



Bill Of Material

Document:	BOM CIR-BMBP-12V-2
Revision:	2
Revision Date:	June 4, 2010

Name:	CIR-BMBP-12V-2	Version: 1	Battery Protector, 12VDC, 7A N-MOSFET, basic model
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Line #	Part Destination	Qty.	Digi-key Part #	Description	Notes
1	R1	1	27KEBK-ND	Resistor, 27k Ohms, 1/8W 5% carbon film	
2	R2	1	1.0MEBK-ND	Resistor, 1.0M Ohms, 1/8W 5% carbon film	Shutoff reset+VR3. 1M:13.9V, 1.2M:13.2V, 1.8M:12.8V
3	R3, R5, R9, R10	3	100KEBK-ND	Resistor, 100k Ohms, 1/8W 5% carbon film	
4	R4, R11, R12	3	330KEBK-ND	Resistor, 330k Ohms, 1/8W 5% carbon film	
5	R6, R14	2	47KEBK-ND	Resistor, 47k Ohms, 1/8W 5% carbon film	
6	R7	1	10KEBK-ND	Resistor, 10k Ohms, 1/8W 5% carbon film	
7	R8	1	1.0MEBK-ND	Resistor, 1.0M Ohms, 1/8W 5% carbon film	
8	R13	1	2.2KEBK-ND	Resistor, 2.2k Ohms, 1/8W 5% carbon film	
9	R17	1		Resistor, bare jumper wire	wire jumper
10	D1, D5, D7	3	1N5234B-TPCT-ND	Diode, 1N5234B, 6.2V zener, 500mW	
11	D2, D3, D6	3	1N4148FS-ND	Diode, 1N4148, signal diode, 500mW	
12	D4	1	1N4148FS-ND	Diode, 1N4148, signal diode, 500mW	D2(+) direct solder to VR3 (pin 1)
13	IC1	1	1N4002-TPMST-ND	Diode, 1N4002, general Si diode, 100V 1A	
14	VR1	1	LM258NOS-ND	IC, LM258 dual op-amp	
15	VR2	1	3362U-504LF-ND	Resistor, 500k variable, 3362U, top adjust, inline	
16	VR3	1	3362U-104LF-ND	Resistor, 100k variable, 3362U, top adjust, inline	
17	C4, C5	2	3362U-105LF-ND	Resistor, 1M variable, 3362U, top adjust, inline	pin1@D2(+): pin2@hole D2(+): pin3@R2 (pin 1)
18	C1, C3	1	BC1160CT-ND	Capacitor, 50V 0.1uF (104), ceramic 20%, 0.1"	
19	C2	1	P5152-ND	Capacitor, 25V 100uF, electrolytic, 0.1" spacing	C1-Vsense delay, Alt: P5165-ND (35V, 100uF) Alt: P5161-ND (35V, 10uF)
20	Q1	1	P5148-ND	Capacitor, 25V 10uF, electrolytic, 0.1" spacing	
21	LED1	1	IRFZ44VPBF-ND	Discrete, IRFZ44N, N-MOSFET, TO-220	
22	PCB	1	67-1098-ND	Display, LED, green 5mm 19mcd diffused	any type of LED would work. Onstate BP PCB, 1.75" square
23	Wire-Red	1		Wire, 22-18AWG, stranded, red	Power +, common red, soldered to D4(+).
24	Wire-Black	1		Wire, 18AWG, stranded, black	power ground. input: black/red
25	Wire-Blue	1		Wire, 18AWG, stranded, blue	MOSFET output: Negative power switch
26	HTSNK1	1		BP module power: red/black, Load power: +V/blue. Isolate blue from power ground.	
27	SCRW1	1	HS107-ND	Heatsink, TO-220, 0.75" (H)	Alt: HS106-ND (3/8"H)
28	NUT1	1		Hardware, screw, #4 x 1/4"	
29	LW1	1		Hardware, lockwasher, #4	
Total Quantity: 39					The MOSFET could be mounted to other heatsinks (>2W).

Make sure all the diodes are inserted the correct way. There is a delay in VR adjustment due to filter capacitor (C1). It may take a few seconds to stabilize adjustments.

Calibration: Wait 10s for sensing voltage to stabilize before adjustments. Set VR1/VR2 to center adjustments.

1. Set power supply to 11.2V. Adjust VR1 until LED flashes. Increase input voltage until LED stops flashing (rese
2. Set power supply to 12.0V. Adjust VR2 until LED flashes
3. Vary power supply voltage from 14 to 11V and 11-14V to check for proper operation.