NX30P6093

High-voltage I²C controlled overvoltage protection load switch

Rev. 1 — 2 May 2018 Product short data sheet

1. General description

NX30P6093 is an 8 A I²C controlled overvoltage protection load switch for USB Type-C and PD applications. It includes undervoltage lockout, overvoltage lockout and overtemperature protection circuits, designed to automatically isolate the power switch terminals when a fault condition occurs. It features input pin impedance detection function, providing USB power supply pin status to system to avoid short circuit damage for the Type-C port power supply pin.

NX30P6093 has a default overvoltage protection threshold, and the OVLO threshold can be adjusted by both external resistor divider on ADJ pin and internal I²C register. A 22.5 ms debounce time is deployed every time before the device is switched ON, followed by a soft start to limit the inrush current.

Designed for operation from 2.8 V to 20.0 V, it can be used in USB Type-C and PD power control applications to offer essential protection and enhance system reliability.

NX30P6093 is offered in a small 20-bump 1.7 x 2.16 mm, 0.4 mm pitch WLCSP package.

2. Features and benefits

- Wide supply voltage range for VIN from 2.8 V to 20.0 V
- System Power supply VDD from 3.0 V to 4.5 V
- I_{SW} maximum 8 A continuous current
- 29 V tolerance on VIN pin
- 8.95 mΩ (typical) ultra-low ON resistance
- Adjustable VIN overvoltage protection by both external resistor and I²C
- Built in slew rate control for inrush current limit
- Integrated current source for VIN pin impedance detection
- Protection circuitry
  - Overtemperature protection
  - Overvoltage protection
  - Undervoltage lockout
- Surge protection:
  - IEC61000-4-5 exceeds ±100 V on VIN
- ESD protection
  - IEC61000-4-2 contact discharge exceeds 8 kV on VIN
  - IEC61000-4-2 air discharge exceeds 15 kV on VIN
  - HBM ANSI/ESDA/JEDEC JS-001 Class 2 exceeds 3 kV on all pins
  - MM Class B exceeds 100 V on all the pins

- Specified from −40 °C to +85 °C

3. Applications

- Smart and feature phones
- Tablets, eBooks
- Notebook

4. Ordering information

Table 1. Ordering information

Type number	Package			
	Temperature range	Name	Description	Version
NX30P6093UK	−40 °C to +85 °C	WLCSP20	wafer level chip-scale package; 20 bumps; 1.70 mm x 2.16 mm x 0.525 mm body (backside coating included)	SOT1397-6

4.1 Ordering options

Table 2. Ordering options

Type number	Orderable part number	Package	Packing method	Minimum order quantity	Temperature
NX30P6093UK	NX30P6093UKAZ	WLCSP20	REEL 7" Q2/T3 *STANDARD MARK CHIPS, DP	4000	T_{amb} = −40 °C to +85 °C

5. Functional diagram

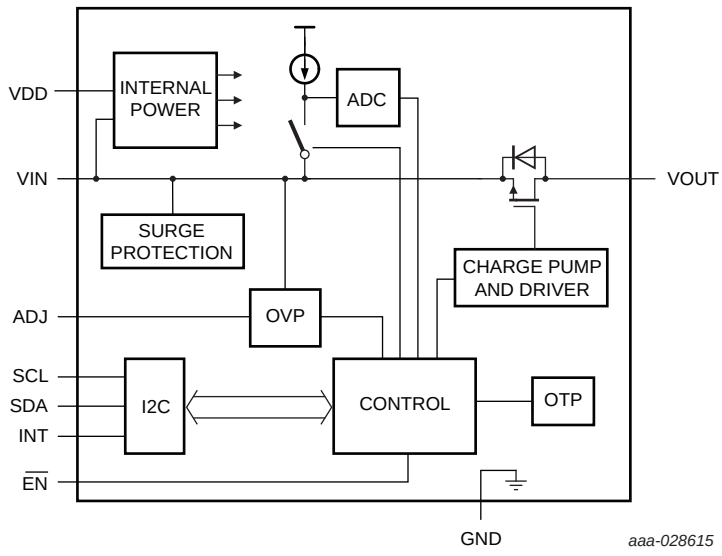

Fig 1. Block diagram

6. Revision history

Document ID	Release date	Data sheet status	Change notice	Supersedes
NX30P6093_SDS v1.0	20180502	Product data sheet	-	-

7. Legal information

7.1 Data sheet status

Document status[1][2]	Product status[3]	Definition
Objective [short] data sheet	Development	This document contains data from the objective specification for product development.
Preliminary [short] data sheet	Qualification	This document contains data from the preliminary specification.
Product [short] data sheet	Production	This document contains the product specification.

[1] Please consult the most recently issued document before initiating or completing a design.

[2] The term 'short data sheet' is explained in section "Definitions".

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9. Contents

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