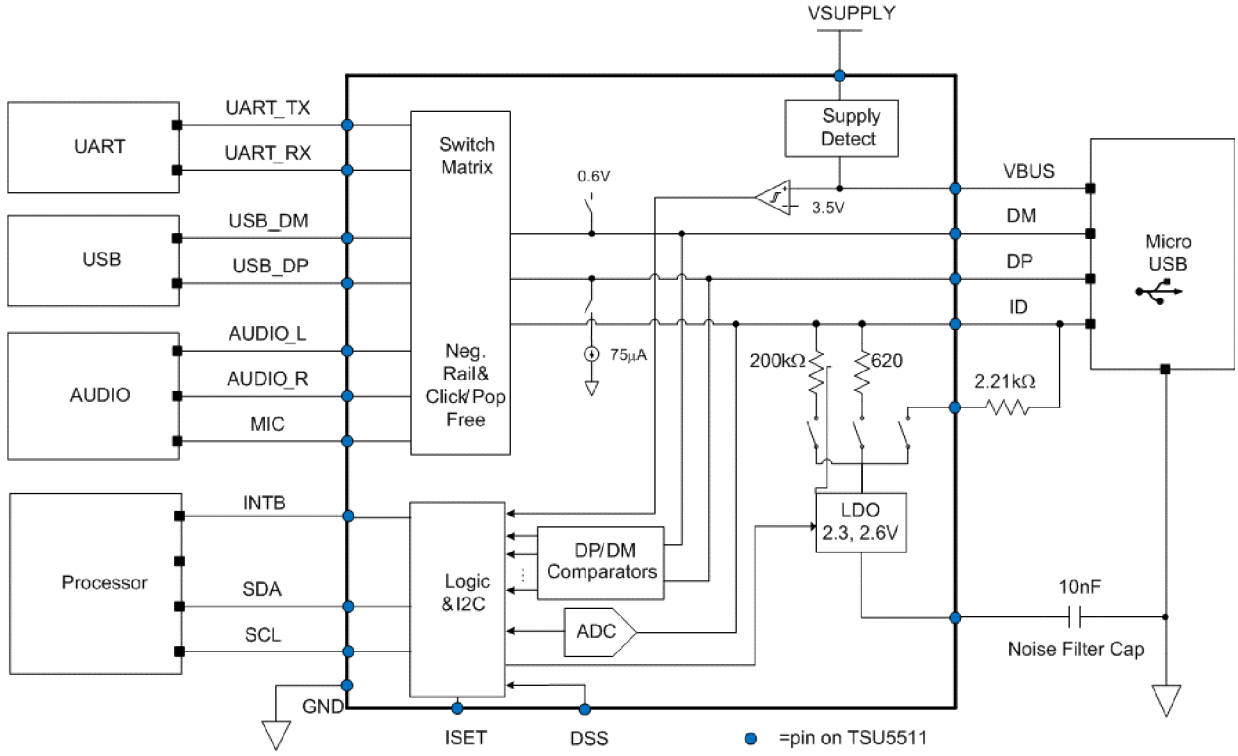
(1) For the most current package and ordering information, see the Package Option Addendum at the end of this document, or see the TI Web site at www.ti.com.
(2) Package drawings, thermal data, and symbolization are available at www.ti.com/packaging.

These devices have limited built-in ESD protection. The leads should be shorted together or the device placed in conductive foam during storage or handling to prevent electrostatic damage to the MOS gates.

SUMMARY OF TYPICAL CHARACTERISTICS

	USB PATH	UART PATH	AUDIO PATH	MIC PATH
Number of switches	1	1	1	1
ON-state resistance (rON)	5 Ω	5 Ω	3 Ω	8.8 Ω
ON-state resistance match (ΔrON)	1 Ω	1 Ω	1.1 Ω	N/A
ON-state resistance flatness (rON(flat))	0.24 Ω	0.24 Ω	0.1 Ω	0.5 Ω
Turn-on/turn-off time (tON/tOFF)	1 ms	1 ms	1 ms	1 ms
Bandwidth (BW)	830 MHz	830 MHz	788 MHz	573 MHz
OFF isolation (OISO)	–22 dB	–22 dB	–75 dB	–100 dB
Crosstalk (XTALK)	–40 dB	–40 dB	–50 dB	–50 dB
Total harmonic distortion (THD)	N/A	N/A	0.05%	0.0017%
Leakage current (INO(OFF)/INC(OFF))	100 nA	100 nA	100 nA	100 nA
Package options	YZP package, 0.5-mm pitch			

APPLICATION BLOCK DIAGRAM



To request a full data sheet, please send an email to:
signal-switches@list.ti.com

PACKAGING INFORMATION

Orderable Device	Status (1)	Package Type	Package Drawing	Pins	Package Qty	Eco Plan (2)	Lead/ Ball Finish	MSL Peak Temp (3)	Samples (Requires Login)
TSU5611YZPR	ACTIVE	DSBGA	YZP	20	3000	Green (RoHS & no Sb/Br)	SNAGCU	Level-1-260C-UNLIM	

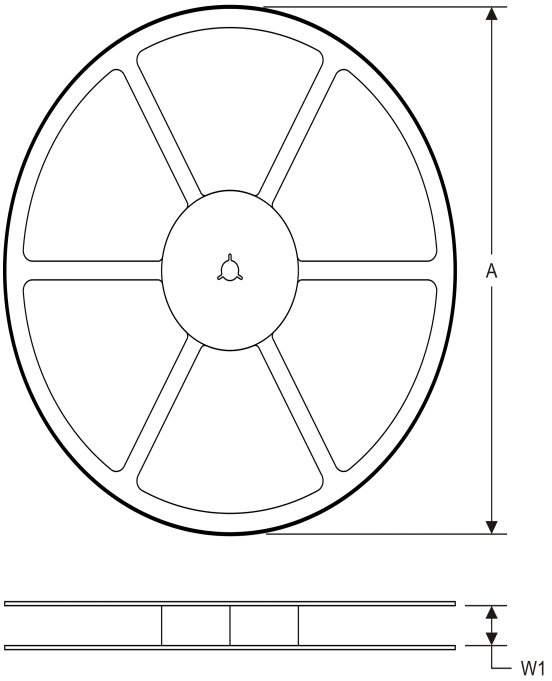
(1) The marketing status values are defined as follows:
ACTIVE: Product device recommended for new designs.
LIFEBUY: TI has announced that the device will be discontinued, and a lifetime-buy period is in effect.
NRND: Not recommended for new designs. Device is in production to support existing customers, but TI does not recommend using this part in a new design.
PREVIEW: Device has been announced but is not in production. Samples may or may not be available.
OBSOLETE: TI has discontinued the production of the device.

(2) Eco Plan - The planned eco-friendly classification: Pb-Free (RoHS), Pb-Free (RoHS Exempt), or Green (RoHS & no Sb/Br) - please check http://www.ti.com/productcontent for the latest availability information and additional product content details.
TBD: The Pb-Free/Green conversion plan has not been defined.
Pb-Free (RoHS): TI's terms "Lead-Free" or "Pb-Free" mean semiconductor products that are compatible with the current RoHS requirements for all 6 substances, including the requirement that lead not exceed 0.1% by weight in homogeneous materials. Where designed to be soldered at high temperatures, TI Pb-Free products are suitable for use in specified lead-free processes.
Pb-Free (RoHS Exempt): This component has a RoHS exemption for either 1) lead-based flip-chip solder bumps used between the die and package, or 2) lead-based die adhesive used between the die and leadframe. The component is otherwise considered Pb-Free (RoHS compatible) as defined above.
Green (RoHS & no Sb/Br): TI defines "Green" to mean Pb-Free (RoHS compatible), and free of Bromine (Br) and Antimony (Sb) based flame retardants (Br or Sb do not exceed 0.1% by weight in homogeneous material)

(3) MSL, Peak Temp. -- The Moisture Sensitivity Level rating according to the JEDEC industry standard classifications, and peak solder temperature.

TAPE AND REEL INFORMATION

REEL DIMENSIONS



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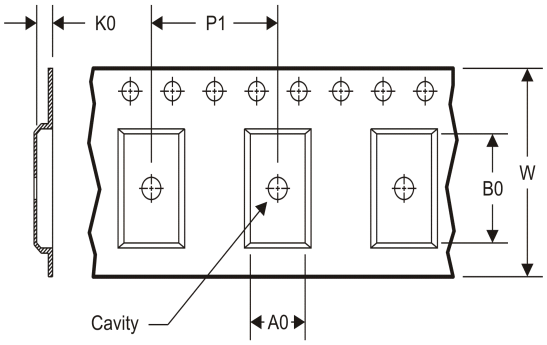


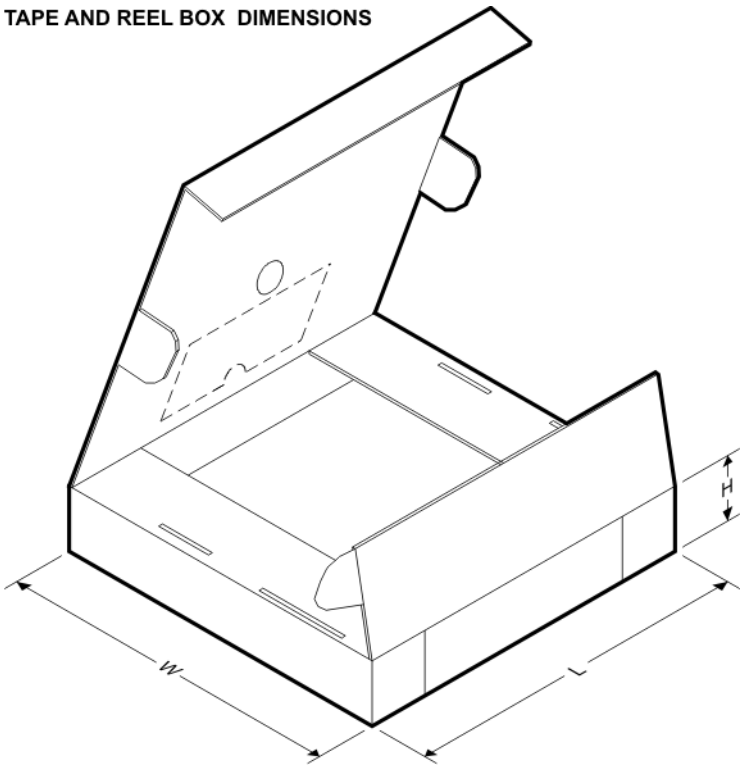
A0	Dimension designed to accommodate the component width
B0	Dimension designed to accommodate the component length
K0	Dimension designed to accommodate the component thickness
W	Overall width of the carrier tape
P1	Pitch between successive cavity centers

TAPE AND REEL INFORMATION

*All dimensions are nominal

Device	Package Type	Package Drawing	Pins	SPQ	Reel Diameter (mm)	Reel Width W1 (mm)	A0 (mm)	B0 (mm)	K0 (mm)	P1 (mm)	W (mm)	Pin1 Quadrant
TSU5611YZPR	DSBGA	YZP	20	3000	180.0	8.4	1.99	2.49	0.56	4.0	8.0	Q1

TAPE AND REEL BOX DIMENSIONS



*All dimensions are nominal

Device	Package Type	Package Drawing	Pins	SPQ	Length (mm)	Width (mm)	Height (mm)
TSU5611YZPR	DSBGA	YZP	20	3000	210.0	185.0	35.0

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