

## Battery Balancer - Relay Board

comp#	description	part#	page#	qty	holes	total holes	area	total area	lead spacing	labor	total labor	part\$	total part\$
D1-8	diode, LED 1 (Mnja 15101		p.22	8	2	16	0.023	0.180	0.100	0.250	2	0.020	0.16
D9-16	diode, 1N58 (Jameco 17		j.38	8	2	16	0.075	0.600	0.400	0.250	2	0.058	0.46
F1-9	fuse, 20a 25 Bussman Al		d.1516	9	2	18	0.125	1.125	0.250	0.250	2.25	0.790	7.11
	or Littelfuse		d.1509									0.800	
F1-9a,b	wire, #18 to Zierick 1022		z	18	2	36	0.070	1.262	0.200	0.250	4.5	0.010	0.18
J1-13	screw termi Keystone 81		d.1724	13	6	78	0.188	2.438	drawing	0.100	1.3	0.368	4.78
J1-13n	#10-32 bras Sartell Hardware			26						0.250	6.5	0.050	1.30
K1-8	relay, DPST P&B T92S71		d.1650	8	12	96	3.672	29.376	drawing	0.500	4.000	6.12	48.96
	Am.Zettler A		cds										
P1	DB9, male, ValuePro Df		j.120	1	11	11	0.599	0.599	drawing	0.500	0.5	0.450	0.45
	P1a jackscrew, # ValuePro (1		j.120	2	0	0	0.000	0.000		0.500	1	0.210	0.42
	P1b jackscrew, # ValuePro (7		j.208	2	0	0	0.000	0.000		0.500	1	0.290	0.58
	P1c standoff, #4 ValuePro (7		j.208	6	0	0	0.000	0.000		0.500	3	0.200	1.20
	P1d screw, #4-4 ValuePro (4		j.208	7	0	0	0.000	0.000		0.500	3.5	0.019	0.13
R1-8	resistor, 3.3 (Jameco 691		j.78	8	2	16	0.075	0.600	0.400	0.250	2	0.010	0.08
	misc. holes (mounting)				6	6	0.049	0.294					
PCB:	0.062" FR4, 2-sided, with silkscreen			1									79.10
	Total number of components			116									
	Total number of holes					293							
	Total component area							36.47 sq.in.					
	Actual board size			11.8 " by		2.9 "	=	34.22 sq.in.					
	<b>Total material cost</b>												<b>\$144.91</b>
Labor:	total preform ( \$0.25 for easy parts,							\$0.50 for hard parts)			21.50		
	solder, touch-up, and visual inspect										10.00		
	test										10.00		
	<b>Total labor cost</b>												<b>\$41.50</b>
	<b>Total Material and Labor cost</b>												<b>\$186.41</b>

Estimated cost of materials and labor to build Battery Balancer Relay boards.

Part costs are prices from respective supplier's catalogs.

by: Lee A. Hart

In Page# column; d# is Digikey catalog T063, j# is Jameco catalog 271, m# is Mouser catalog date:

April 19, 2007

p# is Marlin P. Jones catalog 06-08, j# is Jameco catalog 271, cds is CDS/Nedc file:

C:/ORCAD/SHEET/BATBAL/BRELAY.XLS