

# NX30P6093

## High-voltage I<sup>2</sup>C controlled overvoltage protection load switch

Rev. 1 — 2 May 2018

Product short data sheet

## 1. General description

NX30P6093 is an 8 A I<sup>2</sup>C 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 I<sup>2</sup>C 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<sub>SW</sub> 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 I<sup>2</sup>C
- 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<br>*STANDARD MARK<br>CHIPS, DP | 4000                   | T <sub>amb</sub> = –40 °C to +85 °C |

### 5. Functional diagram

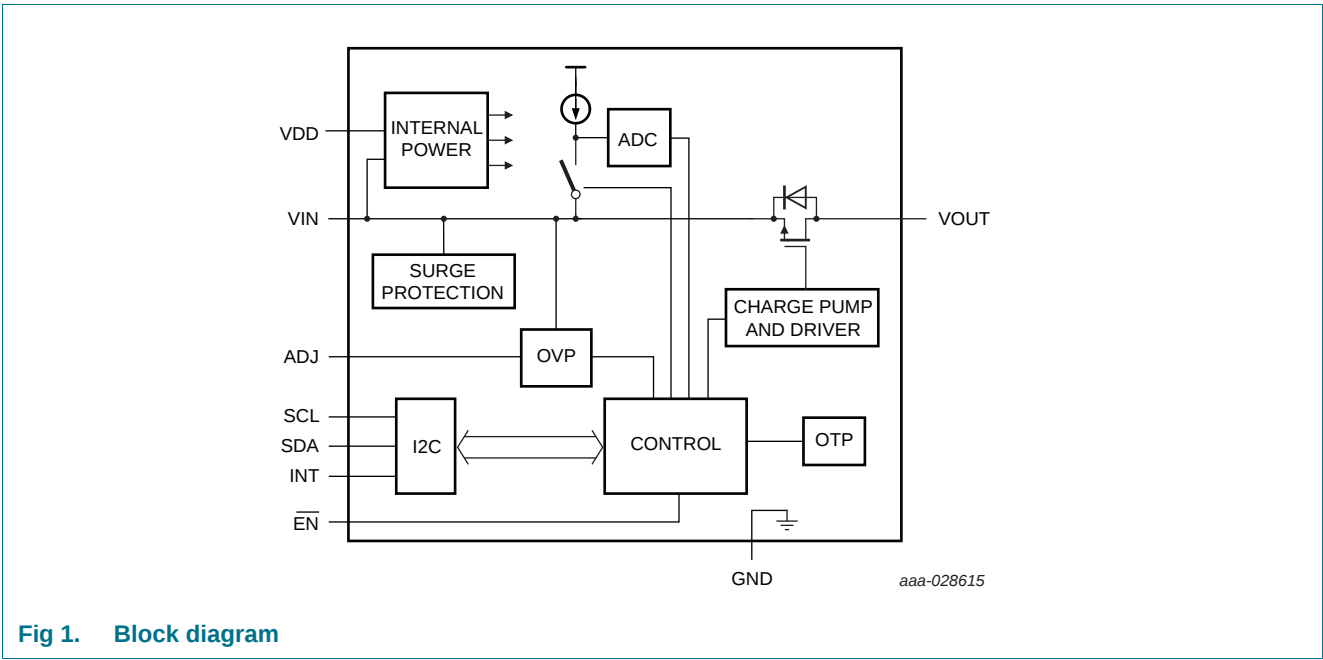


Fig 1. Block diagram

## 6. Revision history

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| 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 <sup>[1][2]</sup> | Product status <sup>[3]</sup> | 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.                                     |

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