



Improved Power density 2 and 2.5A Single Channel Over-current protecting USB Power Switches

AP23x1, AP24x1 & AP25x1 in U-DFN2020-6 are Diodes' latest additions to its single channel USB power switches, offering improved power density with low voltage drop.

The smaller footprint of the U-DFN2020-6 package occupies less than 50% of the area of SOT25 with the power handling of MSOP-8EP – making them a good solution for USB-2.0 and 3.0 port protection.

They are ideal for multi-USB port protection in LCD TVs, monitors, Set Top Boxes, notebook, e-Readers, smart phones, etc

All feature built-in soft-start and output discharge circuit as well as reverse current blocking and over-temperature protection.

If an over-current condition occurs the AP23x1/25x1 limits the output current; the AP24x1 latches off the output.



The Diodes Advantage

The AP23x1/24x1/25x1 provide fast and accurate over-current protection for improved USB ports protection

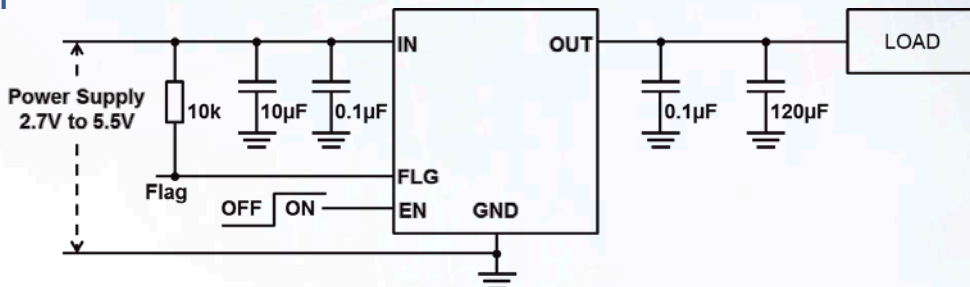
- **70m \bullet R_{DS(ON)} for up to 2.5A (AP25x1) continuous load in in SO-8, MSOP-8, MSOP-8EP, U-DFN3030-8 and U-DFN2020-6**
Reduced system voltage drop over existing AP21X1 series → improved performance in higher current applications.
- **Fast short circuit response time: 2 μ s**
Prevents unnecessary system shutdown or restart
→ improved system robustness
- **2-A continuous Load versions with different OCP Constant current (AP23x1) and latch-off (AP24x1)**
Fault behavior can be optimized for different designs
- **Output discharge function**
Provides controlled discharge of the output capacitor when disabled → Improved robustness of system
- **Reverse current blocking, UVLO, over-current, over-temperature and short-circuit protection**
Improves robustness of USB ports

Circuit Functions

- USB Ports protection
- 5V/3.3V Power Supply Short-Circuit Protection



Typical Application Enable Active High



Single Channel Family

Part Number	Enable (active)	Recommended Max Continuous Load Current	Current Limit	Over-Current Protection	OTP	Soft-start	Reverse blocking	Dis-charge	Output	flag	Packages
AP2331	None	0.2A	0.4A	Current-Limit	Y	Y	Y	Y	-	-	SOT23, SC59
AP2141/D	Low	0.5A	0.8A	Current-Limit	Y	Y	Y	N/Y	Y	Y	SOT25, SO-8 MSOP-8EP, DFN2018-6
AP2151/D	High										
AP2337	-	1.0A	1.5A	Current-Limit	Y	Y	Y	Y	-	-	SOT23
AP2161/D	Low	1.0A	1.5A	Current-Limit	Y	Y	Y	N/Y	Y	Y	SOT25, SO-8 MSOP-8EP, DFN2018-6
AP2171/D	High										
AP2181/D	Low	1.5A	2.1A	Current-Limit	Y	Y	Y	N/Y	Y	Y	SOT25, SO-8 MSOP-8EP, DFN2018-6
AP2191/D	High										
AP2101	Low	2.0A	2.45A	Current-Limit	Y	Y	Y	Y	Y	Y	SOT25, SO-8 MSOP-8EP
AP2111	High										
AP2301	Low	2.0A	2.5A	Current-Limit	Y	Y	Y	Y	Y	Y	SO-8, MSOP-8EP, MSOP-8 U-DFN3030-8, U-DFN2020-6
AP2311	High										
AP2401	Low	2.0A	2.5A	Latch-Off	Y	Y	Y	Y	Y	Y	SO-8, MSOP-8EP, MSOP-8 U-DFN3030-8, U-DFN2020-6
AP2411	High										
AP2501	Low	2.5A	3.7A	Current-Limit	Y	Y	Y	Y	Y	Y	SO-8, MSOP-8EP, MSOP-8 U-DFN3030-8, U-DFN2020-6
AP2511	High										
AP2552	Low	50mA ~ 2.1A	75mA ~ 2.35A	Current-Limit	Y	Y	Y	Y	Y	Y	U-DFN2020-6 SOT26
AP2553	High										
AP2552A	Low										
AP2553A	High										

Ordering Information

Device	Packaging	Package marking info		Reel size	Tape width	Quantity
		AP2x01	AP2x11			
AP23x1SN-7	U-DFN2020-6	DB YWX	DC YWX	7"	8mm	3000
AP24x1SN-7	U-DFN2020-6	DD YWX	DF YWX	7"	8mm	3000
AP25x1SN-7	U-DFN2020-6	DP YWX	DR YWX	7"	8mm	3000

All variants are in packages that use "Green" Molding Compound (No Br, Sb) with Lead Free Finish/RoHS Compliant (Note 1)
 Notes:1. EU Directive 2002/95/EC (RoHS). All applicable RoHS exemptions applied, see EU Directive 2002/95/EC Annex Notes
 2 Codes for date coding on part marks Y Year 0-9 W A-Z week 1-26 a-z week 27-53 X A-Z: Green