

| Loc. No. | Description | Mouser Part No. | Qty | Cost | Total |
|----------|--|---|-----|---|-------|
| | * Not necessary if you want to plug the magpulser into the wall instead * Sub = Substitute | These prices are not current and may have gone up | | | |
| R1, R2 | 120, 5W wirewound resistor * | | 2 | | |
| | Q1, Q2 - See "Magnetic Pulse Generator Notes" * 2SC4688, 2SC3281 or 2SC4029 | 526-NTE 2328 | 2 | | |
| | DC power jack: 2.5mm panel mount * | | | | |
| | DC power plug: 2.5mm * | | | | |
| | Large heat sink (for each transistor) * | | 2 | | |
| R3 | 10k, 10W <i>Sub: 5k, 5W (2 in series)</i> | | | | |
| R4 | 2.2M, ½ W, MF <i>Sub:</i> | 273-2.2M <i>660-MF1/2DL2214F</i> | | n/a <i>0.14</i> | |
| R5 | 680k, ¼ W. MF <i>Sub:</i> | 660-MF1/4DL6813F <i>271-680k</i> | | 0.03 | |
| R7 | 500k, horiz mount, cermet trimpot <i>Sub:</i> | 72-T70YB-500k <i>72-T70YE-500k</i> | | 0.88 <i>0.88</i> | |
| R7 | Pot: 1M, 16mm, .25" x .335" shaft (with printed circuit legs) <i>Sub: (with solder lugs)</i> | 313-1510-1M <i>313-1500-1M</i> | | 1.31 <i>1.31</i> | |
| C3 | 0.22uF, 250V, Metalized Polypropylene <i>Sub:</i> | 5989-250V.22 <i>146-250V.22K</i> | | 0.31 <i>0.36</i> | |
| C2 | 100uF or 150uF (4 to 6), 450V 1 | 5985-450V100 (100uf) 5985-450V150 (150uf) | | 5.08 6.80 | |
| Q3 | 600V, 25A SCR (even 10A will work, but may not last if using a coil with thicker wire) <i>Sub: 1200V, 50A, TO-3P</i> <i>Sub: 1000V, 50A, TO-3P</i> | <i>511-BTW69-1200</i> <i>511-BTW69-1000</i> | | <i>7.02</i> <i>6.00</i> | |
| D5-D7 | Diode: 1,000, 1A, 50ns <i>Sub:</i> | 625-UF4007 <i>512- UF4007</i> | | 0.12 <i>0.15</i> | |
| NE1 | Neon lamp: 65/90V, 0.6mA (NE-2) <i>Sub: NE-2B, 65/90V, 0.5mA</i> <i>Sub: NE-2V, 65/90V, 0.7mA</i> <i>Sub: NE-2E, 65/90V, 0.7mA</i> | 36NE002 <i>36NE003</i> <i>606-A2B</i> <i>606-A9A</i> | | 0.23 <i>0.23</i> <i>0.50</i> <i>0.34</i> | |

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|-----------------|---|--------------------------|------------|--------------|--------------|
| | Get this part also in case the neon lamp doesn't work (neon lamps don't short out and they last thousands of hours): | | | | |
| | Sidac: 110V bilateral trigger diode | 519-K1200E | | 0.94 | |
| | <i>Sub: 120V bilateral trigger diode</i> | <i>519-K1300E</i> | | <i>0.94</i> | |
| T1 | Transformer: 110V - 12V, 1A (much better to use the one below) | 41FG010 | | 5.85 | |
| | Transformer: 230V - 12V CT, 2A 2 (this transformer can be wired for either 115V or 230V) | 553-F44X | | 13.80 | |
| | Knob: 1.04" dia. x 0.56" H, black plastic w/ bright aluminum inlay | 45KN017 | | .81 | |
| | <i>Sub:</i> | | | | |
| | Enclosure: all black, plastic, 6.2" x 6.1" x 2.5" (LWH) - Pactec CM6-225 | 616-63075-510-000 | | 11.43 | |
| | <i>Sub: same as above, but bone color with black front and rear panels</i> | <i>616-63074-510-039</i> | | <i>11.43</i> | |
| S1 | Rocker switch: 10A, 125VAC SPST, red button, (3/4" dia, front: 23mm square) 3 | 103-R13-135B-02R-EV | 1 | 1.76 | |
| | <i>Sub: green button</i> | <i>103-R13-135B-02G</i> | <i>1</i> | <i>1.76</i> | |
| | Panel mount fuse holder (for 20mm x 5mm fuse) | | | | |
| | 7A, 20mm x 5mm fuse | | | | |
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| Loc. No. | Description | Part No. | | Cost | |
| L2 | Inductor: 2.5mH, no. 18 wire, perfect layer (main coil) | Parts Express 4 | | 14.00? | |
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| | Cable: no. 18, 2-wire round, smooth appliance cord (doesn't get tangled) - 7 feet (0.50/foot) | Hardware Store | | 3.50 | |
| | 110V, 6W (or larger) night light 5 | Hardware Store | 2 | | |
| | <i>220V, 6W if your area uses 220V</i> 5 | Hardware Store | <i>2</i> | | |
| | Grommet for 1 1/32" hole (coil cover) | Hardware Store | | 0.27 | |
| | Strain relief: for 1/2" hole, 18/2 cable (or use grommet) | Hardware Store | | 0.50 | |

1 Best to use *photoflash* capacitors (not available at Mouser - try Digikey, but not surplus stores) Photoflash capacitors are designed to fully discharge repeatedly. These high ripple capacitors *may* or *may not* last as long. Surplus stores sometimes carry electrolytic caps which are old and may be starting to dry up.

2 If you don't want to build the 12VDC model then you will need a 110V to 220V transformer to build the version which requires the fewest parts. These are usually only available as an isolation transformer and tend to be very expensive. You may be able to find this transformer at an electronic surplus store at a low price, but this is hit and miss.

You can wire 2 of these transformers (553-F44X) together (12V to 12V) and wire one for 115V and the other for 230V. If you decide to build the magpulser that uses 110V to 12V transformers instead you will save money on the transformers and spend much more for the extra capacitors required. \$28 (2 transformers) doesn't seem so bad after you see what isolation transformers cost (at least the ones Mouser carries).

If you are building the 12VDC version only one 12V to 230V transformer is needed

3 The brass terminal is only used for the built in indicator lamp (may be a neon lamp - not sure). Look at the specification sheet for this switch to find the proper voltage. I use this switch on our M-Pulse 5000 magpulser. It's very attractive and reliable. If you like the (rather ugly) toggle switches use any one rated at 5 amps or more. Pick up a 3/4" flat drill bit (the round ones are very expensive) at the hardware store.

4 Parts Express <http://partsexpress.com/> - 800-338-0531 **(as the cost of copper goes up this price will increase)**

5 Used to test the output voltage of the transformer, by loading it down (with this 6 watt lamp) so that you can measure the voltage before wiring in the capacitor

WHY? Because some transformers with the same voltage and amperage rating may supply too much voltage when used in this manner and cause the large capacitors to actually blow up! (this may apply more to the 12VDC to 330VDC version). The voltage can be reduced by wiring a large power resistor in series with the primary winding. As I recall I've used around 2 ohms, 25 watts. Each transformer is a little different so you need to experiment.