

SINGLE CELL CHARGER AND USB SP2T SWITCH SUPPORT USB AND UART

Check for Samples: [TSU8111](#)

FEATURES

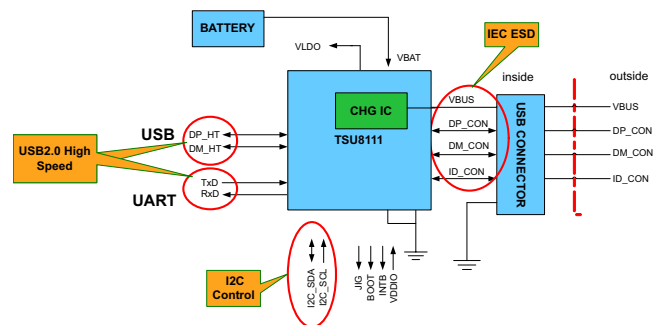
- **Fully Compliant USB Single Cell Charger**
 - Input Voltage Dynamic Power Management
 - 50mA Integrated Low Dropout Linear Regulator (LDO)
 - 1% Charge Voltage Regulation Accuracy
 - 8% Charge Current Accuracy
 - Programmable Charging Current Limit up to 950mA for Wall Adapters
- **Switch Matrix**
 - USB & UART Path Support USB 2.0 High Speed
- **Charger Detection**
 - USB BCDv1.1 Compliant
 - VBUS Detection
 - Data Contact Detection
 - Primary & Secondary Detection
- **Additional Features**
 - I2C interface With Host Processor
 - Switches Controlled by Automatic Detection or Manual Control
 - Interrupts Generated for Plug/Unplug
 - Support Control Signals Used In Manufacturing (JIG, BOOT)
- **Compatible Accessories**
 - USB Chargers (DCP, CDP)
 - USB Data Port
 - Factory Cable
- **Additional Protection**
 - 28V VBUS Rating With Over-voltage Protection

- Thermal Regulation and Thermal Shutdown Protection for Output Current Control
- **ESD Performance Tested Per JESD 22**
 - 12-kV Human-Body Model VBUS/DP_CON/DM_CON/ID_CON
 - 2-kV Human-Body Model All Other Pins
- **IEC ESD Performance** VBUS/DP_CON/DM_CON/ID_CON to GND
 - ±4-kV Contact Discharge (IEC 61000-4-2)
- **Surge Protection on VBUS/DP_CON/DM_CON**
 - USB connector pins without external component

APPLICATIONS

- Cell Phones & Smart Phones
- Tablet PCs
- Digital Cameras & Camcorders
- GPS Navigation Systems
- Micro USB interface with USB/UART/Audio/Video

TYPICAL APPLICATION DIAGRAM


Table 1. ORDERING INFORMATION⁽¹⁾

T _A	PACKAGE ⁽²⁾		ORDERABLE PART NUMBER	TOP-SIDE MARKING
-40°C to 85°C	WCSP 0.4-mm pitch – YFP	Tape and reel	TSU8111YFPR	A8

- (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.



Please be aware that an important notice concerning availability, standard warranty, and use in critical applications of Texas Instruments semiconductor products and disclaimers thereto appears at the end of this data sheet.



This integrated circuit can be damaged by ESD. Texas Instruments recommends that all integrated circuits be handled with appropriate precautions. Failure to observe proper handling and installation procedures can cause damage.

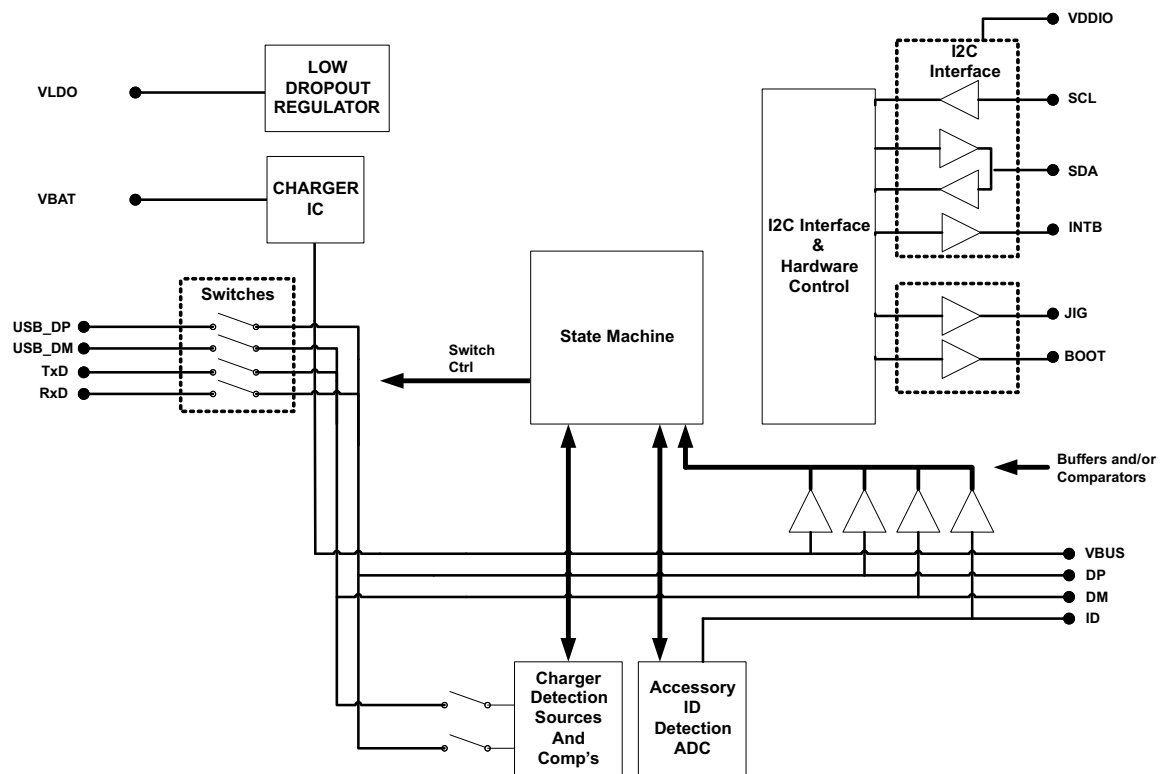
ESD damage can range from subtle performance degradation to complete device failure. Precision integrated circuits may be more susceptible to damage because very small parametric changes could cause the device not to meet its published specifications.

DESCRIPTION

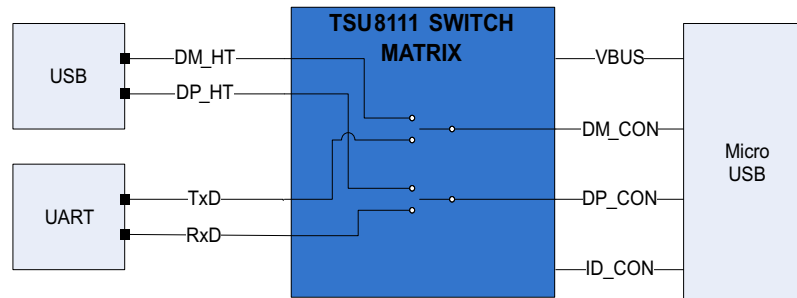
The TSU8111 is a differential high performance automated SP2T switch with impedance detection and integrated Li-Ion linear charger device targeted at space-limited portable applications. The switch features impedance detection which supports the detection of various accessories that are attached through DP, DM and ID. The charger detection satisfies USB charger specification v1.1. VBUS has 28V tolerance to avoid external protection. The device operates from either a USB port or dedicated charger and supports charge currents up to 950mA. Power for this device is supplied through VBAT of the system or through VBUS when attached.

The switch is controlled by automatic detection logic or through I2C manually. JIG and BOOT pins are used when a USB, UART JIG cable is used to test in the development and manufacturing. TSU8111 has open-drain JIG output (active low).

BLOCK DIAGRAM



SWITCH MATRIX



To request full datasheet, please send an e-mail 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)	Op Temp (°C)	Top-Side Markings (4)	Samples
TSU8111YFPR	ACTIVE	DSBGA	YFP	20	3000	Green (RoHS & no Sb/Br)	SNAGCU	Level-1-260C-UNLIM	-40 to 85	A8	Samples

(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.

(4) Only one of markings shown within the brackets will appear on the physical device.

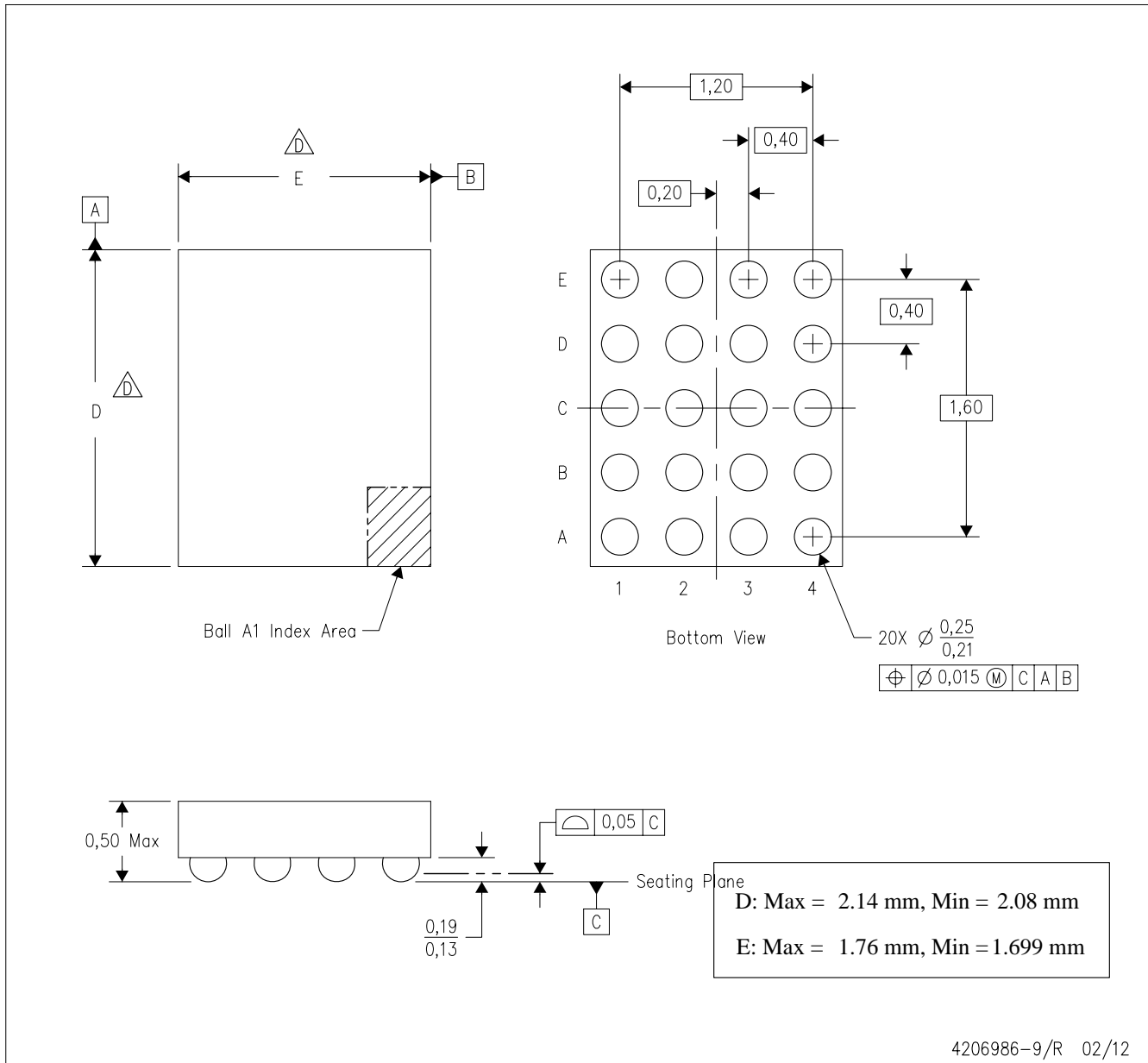
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MECHANICAL DATA

YFP (R-XBGA-N20)

DIE-SIZE BALL GRID ARRAY



- NOTES:
- A. All linear dimensions are in millimeters. Dimensioning and tolerancing per ASME Y14.5M-1994.
 - B. This drawing is subject to change without notice.
 - C. NanoFree™ package configuration.
 - \triangle The package size (Dimension D and E) of a particular device is specified in the device Product Data Sheet version of this drawing, in case it cannot be found in the product data sheet please contact a local TI representative.
 - E. Reference Product Data Sheet for array population.
2 x 2 matrix pattern is shown for illustration only.
 - F. This package contains Pb-free balls.

NanoFree is a trademark of Texas Instruments

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