



FEDERAL SIGNAL CORPORATION
Emergency Products



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VOICE GUN®
Electronic Megaphone

Models : A12SA and A12*W

Operation And Service Instructions

LIMITED WARRANTY

The Signal Division, Federal Signal Corporation (Federal), warrants each new product to be free from defects in material and workmanship, under normal use and service, for a period of two years on parts replacement and one year on labor from the date of delivery to the first user-purchaser.

During this warranty period, the obligation of Federal is limited to repairing or replacing, as Federal may elect, any part or parts of such product which after examination by Federal discloses to be defective in material and/or workmanship.

Federal will provide warranty for any unit which is delivered, transported prepaid, to the Federal factory or designated authorized warranty service center for examination and such examination reveals a defect in material and/or workmanship.

This warranty does not cover travel expenses, the cost of specialized equipment for gaining access to the product, or labor charges for removal and re-installation of the product. Lamps, flash tubes, or batteries are not covered under warranty.

This warranty does not extend to any unit which has been subjected to abuse, misuse, improper installation or which has been inadequately maintained, nor to units which have problems relating to service or modification at any facility other than the Federal factory or authorized warranty service centers.

THERE ARE NO OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO, ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. IN NO EVENT SHALL FEDERAL BE LIABLE FOR ANY LOSS OF PROFITS OR ANY INDIRECT OR CONSEQUENTIAL DAMAGES ARISING OUT OF ANY SUCH DEFECT IN MATERIAL OR WORKMANSHIP.



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SECTION I

GENERAL DESCRIPTION AND OPERATION

1-1. GENERAL.

The Federal Voice Gun (Models A12SA and A12*W) electronic megaphones are designed for long, trouble-free service and simple operation. The following should be observed to obtain maximum results:

A. Operating power for the electronic megaphone is supplied by eight AA size batteries (not supplied). To install batteries, apply slight pressure with thumb against battery cartridge at bottom of handle. Remove locking thumb screw (if tight, screw may be started with a thin coin). Remove cartridge. All batteries should be placed in position with the small copper battery tip pointing away from the springs at the top and bottom of the cartridge. Standard AA size alkaline batteries are recommended for greater volume and life. Batteries equal to the following manufacturers' types should be used:

1. Mallory Duracell MN1500
2. Eveready No. E91
3. Burgess No. AL9

CAUTION

Do not use mercury cells. Polarity of mercury cells is reversed and damage to the instrument may result.

B. The Class B amplifier draws very little current, even with the trigger button depressed, except when actually speaking into the microphone. This results in excellent efficiency and long battery life. In instances where the electronic megaphone is used for short periods a few times a week, batteries may last from six months to one year. Batteries should be replaced at least yearly to avoid possibly exceeding their shelf life.

1-2. OPERATION.

WARNING

Your hearing and the hearing of others, close to the electronic megaphone, could be damaged by loud sounds. This can occur from short exposures to very loud sounds, or from longer exposures to moderately loud sounds. For hearing conservation guidance, refer to federal, state, or local recommendations. OSHA Standard 1910.95 offers guidance on "Permissible Noise Exposure."

Operation of the electronic megaphone is very simple. The following steps should be observed to obtain maximum results.

A. The electronic megaphone is operated by simply pressing the trigger button and speaking into the microphone. The button should be depressed only when actually speaking.

B. Hold the electronic megaphone with one hand. Do not place other hand around mouthpiece. The unit has been designed with a crisp response to increase intelligibility, particularly when used under noisy conditions. If operated in a small empty room, a slight ringing sound may be noticed.

C. For simplicity, no external volume control is used. Volume is controlled entirely by voice intensity. FOR BEST RESULTS AND UNVARYING SOUND REPRODUCTION, LIPS SHOULD BE PLACED IN CONTACT WITH MICROPHONE HOUSING.

D. For maximum intelligibility and effectiveness, be sure the open bell side of the Voice Gun is facing those you are speaking to.

NOTE

Volume is preset at the factory and normally should not need readjustment. If and when necessary, it can be adjusted by removing rubber plug on horn at rear of handle and inserting small screwdriver. Turning control to the left decreases microphone sensitivity and turning to the right (clockwise) increases sensitivity. Control should be set just below the point of feedback under existing conditions. Rubber plugs should be reinserted, forcing it in place with a small screwdriver.

SECTION II SPECIFICATIONS

2-1. PHYSICAL DATA.

Dimensions	10-1/2" High 10-1/8" Long 7-1/4" Bell Diameter
Weight (without batteries).....	3 pounds.
Amplifier	Three-stage, Class B output.
Material:	
Aircraft Model	Lexan*
Standard Model.....	Cyclocac *
Carrying Strap	Nylon, adjustable.
Microphone	Noise-cancelling magnetic.
Speaker	Re-entrant horn and driver type.
Batteries (not furnished)	Eight AA alkaline type recommended.

2-2. TECHNICAL DATA.

Amplifier Output.....	8 watts at 10% total harmonic distortion. 16 watts maximum.
Power Source	12 volts. Eight AA batteries.
Power Consumption	
Minimum	Less than 160MA
Maximum	Less than 200MA

*Registered Trade Mark.

SECTION III

SERVICE AND MAINTENANCE

WARNING

Your hearing and the hearing of others, close to the electronic megaphone, could be damaged by loud sounds. This can occur from short exposures to very loud sounds, or from longer exposures to moderately loud sounds. For hearing conservation guidance, refer to federal, state, or local recommendations. OSHA Standard 1910.95 offers guidance on "Permissible Noise Exposure."

3-1. CLEANING.

Molded parts of the Voice Gun electronic megaphone are made of exceptionally tough and rugged material. When cleaning molded parts, use a damp cloth and mild detergent. Do Not use solvent or strong cleaning agents.

3-2. BATTERY REPLACEMENT.

Power is supplied by eight inexpensive penlight type flashlight cells size AA. At least 1500 to 3000 ten-second messages should be expected from one set of batteries. For many users, battery life will approach shelf life. It is recommended that batteries be replaced yearly, even though still functioning. For longer shelf life and much longer operating life, we recommend use of alkaline batteries equal to the following:

1. Eveready No. E91
2. Mallory Duracell No. MN1500
3. Burgess No. AL9

To remove batteries, proceed as follows:

- A. Apply slight pressure with thumb against battery cartridge at bottom of handle.
- B. Remove locking thumb screw. If tight, screw may be started with a thin coin.
- C. Remove cartridge.
- D. All batteries should be placed in position with the small battery tip pointing away from the springs at the top and bottom of the cartridge (see figure 1).

3-3. FACTORY SERVICE.

Should the electronic megaphone not function, or not function properly after proper installation of good

batteries, it is suggested that the factory be contacted. Describe briefly what the difficulty seems to be. Communications and shipments should be addressed to:

Service Department
Federal Signal Corporation
2645 Federal Signal Dr.
University Park, IL 60466

Instruments within warranty will be promptly repaired without charge and returned postpaid within the United States. Instruments out of warranty will be serviced on a reasonable cost basis.

3-4. TROUBLESHOOTING PROCEDURE.

- A. No sound reproduced. No "click" heard in speaker when switch button is depressed. Proceed with the following steps:

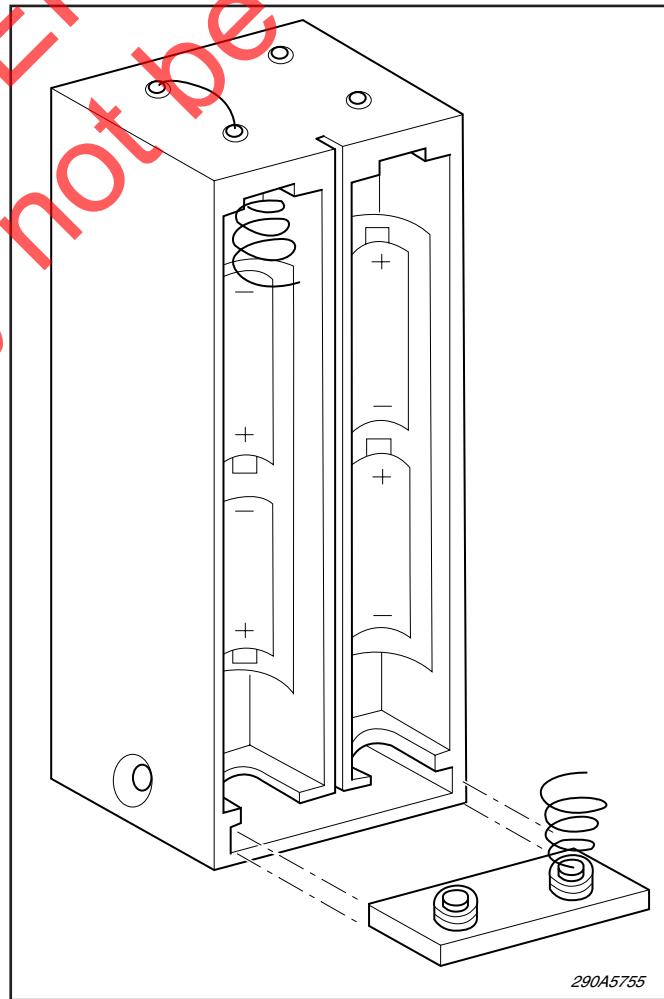


Figure 1.

NOTE

Numbers within parentheses are reference numbers in figure 2.

1. Check for dead or extremely weak batteries or one or more dead cells.
2. Check for proper installation of batteries in cartridge.
3. Reinstall cartridge and batteries in handle and partially disassemble electronic megaphone as follows:
 - a. Remove screw which secures clip and dee (7).
 - b. Remove the three Phillips head microphone housing screws. Lift microphone housing (17) away from microphone (16).
 - c. Gently lift microphone (16) away from foam pad and place slightly to one side of assembly. Lift the foam pad partially away from the horn assembly until the truss head screw is exposed. Remove truss head screw.
 - d. Place electronic megaphone on its side. Carefully rotate driver assembly (1) 1/8-turn to the left and pull driver assembly from horn as far as wires from microphone and handle will permit.

4. Hold switch button depressed. With a voltmeter, check for 12VDC between P1 pins 2 and 4 on the amplifier PC board (4) (see figure 4). If correct voltage is not obtained, remove handle and check switch and all connections in handle.

NOTE

For driver assembly and microphone checks, a 1-1/2 volt battery (D cell) with wires soldered to each end will be required.

5. Check driver assembly (1). Disconnect displacement connector (red insulation) from the amplifier printed circuit board. Momentarily touch the wires from the D-cell across J1 pin 5 and 6 of the red connector (not the connector on the PC board). If no "click" is heard as the connection is made and broken, check for defective wires or connections at the speaker terminals. If wires and connections are proper, the driver assembly is defective and should be replaced.

6. If the previous checks do not reveal trouble, the amplifier assembly is defective and should be replaced or repaired.

NOTE

Amplifier assembly must be oriented on speaker assembly so that volume control will be directly opposite access hole in horn.

7. If amplifier assembly is replaced, volume control may need readjustment (refer to OPERATION (NOTE)). Talk test electronic megaphone and advance volume control until feedback occurs, then retard control slightly.

8. Reassemble electronic megaphone.

NOTE

When fastening microphone housing to horn assembly, insure that microphone wires run straight into the hole in the horn assembly and are not captured under the rim of the housing.

- B. No sound reproduced, but "click" is heard in speaker when switch button is depressed. Also, reproduction very distorted and/or weak output.
 1. Remove microphone housing screws and check wire connections at microphone.
 2. Partially disassemble electronic megaphone (refer to 3-4.A.3).
 3. Check continuity of microphone wire.
 4. Disconnect displacement connector (red insulation) from the amplifier printed circuit board. Momentarily touch the wires from the D-cell across P1 pins 1 and 2 of the red connector. Clicks should be heard as the connection is made and broken. If no click is heard, the microphone is defective. Replace microphone.
 5. If the previous steps do not reveal the trouble, the amplifier assembly is defective and should be replaced.
 6. If the microphone or amplifier is replaced, the volume control may need adjustment (refer to OPERATION NOTE).



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PARTS INDEX

VOICE GUN

ELECTRONIC MEGAPHONE

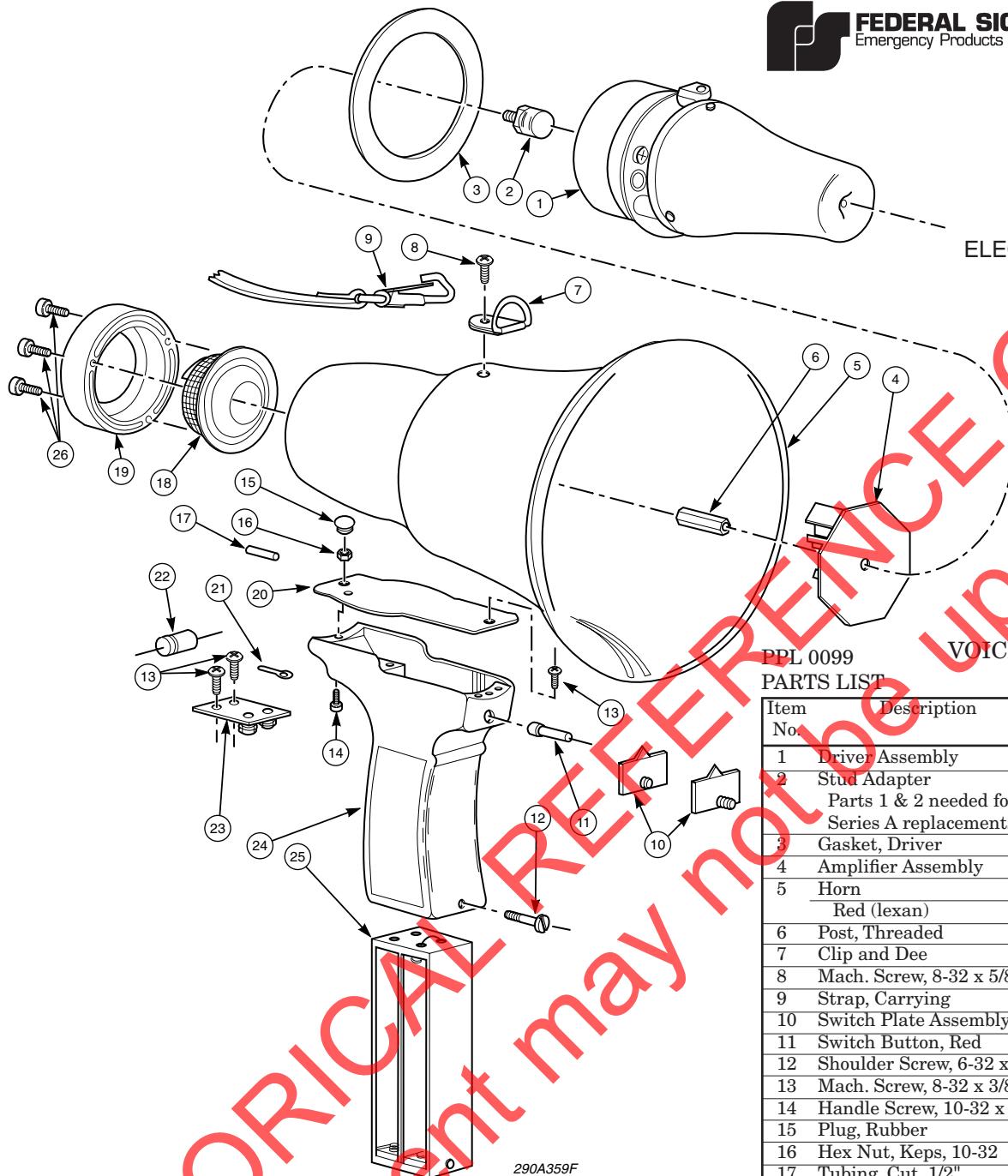


Figure 2. Electronic Megaphone Exploded View.

Item No.	Description	Part Number	Qty.
1	Driver Assembly	132C107	1
2	Stud Adapter	231A110	1
	Parts 1 & 2 needed for Series A replacements		
3	Gasket, Driver	288A015	1
4	Amplifier Assembly	200C507	1
5	Horn		
	Red (lexan)	170D112-11	1
6	Post, Threaded	231A111	1
7	Clip and Dee	144A105-01	1
8	Mach. Screw, 8-32 x 5/8"	7000A162-10	1
9	Strap, Carrying	288B014	1
10	Switch Plate Assembly	200A176	2
11	Switch Button, Red	288A010-11	1
12	Shoulder Screw, 6-32 x 1"	7017A009-16	1
13	Mach. Screw, 8-32 x 3/8"	7000A025-06	3
14	Handle Screw, 10-32 x 1/2"	7000A160-08	1
15	Plug, Rubber	288A016	1
16	Hex Nut, Keps, 10-32	7058A004	1
17	Tubing, Cut, 1/2"	C92-09-02-0003	1
18	Microphone	137B115	1
19	Housing, Microphone		
	Red (lexan)	170B155-11	1
20	Handle, Gasket	288B013	1
21	Lug, Terminal	224A121	2
22	Capacitor, 330UF	108A107	1
23	Cartridge Contact Plate Assy.	200A173	1
24	Handle		
	Red (lexan)	154D106-11	1
25	Cartridge Assembly		
	Red (lexan)	200B177-11	1
26	Mach. Screw, 10-32 x 5/8"	7011A046-12	3

DO NOT ORDER PARTS BY ITEM NUMBER.

Give model, description and part number.

When a part number is not supplied, the part is NOT available.

Refer to PARTS PRICE LIS

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2645 Federal Signal Drive

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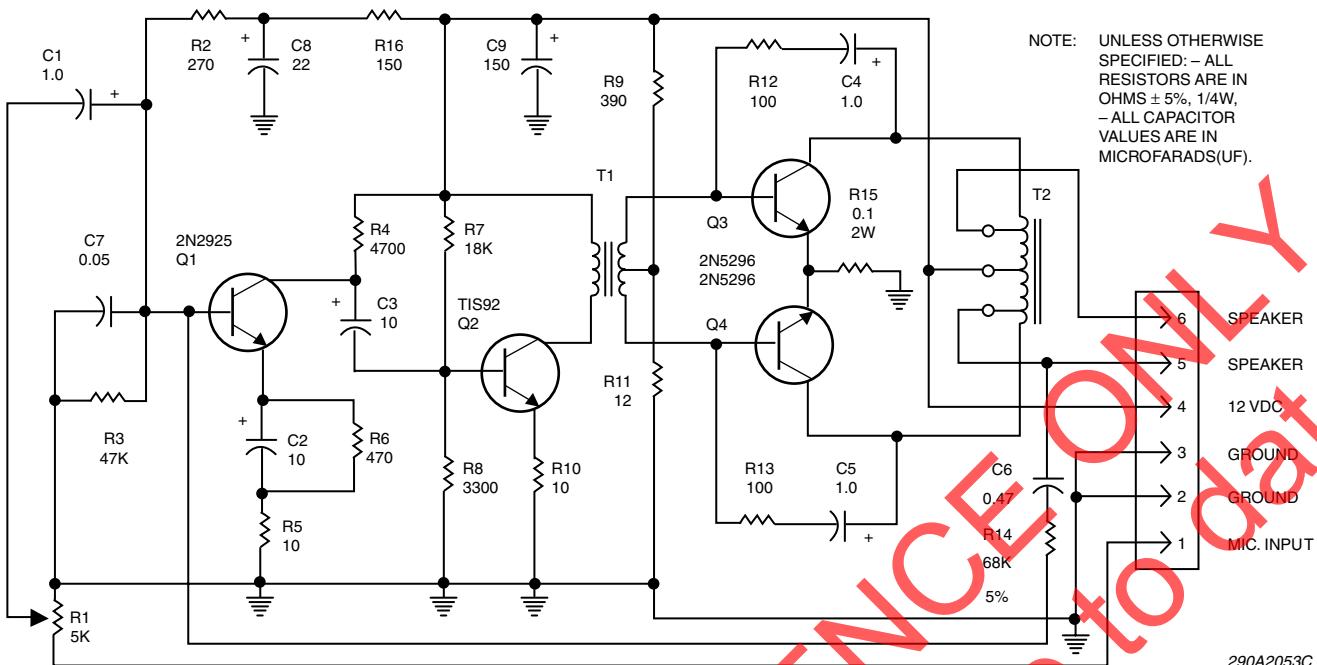


Figure 3. Electronic Megaphone Schematic Diagram.

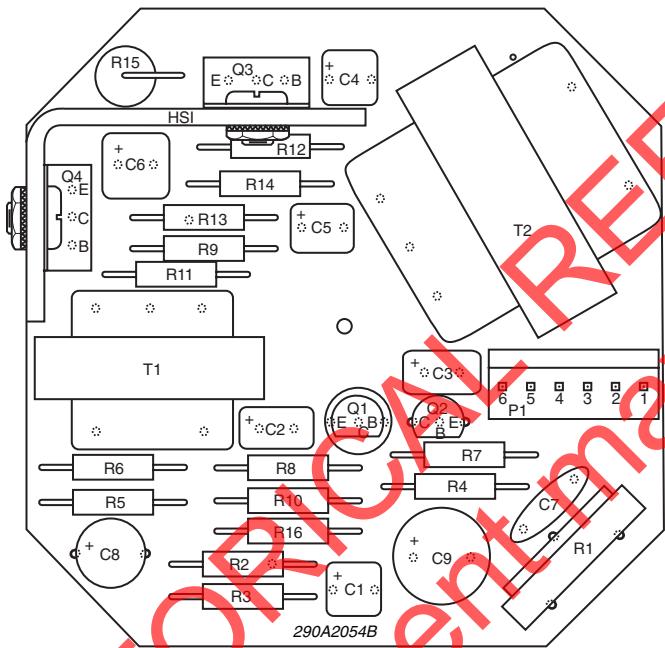


Figure 4. Electronic Megaphone Amplifier Parts Location.

PARTS LIST

AMPLIFIER ASSEMBLY PC BOARD

Schematic Symbol	Description	Part No.
R1	Potentiometer, 5K ohm	105A204-01
R2	Resistor, 270K ohm, 5%, 1/4 W, carbon	100A227
R3	Resistor, 47K ohm, 5%, 1/4 W, carbon	100A228
R4	Resistor, 4700 ohm, 5%, 1/4 W, carbon	100A298
R5	Resistor, 10 ohm, 5%, 1/4 W, carbon	100A251
R6	Resistor, 470 ohm, 5%, 1/4 W, carbon	100A248
R7	Resistor, 18K ohm, 5%, 1/4 W, carbon	100A258
R8	Resistor, 3300 ohm, 5%, 1/4 W, carbon	100A242
R9	Resistor, 390 ohm, 5%, 1/4 W, carbon	100A283
R10	Resistor, 10 ohm, 5%, 1/4 W, carbon	100A251
R11	Resistor, 12 ohm, 5%, 1/4 W, carbon	100A285
R12,13	Resistor, 100 ohm, 5%, 1/4 W, carbon	100A240
R14	Resistor, 68K ohm, 5%, 1/4 W, carbon	100A261
R15	Resistor, 0.1 ohm, 5%, 2 W, WW	103A114
R16	Resistor, 150 ohm, 5%, 1/4 W, carbon	100A238
C1,4,5	Capacitor, 1.0UF, 50V, tantalum	107A649
C2,3	Capacitor, 10UF, 35V, tantalum	107A1117A
C6	Capacitor, 0.47UF, 35V, tantalum	107A645
C7	Capacitor, 0.05UF, 25V, disc	107A227
C8	Capacitor, 22UF, 15V, tantalum	107A677A-02
C9	Capacitor, 150UF, 16V, electrolytic	108A147
Q1	Transistor, 2N2925	125A119
Q2	Transistor, T1S92	125B132
Q3,4	Transistor, 2N5296	125B415
T1	Transformer, Driver	120B133
T2	Transformer, Output	120B138
HS1	Heat Sink	236A110
P1	Connector, Header, 6-pos.	140A235A-02
PCB1	PC Board (with parts)	200C507

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