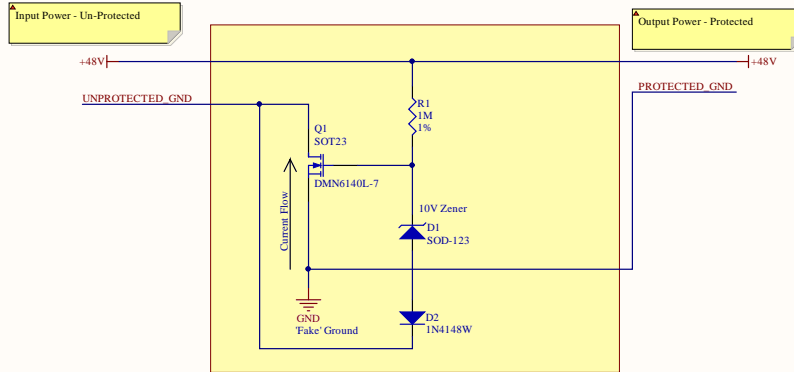


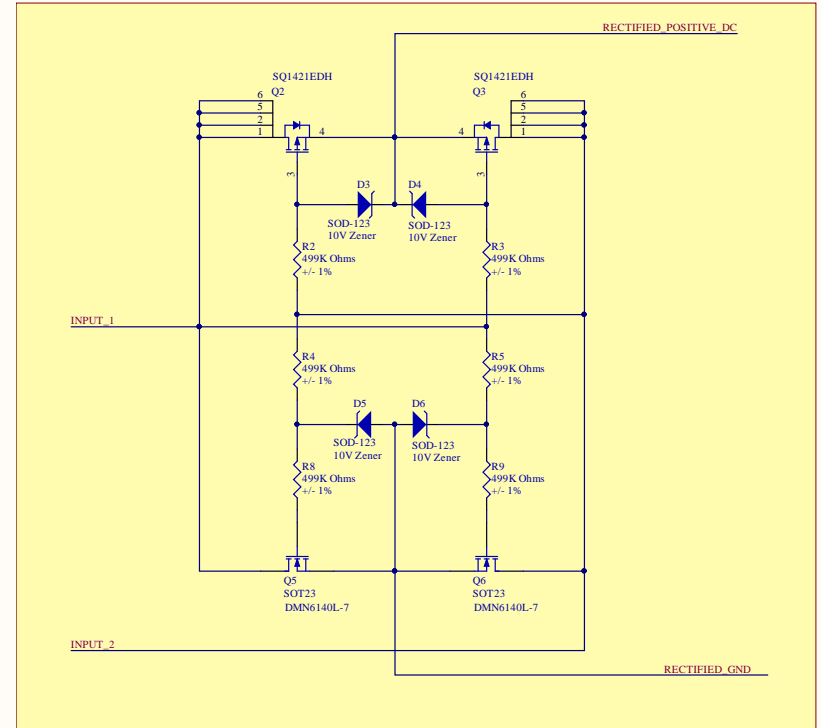
Polarity Protection Circuit - works like a simple diode but with no losses



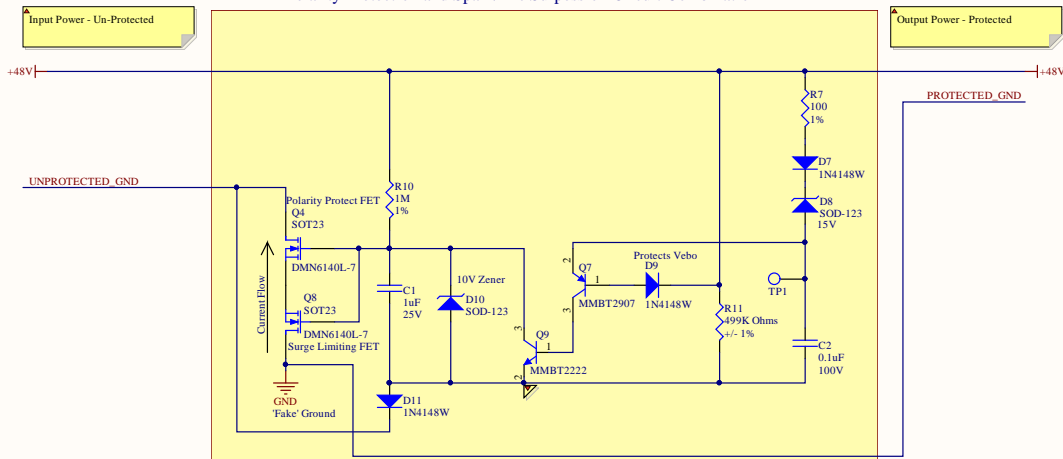
When power is connected backwards the diode prevents the FET gate from getting any voltage so it stays off and also prevents harmful reverse current.

When power is connected properly the FET is initially off and power flows through the body diode of the FET. Once the current flows the voltage at the source (UNPROTECTED_GND) falls and now the voltage at the gate is enough to bias the FET on and the forward voltage drop goes away and its now just the FET resistance (Rdson).

Low Loss DC Rectifier Circuit



Polarity Protection and Spark/Arc Suppression Circuit Combination



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Surge current limiting circuit:
The RC time constant and zener in this circuit prevents surge current from rushing in to charge the input capacitors during hot plugging. This might allow you to use a smaller, cheaper, non-hot swap rated connector in an application. Otherwise inrush current might cause a damaging arc over between the connector pins and melt/vaporize their plating, this current limiter prevents this.

LibRef	Designator	Quantity	Description	manufacturer_1	manufacturer_item_number_1
CAP-000140-00	C1	1		Taiyo Yuden	TMK107B7105KA-T
CAP-000011-00	C2	1		Murata Electronics	GRM188R72A104KA35D
DIO-000004-00	D1, D3, D4, D5, D6, D10	6	Zener Diode	Diodes, Inc.	BZT52C10-7-F
DIO-000001-00	D2, D7, D9, D11	4		Diodes, Inc.	1N4148W-7-F
DIO-000017-00	D8	1	Zener Diode	Fairchild Semiconductor	MMSZ5245B
TRN-000053-00	Q1, Q4, Q5, Q6, Q8	5	N-Channel MOSFET	Diodes, Inc.	DMN6140L-7
TRN-000059-00	Q2, Q3	2	P-Channel MOSFET	Vishay Siliconix	SQ1421EDH-T1_GE3
TRN-000060-00	Q7	1	PNP Bipolar Transistor	On Semiconductor	MMBT2907ALT1G
TRN-000017-00	Q9	1	NPN General Purpose TRANSISTOR Amplifier	Diodes, Inc.	MMBT2222A-7-F
RES-000227-00	R1, R10	2	Resistor	Panasonic	ERJ-3EKF1004V
RES-000085-00	R2, R3, R4, R5, R8, R9, R11	7	Resistor	Panasonic	ERJ-3EKF4993V
RES-000005-00	R7	1	Resistor	Panasonic	ERJ-3EKF1000V