TPS2595x, 2.7V-18V, 4-A, 34-mΩ eFuse With Overvoltage Protection

1 Features

- Wide Input Voltage Range: 2.7 V to 18 V
  - 20-V Absolute Maximum
  - 3 V to 18 V for TPS2595x5 version
- Low On-Resistance: R_{ON} = 34 mΩ (typical)
- Overvoltage Protection Clamp (3.8-, 5.7-, and 13.7-V options)
- Adjustable Undervoltage Lockout (UVLO)
- Adjustable Current Limit with Monitor Output (ILM)
  - Current Range: 0.5 A to 4 A
  - Current Accuracy: ±10% (≥2 A)
- Fast Short Circuit Protection
- Adjustable Output Slew Rate Control (dVdt)
- Over Temperature Protection (OTP)
- Fault Indication Pin ($\overline{FLT}$)
- UL 2367 Recognition (Pending)
- Safe During Single Point Failure Test (UL60950)

2 Applications

- Hot-Swap, Hot-Plug
- SSDs and HDDs
- Industrial Systems
- White Goods
- Set-Top Box
- Digital TV

3 Description

The TPS2595x family of eFuses (An Integrated FET Hotswap device) is a highly integrated circuit protection and power management solution in a small package. The devices use few external components and provide multiple protection modes. They are a robust defense against overloads, short circuits, voltage surges, and excessive inrush current.

Current limit level can be set with a single external resistor. Overvoltage events are limited by internal clamping circuits to a safe fixed maximum, with no external components required.

Applications with particular inrush current requirements can set the output slew rate with a single external capacitor.

Quick output discharge function can be implemented in the TPS2595x5 by connecting OUT to $\overline{FLT}$ pin.

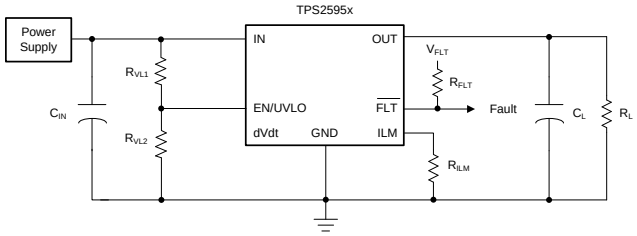
The TPS2595x family is available in multiple package options for various applications. The devices are characterized for operation over the temperature range of –40°C to +125°C.

Device Information(1)

PART NUMBER	PACKAGE	BODY SIZE (NOM)
TPS2595xxDSG	WSON (8)	2.00 mm × 2.00 mm
TPS2595xxDGN	HVSSOP (8)	3.00 mm × 3.00 mm

(1) For all available packages, see the orderable addendum at the end of the data sheet.

Simplified Schematic



ADVANCE INFORMATION

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4 Revision History

NOTE: Page numbers for previous revisions may differ from page numbers in the current version.

Changes from Original (June 2017) to Revision A	Page
• Updated *Features* section	1

ADVANCE INFORMATION

5 Device and Documentation Support

5.1 Documentation Support

5.1.1 Related Documentation

For related documentation see the following:

TPS2595EVM eFuse Evaluation Board

5.2 Receiving Notification of Documentation Updates

To receive notification of documentation updates, navigate to the device product folder on ti.com. In the upper right corner, click on *Alert me* to register and receive a weekly digest of any product information that has changed. For change details, review the revision history included in any revised document.

5.3 Community Resources

The following links connect to TI community resources. Linked contents are provided "AS IS" by the respective contributors. They do not constitute TI specifications and do not necessarily reflect TI's views; see TI's Terms of Use.

TI E2E™ Online Community ***TI's Engineer-to-Engineer (E2E) Community.*** Created to foster collaboration among engineers. At e2e.ti.com, you can ask questions, share knowledge, explore ideas and help solve problems with fellow engineers.

Design Support ***TI's Design Support*** Quickly find helpful E2E forums along with design support tools and contact information for technical support.

5.4 Trademarks

E2E is a trademark of Texas Instruments.
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5.5 Electrostatic Discharge Caution

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.

5.6 Glossary

SLYZ022 — *TI Glossary*.

This glossary lists and explains terms, acronyms, and definitions.

ADVANCE INFORMATION

6 Mechanical, Packaging, and Orderable Information

The following pages include mechanical, packaging, and orderable information. This information is the most current data available for the designated devices. This data is subject to change without notice and revision of this document. For browser-based versions of this data sheet, refer to the left-hand navigation.

PACKAGING INFORMATION

Orderable Device	Status (1)	Package Type	Package Drawing	Pins	Package Qty	Eco Plan (2)	Lead/Ball Finish (6)	MSL Peak Temp (3)	Op Temp (°C)	Device Marking (4/5)	Samples
PTPS259531DSGT	ACTIVE	WSON	DSG	8	250	TBD	Call TI	Call TI	-40 to 125		Samples
PTPS259541DSGT	ACTIVE	WSON	DSG	8	250	TBD	Call TI	Call TI	-40 to 125		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) **RoHS:** TI defines "RoHS" to mean semiconductor products that are compliant with the current EU RoHS requirements for all 10 RoHS substances, including the requirement that RoHS substance do not exceed 0.1% by weight in homogeneous materials. Where designed to be soldered at high temperatures, "RoHS" products are suitable for use in specified lead-free processes. TI may reference these types of products as "Pb-Free".
RoHS Exempt: TI defines "RoHS Exempt" to mean products that contain lead but are compliant with EU RoHS pursuant to a specific EU RoHS exemption.
Green: TI defines "Green" to mean the content of Chlorine (Cl) and Bromine (Br) based flame retardants meet JS709B low halogen requirements of <=1000ppm threshold. Antimony trioxide based flame retardants must also meet the <=1000ppm threshold requirement.

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

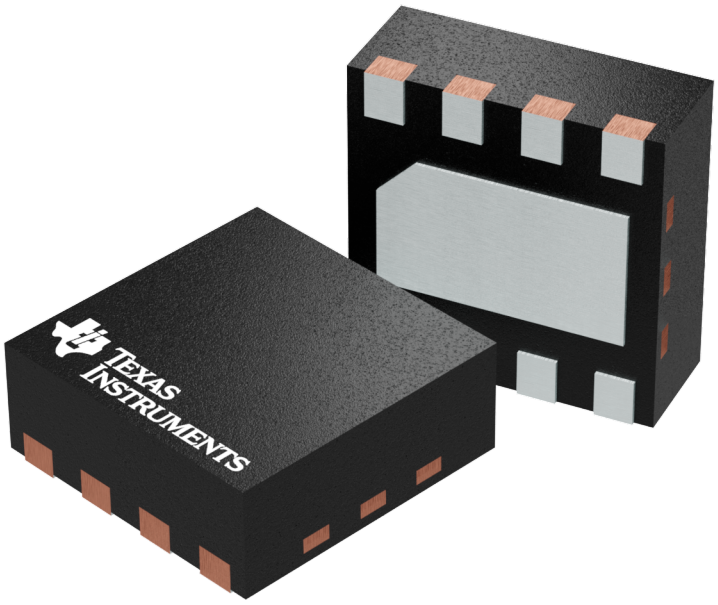
(4) There may be additional marking, which relates to the logo, the lot trace code information, or the environmental category on the device.

(5) Multiple Device Markings will be inside parentheses. Only one Device Marking contained in parentheses and separated by a "~" will appear on a device. If a line is indented then it is a continuation of the previous line and the two combined represent the entire Device Marking for that device.

(6) Lead/Ball Finish - Orderable Devices may have multiple material finish options. Finish options are separated by a vertical ruled line. Lead/Ball Finish values may wrap to two lines if the finish value exceeds the maximum column width.

DSG 8 WSON - 0.8 mm max height

PLASTIC SMALL OUTLINE - NO LEAD



Images above are just a representation of the package family, actual package may vary.
Refer to the product data sheet for package details.

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