

Speaker Protect

V3.0

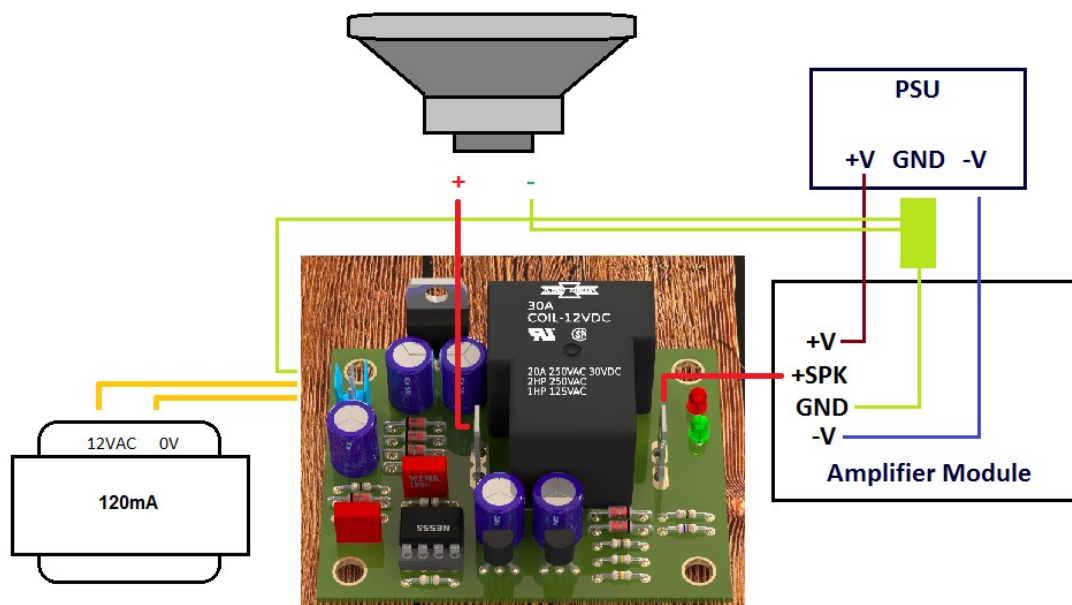
Features

- Uses 30A Relay for DC Protection
- Low Parts Count and Small Footprint.
- At protection mode, the speaker is shorted to ground. Any DC arc that will form will be redirected to ground, and not to the speaker. So the speaker will be safe even if the relay has melted down.

Specifications

Power Supply	12VAC to 15VAC, 1A	AC supply for fast turn off
Relay Type	NO: 20A, NC: 15A @240VAC, 12VDC Coil	T90 package, 6 pin relay
PCB Dimensions	2.6" x 2"	

Connection Diagram



DC Protect Sensitivity

The sensitivity of the DC sensor circuit should match the rail voltage of the amplifier to avoid false tripping at high output levels. R1 is the resistor that limits the current of the amplifier for the DC sensor circuit. Too low a value and the DC protect will be triggered early. Putting a high value resistor may delay the protection in an actual event of DC protection. So R1's value should be chosen based on the amplifier's rail voltage.

Amp Rail Voltage (+-V DC)	R1 Resistor Value (ohms)
25V to 35V	33K
40V to 60V	47K
65V to 90V	75K

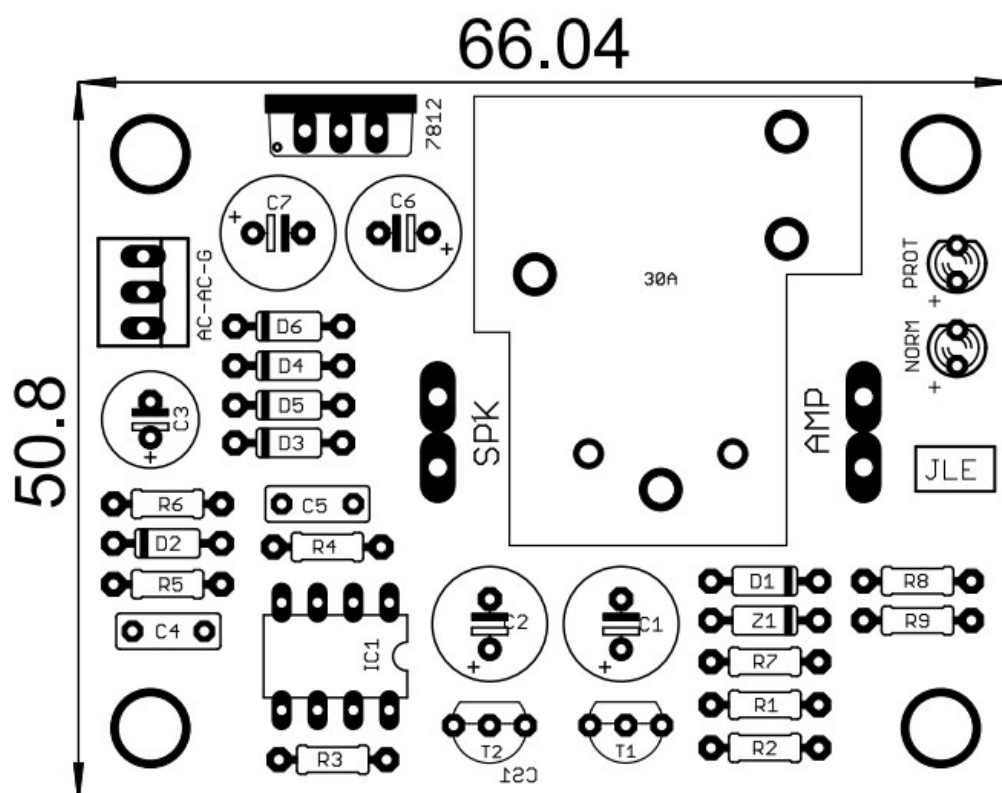
Table 2 (R1 recommended values)

Bill of Materials

Part	Value (All resistors are 1/4W unless specified)	Part Number, Description, Alternative values.
R1	47K (or Refer to table 2)	
R2, R5	120K	
R3	150R	
R4, R6	10R	
R7	1R	
R8	10K	Adjust value depending on LED
R9	6.8K	Adjust value depending on LED
C1, C2	220u 16V	8mm max diameter, 16V or higher
C3	22u 35V	7mm max diameter electrolytic
C4, C5	100nf, 50V	5mm pitch
C6, C7	47uf, 50V	8mm max diameter electrolytic
CS1	100nf, 50V	0805 SMD
D1	1n4148	
D2, D3, D4, D5, D6	1n4007	
Z1	1n4742	
T1, T2	2n5551	
IC1	NE555	Solder directly on PCB, do not use socket.
-	LM7812	12V 1A fixed regulator

30A	T90 5pin 12V Type Relay NO: 20A, NC: 15A 12VDC	T90S5D12-12 SLA-12VDC-SL-C BS-901CS
PROT, NORM	Red, Blue	5mm diffused LED 1pc each, adjust R8, R9 if needed
AC-AC-G	Molex 3 pin terminal, 2.54mm	Male: 22-23-2031 Female: 10-11-2033
SPK, AMP	Faston Tab 6.35 x 0.8	2pcs
-	Brass standoffs 8mm+8mm	4pcs with nuts and screw

PCB Details



Sample Assembled Picture

