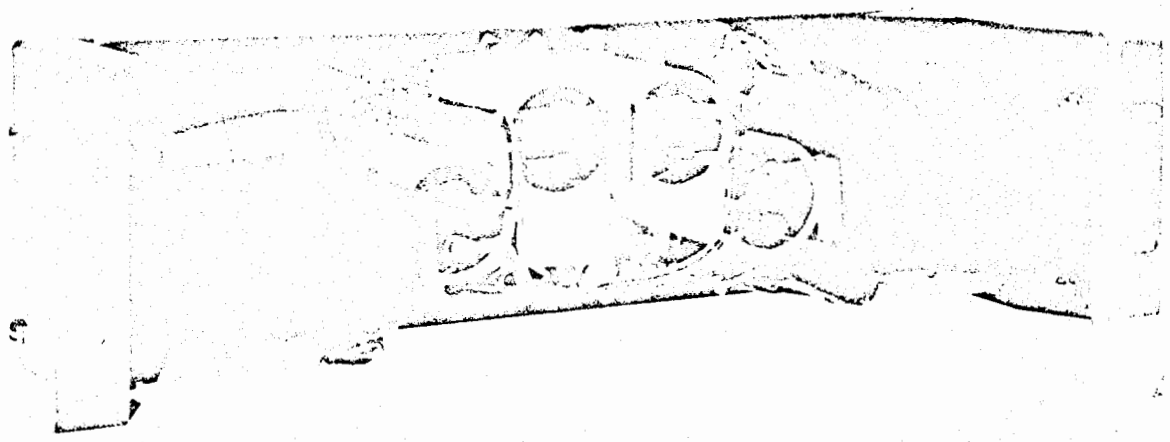
SPECTRA SONICS

LEADER IN ADVANCED TECHNOLOGY



GENERAL DESCRIPTION

The Model 404RS Power Supply was developed by SPECTRA SONICS to provide a highly compact, efficient, reliable D.C., bi-polar, power source for applications in Sound Reinforcement Systems. The power supply is mounted in a very heavily constructed steel chassis to provide the maximum protection to the electronic circuitry, thereby enhancing the power supply's ability to withstand the rigors of "on the road" use.

A Model 404RSD (Dual) Power Supply (shown above) is available, also. This is literally two of the power supplies as described above in a single chassis. The dual supply output may be combined to produce 16 amperes.

SPECIFICATIONS

VOLTAGE AND CURRENT	
AC Input	Output Voltage
115VAC, 60Hz	56VDC ± 1 volt no load, 48VDC ± 1 volt @ 8 amperes
105VAC, 60Hz	44VDC ± 1 volt @ 8 amperes
125VAC, 60Hz	60VDC ± 1 volt no load
RIPPLE	1.2 volt peak to peak, maximum, .4 volt average
POWER REQUIREMENT	115VAC, 50/60Hz, 400 watts
EFFICIENCY @ 60Hz	94%, approximate.
AMBIENT TEMPERATURE RANGE	-40°C (-40°F) to 85°C (185°F)
PHYSICAL DIMENSIONS	13.5cm (5¼") x 49.2cm (19") x 15.2cm (6")
WEIGHT	
Model 404RS	8.4Kg (18.5#)
Model 404RSD	15Kg (33#)

ARCHITECTS' AND ENGINEERS' SPECIFICATIONS

The bi-polar, direct current, power supply shall be a solid state device approximately 5¼" high x 6" deep x 19" wide, and shall be capable of being installed in a standard electronic equipment rack. The power supply shall provide a nominal voltage output of plus and minus 25 VDC (± .5 VDC) at 8 amperes, the output power shall be 375 watts. The power supply shall be protected from overloads by a fuse.

Two of these power supplies shall be capable of being installed in a common chassis with no degradation of performance or reliability. The power supply shall be designed to function over extended periods without failure and with no maintenance. The power supply shall be SPECTRA SONICS Model 404RS or the Model 404RSD (Dual).

SPECIFICATIONS

MAXIMUM CONTINUOUS POWER OUTPUT	80 watts, 2 ohms load
Without forced air cooling at 25°C (77°F)	
Bridged Configuration	160 watts, 4 ohms load
FREQUENCY RESPONSE	±0.2dB, maximum output into 8 ohms, DC to 20KHz, (±0.3dB) maximum output into 4 ohms, DC to 20KHz, (±0.4dB), maximum output into 2 ohms, DC to 20KHz.
TOTAL HARMONIC DISTORTION	.025% (±.01%), at maximum output, 1KHz, any load
INTERMODULATION DISTORTION (60Hz + 7KHz, 4:1)	.075% (±.075%), at maximum output, any load
INPUT SENSITIVITY	+5dBv (1.38 VRMS) ±1dBv for maximum output
GAIN	21.4dB (±0.15dB)
SIGNAL-TO-NOISE RATIO	122dB, (±1dB) below 80 watts, at 2 ohms, +5dBv input
MAXIMUM DC OUTPUT	10 amperes, bi-polar, current limited
SHORT CIRCUIT PROTECTION	Current limited, fuse protected
OVERLOAD RECOVERY TIME	1 microsecond, (±.5 microsecond) for 1000% overload
SLEW RATE	10 volts per microsecond (±1 volt per microsecond)
SOURCE IMPEDANCE	0 ohm to infinity
INPUT IMPEDANCE	10K ohms ±5%
OUTPUT IMPEDANCE	0.008 ohms, (±0.0006 ohm) at 100Hz or less
DAMPING FACTOR	1000 (±75) at 100Hz and below, 8 ohms load
OUTPUT LOADING	Not less than 2 ohms
PHASE SHIFT	10° (±3°), DC to 20KHz
POWER SUPPLY RIPPLE REJECTION	70dB (±5dB) at total power supply ripple frequencies, full wave, capacitance bridge
POWER SUPPLY REQUIREMENTS	
Voltage	10VDC bi-polar, minimum; 30VDC bi-polar, maximum
Quiescent Current	+70mA (±10mA) and -75mA (±10mA)
80 watts, 2 ohms load	+2.95A (±50mA) and -2.9A (±50mA)
50 watts, 4 ohms load	+1.70A (±50mA) and -1.65A (±50mA)
DC OFFSET VOLTAGE	+100mV (±90mV)
DC TEMPERATURE STABILITY	Unconditionally stable (stability = 1)
MAXIMUM AMBIENT TEMPERATURE	2 ohms, forced air cooling recommended 4 ohms, 75°C (167°F) 8 ohms, 110°C (230°F)
DIMENSIONS	6.35cm (2.5") x 25.40cm (10") x 4.76cm (1.875")
NET WEIGHT	0.4Kg (.88 pound)

SYSTEM SUPPORT EQUIPMENT

The Model 701 Power Amplifier is designed to be installed in a SPECTRA SONICS Model 202PC Card Holder. In the event Bi/Tri/Quad amplification is required, the Model 505 Electronic Filter is ideally matched to the Model 701, and is available in a wide range of frequencies to satisfy the requirements of all sound reinforcement systems. A Model 404RS or Model 404RSD (dual) Power Supply provides the power requirements for system operation.

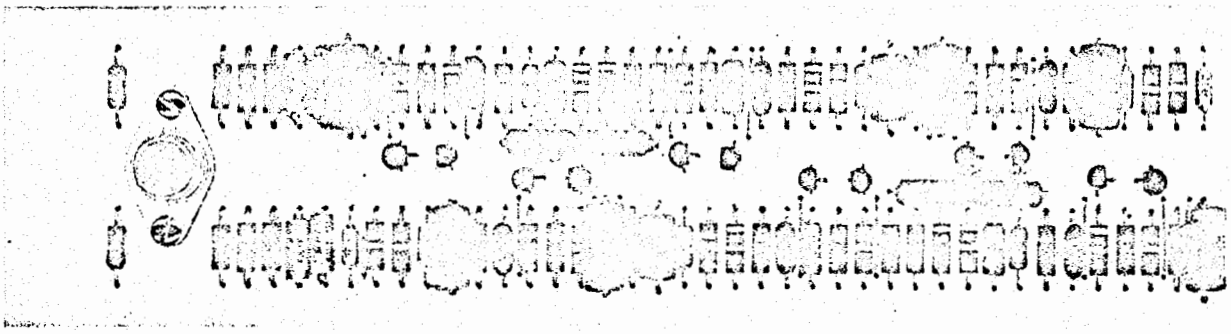
A complete sound reinforcement system, consisting of the Model 701 Power Amplifier, the Model 202PC Card Holder, the Model 505 Electronic Filter, and the Model 404RS Power Supply, is a compact, highly reliable system with exceptional performance. It is a very flexible system, and may be easily reconfigured to adjust to new requirements by rearranging or adding components.

SPECTRA SONICS

LEADER IN ADVANCED TECHNOLOGY

3750 AIRPORT ROAD OGDEN, UTAH 84403 (801) 392-7531

MODEL 505 ELECTRONIC FILTER



(2/3 actual size)

GENERAL DESCRIPTION

The SPECTRA SONICS Model 505 Electronic Filter is designed for high pass, low pass, band pass and/or crossover frequencies for selective segregation of a particular frequency range. The filter includes power supply regulation and 18dB/octave filters, and is fully solid state. Each unit can accept two separate inputs and will provide four outputs. In addition, a low frequency (below 20Hz) filter network roll off 18dB/octave for loudspeaker protection and to eliminate unwanted low frequencies is a significant feature designed into and included in the circuitry.

In particular, for those select professional audio systems from which outstanding quality performance is demanded, a Model 505 Electronic Filter ideally provides two complete crossovers, each with imperceptible transition at a specific crossover frequency. The Model 505 Electronic Filter is available in 19 standard studio monitor values, allowing for complete speaker system flexibility. The following standard frequencies are available for immediate delivery: 100Hz, 150Hz, 200Hz, 250Hz, 300Hz, 400Hz, 500Hz, 600Hz, 800Hz, 1kHz, 1.2kHz, 1.5kHz, 1.8kHz, 2.5kHz, 4kHz, 4.5kHz, 5kHz, 6.5kHz, and 7kHz. Custom frequencies may be obtained at a slightly higher cost.

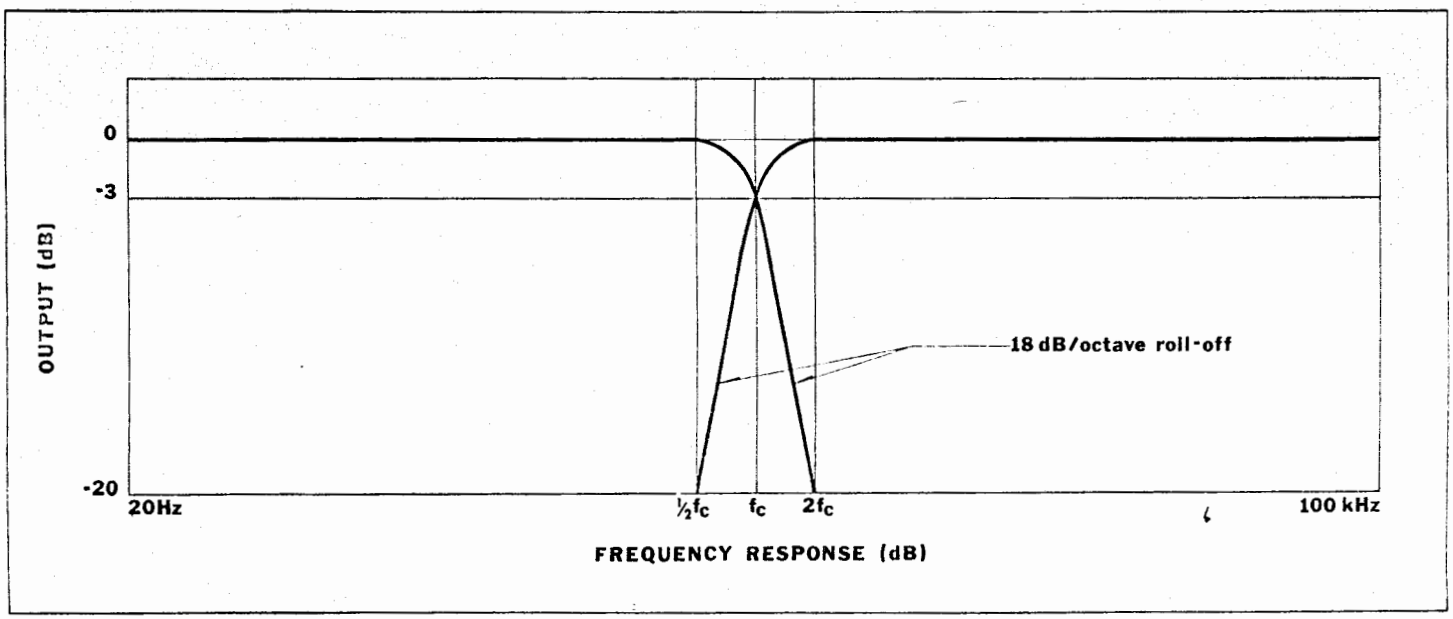
A three-way filter Model 505-f_1/f_2, where f_1 and f_2 designate frequencies desired, is also available as a custom option.

ARCHITECTS' AND ENGINEERS' SPECIFICATIONS

The electronic filter shall be a solid state device manufactured in modular (plug-in) printed circuit card form, 2½ X 10" X ¾". Each module shall be configured to provide two separate inputs and a total of four individual output sections (two complete crossovers). The filter sections shall have OdB gain (no insertion loss) with a maximum output capability of +20dBV. The signal-to-noise ratio must be not less than 100dB below +4dBV output with +4dBV input, 20Hz to 20kHz, unweighted. The filter sections shall exhibit the following frequency response: Low Pass/Crossover Sections shall be within ±.2dB from 20Hz to ½f_c, -3dB, at f_c with 18dB/octave roll-off above f_c; High Pass/Crossover Sections shall be within ±.2dB from 2 f_c to 100,000Hz, -3dB at f_c with 18dB/octave roll-off below f_c. Each filter section shall have less than 10 ohms output impedance and be capable of being loaded by 5K ohms or greater. Power requirement shall be 50 VDC (±25 VDC). The electronic filter shall be SPECTRA SONICS Model 505.

SPECIFICATIONS

CONFIGURATION	Each module provides two separate inputs and a total of four individual output sections (two complete crossovers)
GAIN	OdB ±.5dB, each section
MAXIMUM OUTPUT	+20dBV minimum, 5K ohms load each section, OdBV =.775V RMS
SIGNAL-TO-NOISE RATIO	Better than 100dB below +4dBV output, 20Hz to 20kHz, unweighted, OdBV - .775V RMS
CROSSOVER FREQUENCIES	f_c, available in standard studio monitor values
HARMONIC DISTORTION	Unmeasurable - less than 1/100th of 1%, 20Hz to 20kHz
FREQUENCY RESPONSE	
LOW PASS/CROSSOVER SECTIONS	Within ±.2dB from 20Hz to ½ f_c (1 octave below f_c), -3dB at f_c with 18dB/octave roll-off above f_c
HIGH PASS/CROSSOVER SECTIONS	Within ±.2dB from 2 f_c (1 octave above f_c) to 100,000Hz, -3dB at f_c with 18dB/octave roll-off below f_c
f_c TOLERANCE	±8% @ -3dB
INPUT IMPEDANCE	Approximately 60,000 ohms
OUTPUT IMPEDANCE	Less than 10 ohms, each section
OUTPUT LOADING	5K ohms or greater, each section
POWER REQUIREMENT	±25 VDC at approximately 80mA or less (±22 VDC minimum, ±30 VDC maximum; .5V RMS, maximum ripple)
OPERATING TEMPERATURES	32° F (0° C) - 140° F (78° C)
PHYSICAL CHARACTERISTICS	Solid state device in modular (plug-in) printed circuit card form (2½" X 10" X ¾"). Net weight 5 ounces



SPECTRA SONICS

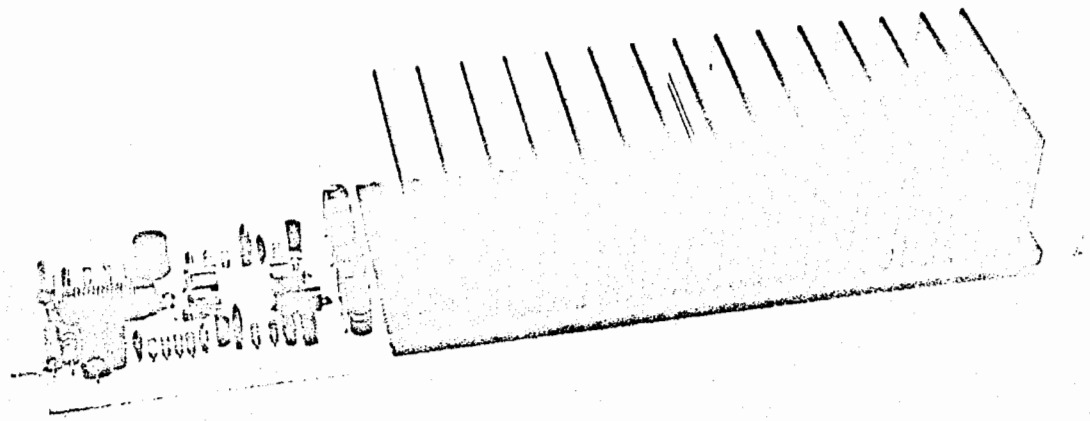
LEADER IN ADVANCED TECHNOLOGY

Ogden, Utah

Hollywood, California

SPECTRA SONICS

LEADER IN ADVANCED TECHNOLOGY



GENERAL DESCRIPTION

The Model 701 Power Amplifier was developed by SPECTRA SONICS to provide the professional audio industry with an unequaled degree of performance and reliability. The Model 701 is contained on a compact printed circuit card, and may be "plugged in" to a system to deliver 80 watts continuous power to a load. The Model 701 is so designed that two amplifiers may be bridged together to produce 160 watts of power. This unique design feature enhances the flexibility of the amplifier and expands its potential to meet a variety of system requirements. The multiple use of the Model 701 throughout a system improves the maintainability of a system and reduces the logistical load.

The Model 701 may be used interchangeably with the Model 700, and is the result of a continuing research effort to further improve the performance, reliability and durability of SPECTRA SONICS professional audio products.

ARCHITECTS' AND ENGINEERS' SPECIFICATIONS

The power amplifier shall be a solid state, modular unit, and shall produce 80 watts to a load. The amplifier shall be designed so that two units may be bridged together to produce 160 watts. Frequency response shall be ±0.4dB, maximum output into 2 ohms, DC to 20KHz. Total harmonic distortion shall be .025%, (±.01%) at the maximum output at any load and intermodulation distortion, 60Hz and 7KHz, mixed 4:1 shall be at least .075% (±.075%) any load at maximum output. The amplifier shall have a nominal input sensitivity of +5dBv (1.38 VRMS), (±1dBv), at maximum output with a gain of +21.4dB (±0.15dB). It shall provide a signal-to-noise ratio of 122dB (±1dB) below 80 watts at 2 ohms with +5dB input. The maximum direct current output shall be ±10 amperes, current limited and fused for short circuit protection. Overload recovery time shall be less than 1 microsecond (±.5 microsecond) for up to 1000% overload and the slew rate shall be 10 volts per microsecond (±1 volt per microsecond). The amplifier shall accept a source impedance from zero ohm to infinity and shall have an input impedance of 10K ohms (±5%), an output impedance of 0.008 ohm (±0.0006 ohm) at 100Hz or less and a damping factor of 1000 (±75) at 100Hz, or less, with a load of 8 ohms. The amplifier shall accept an output loading of 2 ohms or more; phase shift DC to 20 KHz shall be 10^{o} within $\pm 3^{o}$. The ripple rejection, at maximum power, and at power supply ripple frequencies, for a full wave, capacitance bridge shall be 70dB (±5dB). The amplifier shall operate with a bi-polar power supply of 10VDC, minimum. to 30VDC, maximum; quiescent current +70mA (±10mA) and -75mA (±10mA; current rating for 80 watts at 2 ohms load are: +2.95A (±50mA) and -2.9A (±50mA); 50 watts at 4 ohms load are: +1.70A (±50mA) and -1.65A (±50mA).

The power amplifier shall be unconditionally DC temperature stable (stability = 1) and shall operate at 110^{o}C (230^{o}F) with 8 ohms load and 75^{o}C (167^{o}F) with 4 ohms, forced air cooling shall be recommended for loads of 2 ohms. The power amplifier shall measure 6.35cm (2.5") x 25.40cm (10") x 4.76cm (1.875"), 0.4Kg (.88 pounds). It shall be the SPECTRA SONICS Model 701 Power Amplifier.

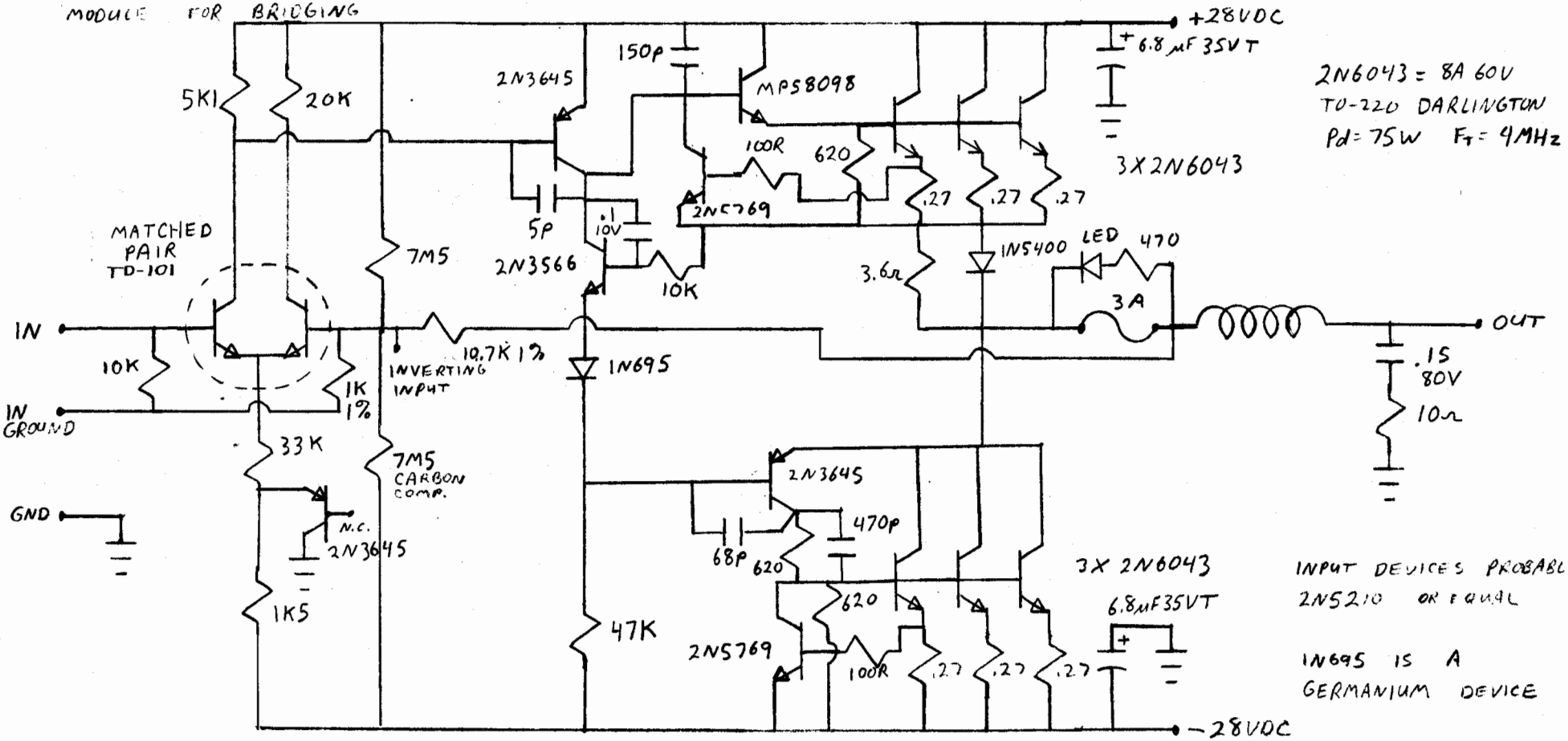
MAY 1978

SPECTRASONICS 701 POWER MODULE D. FRASER SEPT 7, 1980

CONNECT INVERTING INPUT VIA A 10.7K 1% RESISTOR TO THE OUTPUT OF A SECOND MODULE FOR BRIDGING

Av= 11.7 - AN INPUT OF ABOUT 5dbm IS REQUIRED TO ACHIEVE FULL OUTPUT

NOTE- IT IS NORMAL FOR THE NEGATIVE HALF OF THE WAVEFORM TO CLIP BEFORE THE POSITIVE



INPUT DEVICES PROBABLY 2N5210 OR EQUAL

IN695 IS A GERMANIUM DEVICE

ALL CAPACITORS ARE SILVER MICA EXCEPT THE 2 TANTALUM SUPPLY BYPASS UNITS AND THE .1 DISC AND .15 TUBULAR

ALL RESISTORS 1/4W 5% EXCEPT 2 1% TYPES AND ALL .27Ω ARE 2W 10% BWH TYPE - BLUE 5TH BAND 1 IS CARBON COMP. ALL OTHER 1/4W ARE CARBON FILM

LED APPEARS TO BE TEXAS TIL-209

COIL IS 12½ TURNS ON ¼" Ø FORMER .885" LONG TIGHTLY WOUND. WIRE Ø ≈ .045"

D. Fraser Sept. 7/80