



New Product Announcement

AP22950

Overvoltage-Protected High-Side Switch with 110V Surge Protection Improves USB PD 3.1 SPR Port Robustness

The AP22950 is a high-voltage power switch with multiple protection features, including reverse-current protection (RCP), undervoltage lockout (UVLO), overvoltage lockout (OVP), and overtemperature protection (OTP). These features provide a robust VBUS switch for USB Power Delivery (PD) 3.1 Standard Power Range (SPR) ports.

There is a built-in TVS diode on the VBUS pin which, with a 22 μ F input capacitor, protects both it and the downstream system from surges up to 110V, as per IEC61000-4-5.

The AP22950's enhanced reverse current protection blocks reverse currents while ensuring that it can supply the highest voltage to the internal system, enabling support for portable devices that have multiple power inputs.

It operates from a 2.5V to 22.5V VBUS input voltage with a low 30m Ω on-resistance, allowing it to support USB PD3.1 SPR VBUS switch applications up to 100W. The device's default 23V overvoltage protection threshold can be adjusted from 4.0V to 23V by an external resistor on the OVLO pin. The ACKb pin provides a VBUS voltage status indicator.

The AP22950 is available in the tiny U-WLB2515-15 package.



The DIODES Advantage

High-voltage power switch for USB PD SPR applications meets IEC61000-4-5 110V surge ratings and improves system robustness.

- **Wide 2.5V to 22.5V Operating Input Voltage Range**
Supports USB PD3.X Standard Power Range (SPR)
- **Seamless Automatic Reverse-Current Blocking Diode Mode**
Operates as a diode when $V_{OUT} > V_{BUS}$, removing potential reverse current paths
- **Meets 110V IEC61000-4-5 Surge Protection**
Provides robust protection against USB-C VBUS surges
- **Low 30m Ω R_{ON}**
Supports continuous load currents up to 5A and output power up to 100W

Applications

Robust USB PD VBUS switch in:

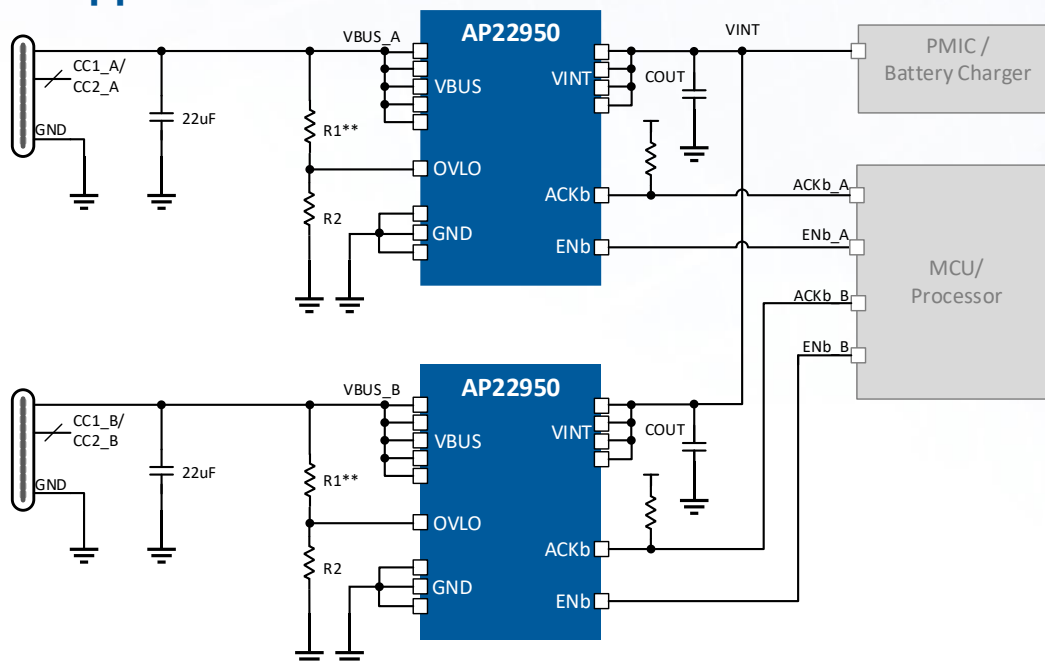
- Laptops
- Computer accessories
- Smartphones
- Tablets
- Portable speakers
- USB power sinks
- Digital cameras
- Wearable devices

The Diodes logo is a registered trademark of Diodes Incorporated in the United States and other countries.

All other trademarks are the property of their respective owners.

© 2025 Copyright Diodes Incorporated. All Rights Reserved.

Typical Application



Overvoltage-Protected USB-PD VBUS Power Switches

Part Number	Max. Voltage	Input Voltage Range	IEC Surge Protection (V) with Capacitor		OVLO	Quiescent Current	R _{ON}	Operating Ambient Temperature	Package
	V	V	No	22μF	V	μA	mΩ	°C	
AP22950	29	2.5 to 22.5	±100	±110	Adj, 23 (Default)	70	30	-40 to +85	U-WLB2515-15

Ordering Information

Orderable Part Number	Compliance (Only Automotive Supports PPAP)	Package Code	Moisture Sensitivity	Packing	
				Quantity	Carrier
AP22950CZ15-7	Standard	CZ15	MSL-1	3,000	7" Tape & Reel