

# STUSB4500/L, STUSB4531 SERIES



## Supply your device with USB Type-C® PD controllers



### Compact universal serial bus power delivery controllers with automated power negotiation and full-feature support

ST offers a range of **controllers for USB Type-C sink applications**. The **STUSB4531** combines hardware robustness and software flexibility in a patented hybrid architecture to simplify integration of full-featured USB-C sink ports. This enables faster design cycles, better interoperability, and reduced firmware complexity and memory footprint. The **STUSB4500** and **STUSB4500L** provide autonomous USB Type-C sink operation for cost-effective and reliable power delivery designs, with support for common USB-C charging use cases.

#### KEY FEATURE

- Hybrid USB PD sink controller
- Full-featured USB Type-C sink support
- Standalone/hybrid architecture
- Simplified USB-C integration
- Autonomous power negotiation
- High interoperability

#### KEY BENEFITS

- Reduced firmware complexity
- Faster time-to-market
- Easy device integration
- Reliable and certified hardware
- Flexible solution for USB-C sink designs
- Supports a broad range of USB-C use cases

#### KEY APPLICATIONS

- STUSB4500L
  - USB micro-B replacement
  - Single-cell battery powered devices
- STUSB4500
  - DC barrel replacement
  - Multi-cell battery powered devices
- STUSB4531
  - Battery charging only and VBUS-powered devices
  - Portable consumer devices
  - Industrial devices
  - Smart accessories
  - Medical devices

## STUSB4500L

### Standalone USB Type-C sink controller for 5 V applications

The STUSB4500L targets 5 V sink devices, supporting dead-battery mode for direct VBUS power. It autonomously manages attach detection, source-to-sink connection, device identification, cable orientation, and VBUS power path configuration and monitoring. High voltage protections ensure safe operation.

Scan the QR code for the EVAL-SCS002V1 reference design and detailed documentation.



## STUSB4500

### Standalone USB PD controller for sink applications

The STUSB4500 implements a proprietary algorithm that enables automatic high-power profile charging without software support (AUTORUN). It includes dead-battery mode and negotiates Power Delivery contracts using default power profiles stored in internal memory.

Scan the QR code for the STUSB4500 evaluation board and detailed documentation.



## STUSB4531

### Standalone USB PD controller for full-featured USB Type-C applications

The STUSB4531 combines AUTORUN operation, advanced power negotiation, and a unique hybrid architecture to simplify integration of full-featured USB-C sink designs. According to IEC 62680-1-3:2024/ IEC 62680-1-2:2024 certifications, the **STUSB4531 is fully compliant with EUROPE Ecodesign and Common Charger directive.**

Scan the QR code to access STUSB4531 HW and SW tools.



## Product portfolio

Features	STUSB4500L	STUSB4500	STUSB4531
Target application	USB micro-B replacement	DC barrel replacement	Full feature USB-C port
USB-C revision	1.4	1.2	2.4
USB PD revision	-	2.0	3.2
Certification ID	1455	1000133	13956
Power role	SINK	SINK	SINK
Data role	UFP	UFP	UFP / DFP
Typical power	Up to 15 W (5 V; 3 A)	Up to 100 W (20 V; 5 A)	Up to 100 W (20 V; 5 A)
EPR support	-	-	Yes – up to 240 W (with additional HW + SW)
PPS support	-	-	Yes
AVS support	-	-	Yes
ALT mode support	-	-	Yes
VDM support	-	-	Yes
Package	QFN24 (4x4)	QFN24 (4x4)	QFN16 (3x3) CSP16 (2.3x2.3)



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