

# T O R P E D O - Design/Layout by Dsavitsk

Last revised:  
10/23/15

BOM by  
Tom Blanchard

PART ID	DESCRIPTION	QTY	SOURCE	PART NO	EACH	TOTAL	SOURCE	PART NO	EACH	TOTAL
<b>Capacitors</b>			all parts limited to 48mm high				all parts limited to 48mm high			
C1	Electrolytic Radial, 10uf 400V	1	Mouser	<a href="#">667-EEU-EB2G100</a>	\$ 0.85	\$ 0.85	DigiKey	<a href="#">P5939-ND</a>	\$ 0.85	\$ 0.85
C2, C3	Electrolytic Snap-In, 220uf 400V	2	Mouser	<a href="#">667-EET-HC2G221BF</a>	\$ 4.50	\$ 9.00	DigiKey	<a href="#">P13243-ND</a>	\$ 4.50	\$ 9.00
C4	Electrolytic Radial, 4700uf 16V	1	Mouser	<a href="#">647-UHE1C472MHD6</a>	\$ 2.00	\$ 2.00	DigiKey	<a href="#">493-1572-ND</a>	\$ 2.00	\$ 2.00
C5	Film Polyester, 0.33uf 50V	1	Mouser	<a href="#">667-ECQ-V1H334JL</a>	\$ 0.35	\$ 0.35	DigiKey	<a href="#">P4669-ND</a>	\$ 0.35	\$ 0.35
C6	Electrolytic Radial, 100uf 16V	1	Mouser	<a href="#">647-UVR1C101MDD1TD</a>	\$ 0.25	\$ 0.25	DigiKey	<a href="#">493-1040-ND</a>	\$ 0.25	\$ 0.25
C7, C8 (optional)	Electrolytic Radial, 470uf 10V	2	Mouser	<a href="#">EEU-FM1A471</a>	\$ 0.50	\$ -	DigiKey	<a href="#">P12361-ND</a>	\$ 0.50	\$ 1.00
C9, C10	Film Polypropylene, 0.1uf 630V	2	Mouser	<a href="#">505-MKP4-0.1/630/5</a>	\$ 0.75	\$ 1.50	DigiKey	<a href="#">495-1333-ND</a>	\$ 0.75	\$ 1.50
C11, C12	Solen PPB 4.7uf 400VDC	2	Parts Express	<a href="#">Solen PPB. 4.7uf 450V</a>	\$ 5.00	\$ 10.00	DigiKey	<a href="#">P14214-ND</a>	\$ 5.00	\$ 10.00
C11, C12 alt.	Film cap, box radial or axial, 4.7uf 300Vmin		Mouser	<a href="#">505-MKP44.7/400/10</a>	\$ 4.00	\$ -				
C11, C12 alt.	Cornell Dubilier polypropylene 4.7uf 600V		Mouser	<a href="#">5984-940C6W4P7K-F</a>	\$ 13.50	\$ -	DigiKey	<a href="#">338-1142-ND</a>	\$ 13.50	\$ -
C11, C12 (used on prototypes)	Clarity Cap SA, 4.7uf 630V		Madisound	<a href="#">ClarityCap SA 4.7uf 630V</a>	\$ 11.00	\$ -	Madisound	<a href="#">ClarityCap SA 4.7uf 630V</a>	\$ 11.00	\$ -
C11, C12 alt.	Jantzen 4.7uf 400V Crosscap		Parts Express	<a href="#">Jantzen 4.7uf 400V</a>	\$ 4.00	\$ -	Parts Express	<a href="#">Jantzen 4.7uf 400V</a>	\$ 4.00	\$ -
Snubber Caps for D5-D8	SMD 1206, 100pf 50V	4	Mouser	<a href="#">77-VJ1206A101KXACBC</a>	\$ 0.13	\$ 0.50	DigiKey	<a href="#">399-1205-1-ND</a>	\$ 0.13	\$ 0.50
<b>Diodes</b>										
D1, D2, D3, D4	1N5062 (GPR-1A) Rectifier 1A 800V	4	Mouser	<a href="#">625-1N5062GP-E3/54</a>	\$ 0.25	\$ 1.00	DigiKey	<a href="#">UF4007CT-ND</a>	\$ 0.25	\$ 1.00
D5, D6, D7, D8	BY228GP (DO-201AD) Rectifier 2.5A 20V	4	Mouser	<a href="#">625-BY228GP-E3</a>	\$ 1.25	\$ 5.00	DigiKey	<a href="#">BY228GP-E3/54GICT-ND</a>	\$ 1.25	\$ 5.00
D9	1N4448, General Purpose, (DO-35)	1	Mouser	<a href="#">512-1N4448</a>	\$ 0.10	\$ 0.10	DigiKey	<a href="#">1N4448CT-ND</a>	\$ 0.10	\$ 0.10
D10, D11, D13, D15	RED LED, 3mm - do not use other colors*	4	Mouser	<a href="#">593-VAOL-3LAE2</a>	\$ 0.50	\$ 2.00	DigiKey	<a href="#">751-1089-ND</a>	\$ 0.50	\$ 2.00
D12, D14	1N5235B Zener diode, 6.8V	2	Mouser	<a href="#">512-1N5235B</a>	\$ 0.15	\$ 0.30	DigiKey	<a href="#">1N5235BFS-ND</a>	\$ 0.15	\$ 0.30
<b>Resistors</b>										
R1	Metal Film, 240K, 1W	1	Mouser	<a href="#">594-5073NW240K0J</a>	\$ 0.20	\$ 0.20	DigiKey	<a href="#">PPC240KW-1CT-ND</a>	\$ 0.20	\$ 0.20
R2**, R3	Metal Film, 100R, 1W	1	Mouser	<a href="#">594-5083NW100R0J</a>	\$ 0.20	\$ 0.20	DigiKey	<a href="#">PPC100W-2CT-ND</a>	\$ 0.20	\$ 0.20
R4, R5	RN60 V-D, 402R, 1/2W	2	Mouser	<a href="#">71-RN60D-F-402</a>	\$ 0.15	\$ 0.30	DigiKey	<a href="#">CMF402HFCT-ND</a>	\$ 0.15	\$ 0.30
R6, R7, R8, R9	Metal Film, 62K, 1W	4	Mouser	<a href="#">594-5073NW62K00J</a>	\$ 0.20	\$ 0.80	DigiKey	<a href="#">PPC62KW-1CT-ND</a>	\$ 0.20	\$ 0.80
R10, R11	RN55 V-D, 1M	2	Mouser	<a href="#">71-RN55D-F-1.0M</a>	\$ 0.10	\$ 0.20	DigiKey	<a href="#">CMF1.00MHFCT-ND</a>	\$ 0.10	\$ 0.20
R12, R13	RN55 V-D, 475R	2	Mouser	<a href="#">71-RN55D-F-475</a>	\$ 0.10	\$ 0.20	DigiKey	<a href="#">CMF475HFCT-ND</a>	\$ 0.10	\$ 0.20
<b>Transistors</b>										
Q1, Q2, Q3, Q4	2N5087 PNP, TO-92, matched pack of 4***	1	Beezar	<a href="#">2N5087-TORP</a>	\$ 0.50	\$ 0.50	Beezar	<a href="#">2N5087-TORP</a>	\$ 0.50	\$ 0.50
Q5, Q6	MJE350,300V 0.5A PNP,TO-126 required****	2	Mouser	<a href="#">512-MJE350STU</a>	\$ 0.75	\$ 1.50	DigiKey	<a href="#">MJE350STU-ND</a>	\$ 0.75	\$ 1.50
VR1	NJM2396F63 LDO reg.6.3V 1.5A, TO-220F-4	1	Mouser	<a href="#">513-NJM2396F63</a>	\$ 1.50	\$ 1.50	DigiKey	1000 min. at DigiKey	\$ 1.50	\$ 1.50
<b>Miscellaneous</b>										
Choke** optional instead of R2	Hammond 154H	1	Mouser	<a href="#">546-154H</a>	\$ 15.00	\$ 15.00	DigiKey	<a href="#">154H-ND</a>	\$ 15.00	\$ 15.00
Alps Volume Pot	Alps RK27112A-S25, 50K	1	Beezar	<a href="#">Alps RK27 Stereo Pot</a>	\$ 16.00	\$ 16.00	Beezar	<a href="#">Alps RK27 Stereo Pot</a>	\$ 16.00	\$ 16.00
SW1	DPDT PCB-horizontal Switch	1	Mouser	Z-switch	\$ 7.00	\$ 7.00	DigiKey	<a href="#">EG2444-ND</a>	\$ 7.00	\$ 7.00
KK1, KK2, KK3	Avid 513102B02500G - 1-1/2" tall	3	Mouser	<a href="#">532-513102B25</a>	\$ 1.50	\$ 4.50	DigiKey	<a href="#">346-ND</a>	\$ 1.50	\$ 4.50
Torpedo Hardware Kit	Hardware Kit 4-40 thread, 3/8", washers, nuts, 5/16" standoffs, etc.	1	Beezar	Torpedo Hardware Kit	\$ 15.00	\$ 15.00	Beezar	Torpedo Hardware Kit	\$ 15.00	\$ 15.00

Knob - volume control	Varies	1	Varies	Beezar	\$ 10.00	\$ 10.00	Varies	Beezar	\$ 10.00	\$ 10.00
<b>Connectors</b>										
J1	Neutrik Phone Jack, NMJ6HCD2	1	<a href="#">Beezar</a>	<a href="#">NMJ6HCD2</a>	\$ 2.50	\$ 2.50	<a href="#">Beezar</a>	<a href="#">NMJ6HCD2</a>	\$ 2.50	\$ 2.50
J2	RCA Jacks Assembly, PCB Mount	1	Mouser	<a href="#">161-4221-E</a>	\$ 2.50	\$ 2.50	DigiKey	<a href="#">CP-1435-ND</a>	\$ 2.50	\$ 2.50
J3 (must have J3a, too)	IEC Inlet, PCB Mount, 10A 250VAC	1	Mouser	<a href="#">693-DD21.0111.1111</a>	\$ 15.00	\$ 15.00	DigiKey	<a href="#">486-1305-ND</a>	\$ 15.00	\$ 15.00
J3a (use with J3)	Fuse Drawer for IEC Inlet above (J3)	1	Mouser	<a href="#">693-4301.1405</a>	\$ 2.00	\$ 2.00	DigiKey	<a href="#">486-1274-ND</a>	\$ 2.00	\$ 2.00
Fuse (many sources/brands)	5x20mm, Slo-Blo, 0.25A 250V	2	Mouser	<a href="#">693-0034.3111</a>	\$ 0.50	\$ 1.00	DigiKey	<a href="#">283-3298-ND</a>	\$ 0.50	\$ 1.00
<b>Tubes</b>										
TR, TL	Ceramic Tube Socket, 7-pin Gold	2	<a href="#">Beezar</a>	<a href="#">GZC7-Y-G</a>	\$ 2.00	\$ 4.00	<a href="#">Beezar</a>	<a href="#">GZC7-Y-G</a>	\$ 2.00	\$ 4.00
6J6 Vacuum Tube	also includes 6J6-A and 6J6-WA	2	<a href="#">Beezar</a>	<a href="#">6J6 Tube</a>	\$ 2.00	\$ 4.00	<a href="#">Beezar</a>	<a href="#">6J6 Tube</a>	\$ 2.00	\$ 4.00
5964 Vacuum Tube	same/similar ratings		<a href="#">Beezar</a>	<a href="#">5964 Tube</a>	\$ 4.00	\$ -	<a href="#">Beezar</a>	<a href="#">5964 Tube</a>	\$ 4.00	\$ -
5844 Vacuum Tube	close ratings, slightly over-driven		<a href="#">Beezar</a>	<a href="#">5844 Tube</a>	\$ 4.00	\$ -	<a href="#">Beezar</a>	<a href="#">5844 Tube</a>	\$ 4.00	\$ -
TORPEDO! Tube Matching	per pair, matched for combined output	2	<a href="#">Beezar</a>	<a href="#">6J6.5844.5964 matching/pr.</a>	\$ 2.00	\$ 4.00	<a href="#">Beezar</a>	<a href="#">6J6.5844.5964 matching/pr.</a>	\$ 2.00	\$ 4.00
<b>Printed Circuit Board</b>										
	TORPEDO! PCB	1	<a href="#">Beezar</a>	TORPEDO! PCB	\$ 50.00	\$ 50.00	<a href="#">Beezar</a>	TORPEDO! PCB	\$ 50.00	\$ 50.00
<b>Transformers</b>										
	Eddor Custom Power Transformer	1	<a href="#">Beezar</a>	Eddor Custom XPWR	\$ 50.00	\$ 50.00	<a href="#">Beezar</a>	Eddor Custom XPWR	\$ 50.00	\$ 50.00
	Eddor Custom Output Transformers	2	<a href="#">Beezar</a>	Eddor Custom PCW	\$ 20.00	\$ 40.00	<a href="#">Beezar</a>	Eddor Custom PCW	\$ 20.00	\$ 40.00
<b>Recommended Enclosure</b>										
	Beezar/Context Custom Machined 14" long, BLACK anodized, laser-etched	1	<a href="#">Beezar</a>	Beezar Torpedo Case	\$ 175.00	\$ 175.00	<a href="#">Beezar</a>	Beezar Torpedo Case	\$ 175.00	\$ 175.00
<b>TOTAL</b>					<b>\$ 455.75</b>		<b>Total, DigiKey</b>		<b>\$ 456.75</b>	
* LEDs must be selected carefully! Forward Voltage is most important; optimum is around 1.8V. The LEDs directly affect performance!										
** R2 and Choke are interchangeable. Use one, but not both. Beezar recommends the choke for <i>less noise</i> .										
*** Matching by HFE is not critical, but Beezar supplies them this way.										
**** TO-126 is required style. NOTE: Pinouts are different with other body styles.										