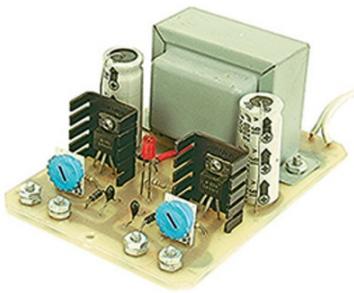


## 20626 (JE215) Adjustable Dual Power Supply Kit



### General Description:

The 20626 is a dual power supply with independent adjustable positive and negative output voltages. A separate adjustment for each of the supplies provides the user unlimited applications for IC circuit voltage requirements. The supply can also be used as a general all purpose variable power supply.

- Adjustable regulated power supplies positive and negative 1.2VDC to 15VDC
- Power output (each supply): 5VDC @ 500mA, 10VDC @ 750mA, 12VDC @ 500mA, and 15VDC @ 750mA
- Two 3-terminal adjustable regulators with thermal overload protection
- Heat sink regulator cooling

ITEM	QTY.	PART NO.	DESCRIPTION
IC1	1	23579	Regulator, Adj. Pos., LM317T
IC2	1	23819	Regulator, Adj. Neg., LM337T
C1, C2	2	609705	Capacitor, Electrolytic, 2200uF 35V
C3, C4	2	33662	Capacitor, Tantalum, 1uF 35V
CR1, CR4	4	35975	Diode, 1N4001
LED1	1	94511	Red T1 ¼ LED, Diffused Lens
R1	1	690865	¼ Watt, 1k ohm (brown-black-red)
R2, R5	2	690689	¼ Watt, 180 ohms (brown-gray-brown)
R3, R4	2	35503	¼ Watt Potentiometer, 2.5k ohms
P1	1	42042	6 foot power cord, AWG 18/2
T1	1	29226	Power Transformer, 12.6VCT @ 2A
	2	42622	Heatsink, THM6030 or Equivalent
	1	20642	Printed Circuit Board, JE215-1
	2	40970	Screw, PH 4-40 x 3/8"
	6	42446	Screw, PH 6-32 x 3/8"
	2	42463	Washer, split lock, #6
	2	40943	Hex Nut, 4-40
	10	42420	Hex Nut, 6-32
	4	32011	Rubber bumper feet SJ5012 or equivalent
		20634	Kit instructions for JE215

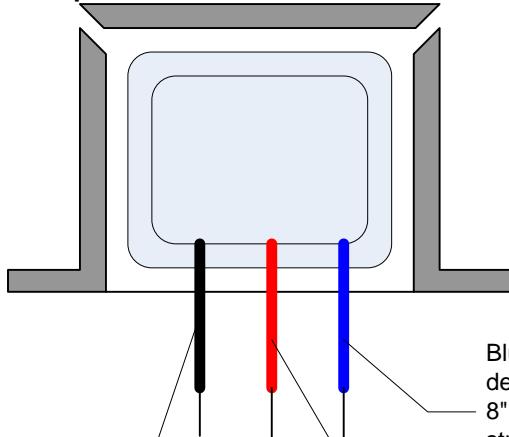
### Assembly Preparation and Procedures

1. Important: Identify all parts on parts list before proceeding.
2. Suggestions: simulate board assembly by placing the components in their actual place on the picture assembly (see figure 1 or figure 3), then transfer components to the actual board during assembly.
3. Tools required: small soldering iron (27 watt to 35 watt), resin core solder (0.3" diameter, SN60 or SN63). Do not use acid core type or 50/50 solder), small sponge (water dampened) for cleaning solder tip, small wire cutter and stripper, small long nose pliers, screw driver, plastic electrical tape, multimeter that can read resistance, capacitance, and voltage (preferably digital)

## Component wire stripping, bending, and lead spreading

### T1 (Power Transformer)

OUTPUT SIDE (12.6VCT @ 2A) with RED wire as center tap.  
Opposite side of transformer are two yellow wires (input side)  
for 115VAC input.



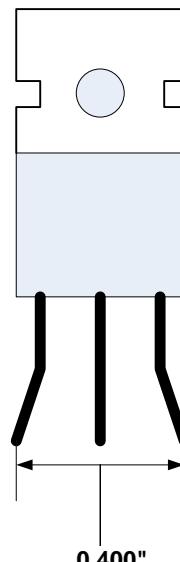
Black wire  
default length  
8" with 0.4"  
stripped and  
tinned end

Recommend to cut wires on power  
transformer to 3.5" in length, strip 1/8" twist  
bare wires and tin (note: do not cut the  
wires while stripping)

Blue wire  
default length  
8" with 0.4"  
stripped and  
tinned end

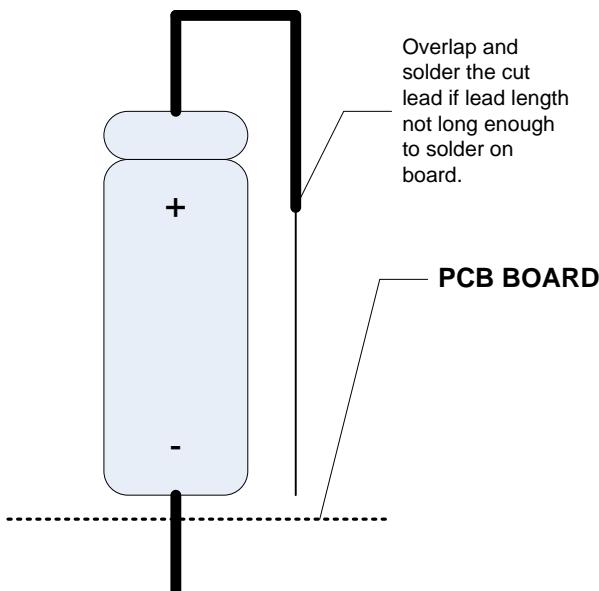
Red wire  
(center tap)  
default length  
8" with 0.4"  
stripped and  
tinned end

### IC1 and IC2 Adjustable Voltage Regulator



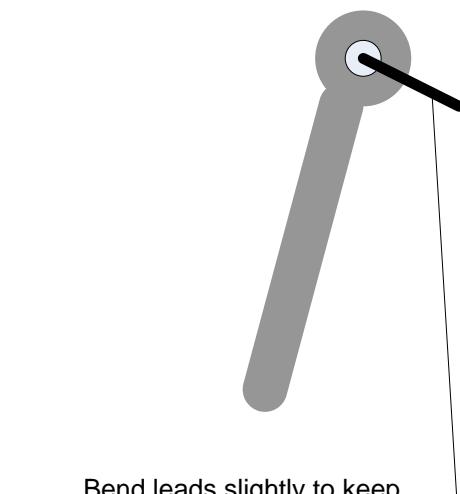
Recommended lead spread for  
voltage regulator. For  
datasheets of part number  
23579 (LM317T) and 23819  
(LM337T) please proceed to our  
website at [www.jameco.com](http://www.jameco.com)

### C1 and C2 Electrolytic Capacitor



Note: extension lead not required if lead of  
one end of capacitor is long enough to  
solder on the board.

### Component lead bending and clipping



Bend leads slightly to keep  
components on the board before  
soldering. Solder leads and clip  
excess material.

### ***Soldering Tips:***

1. Feed the solder to the crack between the iron tip and the solder pad next to the component lead.
2. Leaving the iron tip too long on a pad will cause the pad to lift, as well as damage the component. Allow approximately 2 seconds per solder joint.
3. Using too much solder can cause the solder to bridge across traces and pads.
4. Keep iron tip clean by wiping the tip across a water dampened sponge – frequently.

### ***Assembly Instructions:***

#### **READ ALL THE INSTRUCTIONS BEFORE STARTING**

1. Printed wiring board assembly. See assembly figure 1, figure 2, and figure 3.
  - 1.1 Start the board assembly by placing the printed circuit board to the position shown on the assembly picture (see figure 1 (component side), figure 2 (solder side)).
  - 1.2 Insert diodes CR1 thru CR4 as shown. The polarity band on each of the diodes must be placed as shown on the assembly (see figure 1 (component side) and figure 2 (solder side)). Mount all diodes 1/8" above the board. Solder and clip leads.
  - 1.3 Insert resistors R1, R2, and R5 (see figure 1). Be sure that the color coded values are properly placed. Solder and clip leads.
  - 1.4 Insert capacitors C3 and C4. Be sure that the positive (+) polarity lead on each of the capacitors is placed correctly on the printed circuit board. Solder and clip leads.
  - 1.5 Install transformer T1 by first inserting the leads into the board before securing it down with the hardware. The CT (center tap) lead is different in color in this group of 3 wires and must go into the hole marked "CT" (see figure 1).
  - 1.6 Insert regulators IC1 and IC2 (see figure 1). Push leads about 1/8" into the board. Do not solder yet. Be sure the correct regulator (IC) is places into the correct position.
  - 1.7 Install the heat sinks behind the IC's as shown. Push the heat sink into the holes. Allow 1/8" of air space between the bottom of the heat sink and top of the board. Secure IC's to heatsink using #4 screws (hardware). Solder IC leads and clip excess leads as required.
  - 1.8 Insert capacitors C1 and C2. Be sure that the polarity leads are properly placed in the correct nodes. Push the capacitors against the board and bend each leads 90 degrees into the solder trace. Solder about 1/8" to 1/4" of the leads to the solder pad (solder side of the board) and clip excess leads.
  - 1.9 Insert light emitting diode (LED1). Note the (-) polarity lead which is the flat side of the LED placement. Adjust the LED by leaving approximately 3/4" of leads above the board. Solder and clip excess leads.
  - 1.10 Insert adjustable resistors R3 and R4. All leads must be straightened before installing. Mount resistor body flush to the board (component side). Solder and clip excess leads.

### ***Assembly Instructions (continued):***

1.11 Install jumper wire as show on figure 1 and figure 2 (option for a switch). Use clipped component lead wire. Solder and clip excess leads.

1.12 Strip power cord P1 insulation back about  $\frac{1}{4}$ ". Twist wire leads and insert into location as shown (see figure 1 and figure 2). Bend twisted wire leads of power cord flush against the solder pads and solder. As a safety precaution against electrical shocks, place two layers of  $\frac{3}{4}$ " wide plastic electrical tape over the 120VAC input traces. A cable clamp may be used, secured by the transformer to relieve the strain on the power cord leads.

1.13 Insert 4 no. 6 screws from the bottom of the board for the output terminals as shown (see figure x). Tighten the first nut (4) on top of the board. Hand tighten the second nut (4) over the first.

1.14 Place bumper feet (4) to the bottom of the board.

1.15 Cut power supply indent. Labels from instruction sheet, glue, or tape the board.

### **2. Final Assembly**

Do not attempt to plug in the power cord until a final check has been made to verify the correctness of all assembled components. Components IC1 and IC2 will be permanently damaged if their placement is accidentally swapped and diodes CR1 and CR2 will blow if their polarity placement is reversed. Place a check (4) in each of the circles on the assembly picture as you go over each component.

### ***Power Supply Voltage Adjustment:***

1. The Kit 20636 (JE215) power supply voltage can be varied by turning adjustable resistors R3 for positive power supply and R4 for negative supply (see figure 1 for location of R3 and R4). Use DC voltage meter for correct voltage setting.

2. For dual adjustable positive (or dual negative outputs, reverse the leads on one of the supplies. However, when used in this manner, each of the load must be in separate use, i.e. not electrically connected together.

### **Safety Notes:**

1. Never use the power supply on metal surfaces.
2. Allow adequate air ventilation to cool.
3. Unplug power cord when not in use.

## **Trouble Shooting Tips:**

1. No voltage outputs across terminals –
  - 1.1 A) check power cord for correct wiring and 115VAC on printed board pads. B) check for 12.6VCT on secondary leads of transformer T1. C) check for improper placement of C1 and C2 (polarity) – should have approximately 18.5VDC when measure across each capacitors. D) check for polarity on diodes CR1 to CR4, diodes will blow if polarity bands are placed backwards.
2. Everything functions except for LED1 which does not light up –
  - 2.1 reverse lead mounting – led anode and cathode side could be backwards.
3. Output voltage problems –
  - 3.1 regulators IC1 and IC2 are reversed. Possible permanent damage. If unsure of pin configuration please proceed to our website for datasheet on IC1 and IC2 regulator (refer to figure 1 for proper placement on IC1 and IC2 on PCB board).
  - 3.2 A) output voltage stays high – open connections in R3 and R4 terminals, check for soldering joints. B) output voltage stays low and does not change – shorted R3 and R4 terminals, check for solder bridging.
  - 3.3 Output varies and is difficult to adjust – check for placement reversal of C3 and C4, and R3 CR3 and CR4.
4. Output voltage drops under load –
  - 4.1 check capacitors C1 and C2 for proper value and correct polarity.

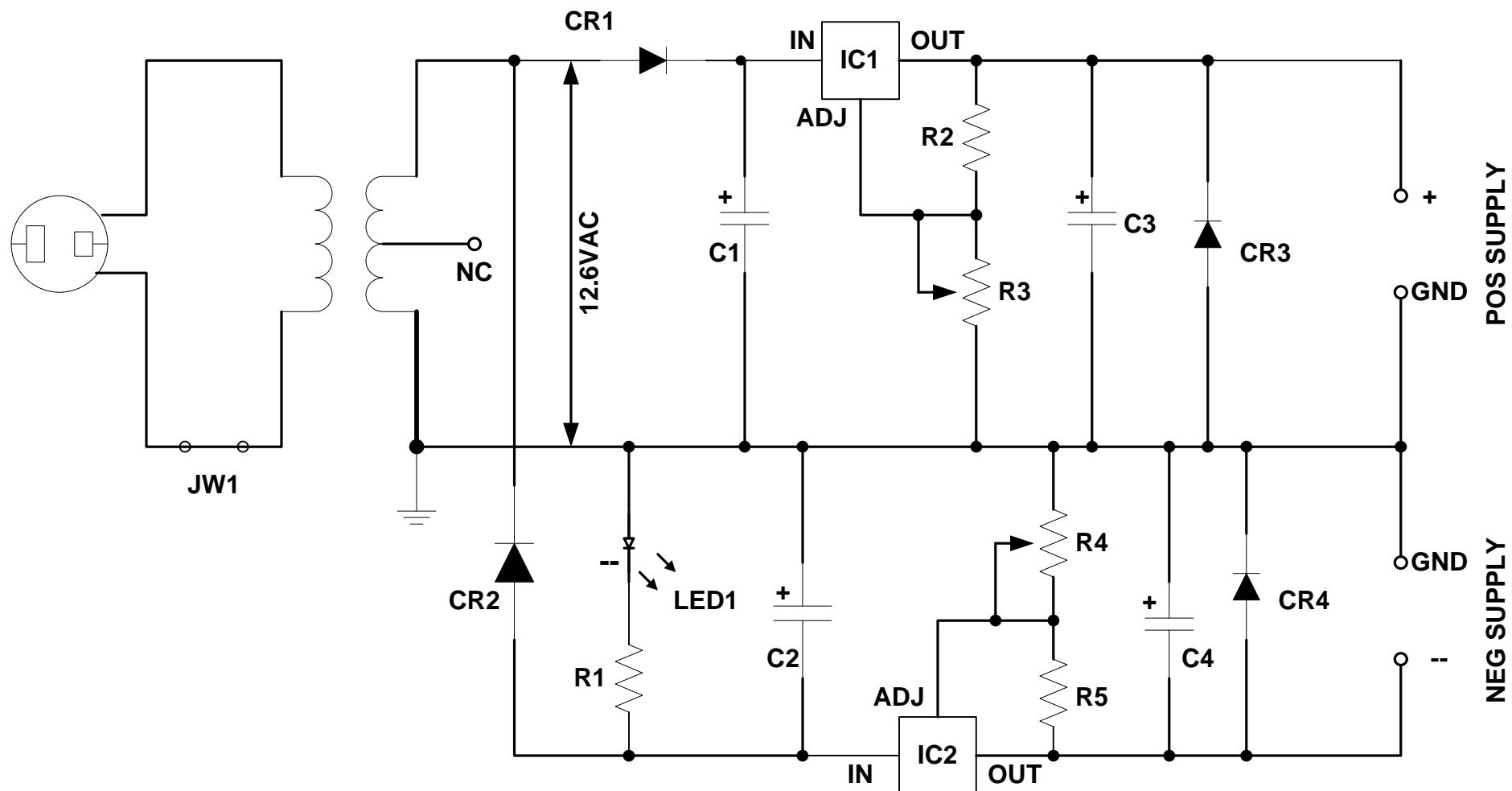
## **20626 (JE215) Adjustable Power Supply Kit**

**Important disclaimer:** to the fullest extent permitted by applicable law, Jameco expressly disclaims the implied warranty to fitness for a particular purpose. Customer should understand that Jameco does not make any representation that products purchase will suit customer's particular purpose. Customer must rely on own customer's skill or judgement in selecting suitable products for customer. To the extent any implied warranty is applicable, such warranty shall be limited to 90 days from date of purchase.

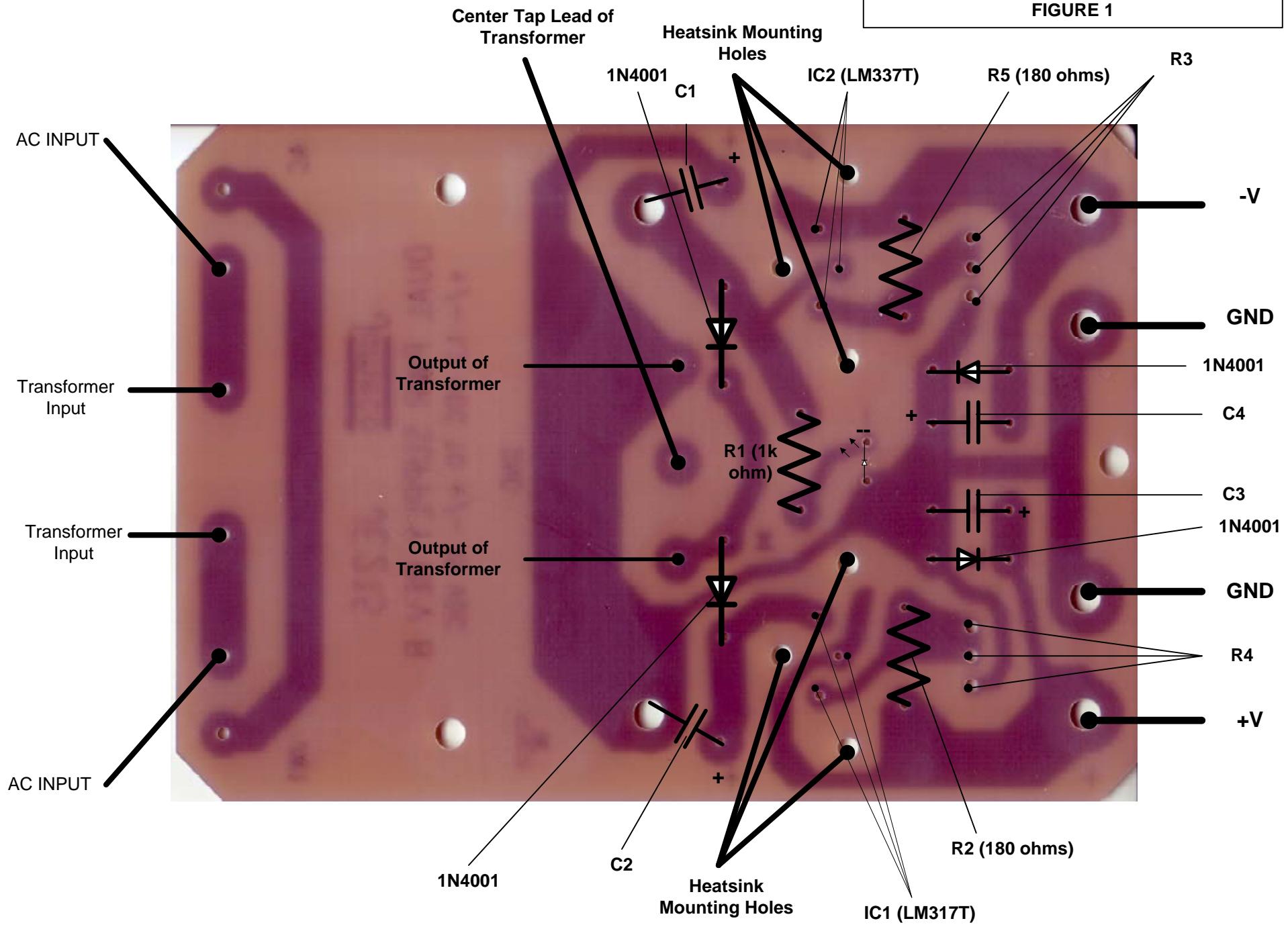
**Limitation of liability:** Jameco's liability shall be limited to the repair or replacement of defective products in accordance with the Jameco limited warranty. Jameco shall not be liable for any incidental, special or consequential damages for breach of any warranty, expressed or implied, directly or indirectly arising out of Jameco's sale of merchandise, including any failure to deliver any merchandise, or arising out of customer's installation or use, whether proper or improper, of the product, separately or in combination with other equipment, or from any other cause.

**Warranty:** Jameco warrants the equipment to be free from defects for a period of 90 days from date of purchase. If found to be defective, these products will be replaced with a new unit, not repaired. No units will be accepted past the 90 day warranty for repair or replacement. There is no charge for any replacement. Equipment or parts which have been subject to misuse, accident, alteration, neglect and/or unauthorized repair are not covered by the warranty. Seller shall have the right to final determination as to existence and cause of defect.

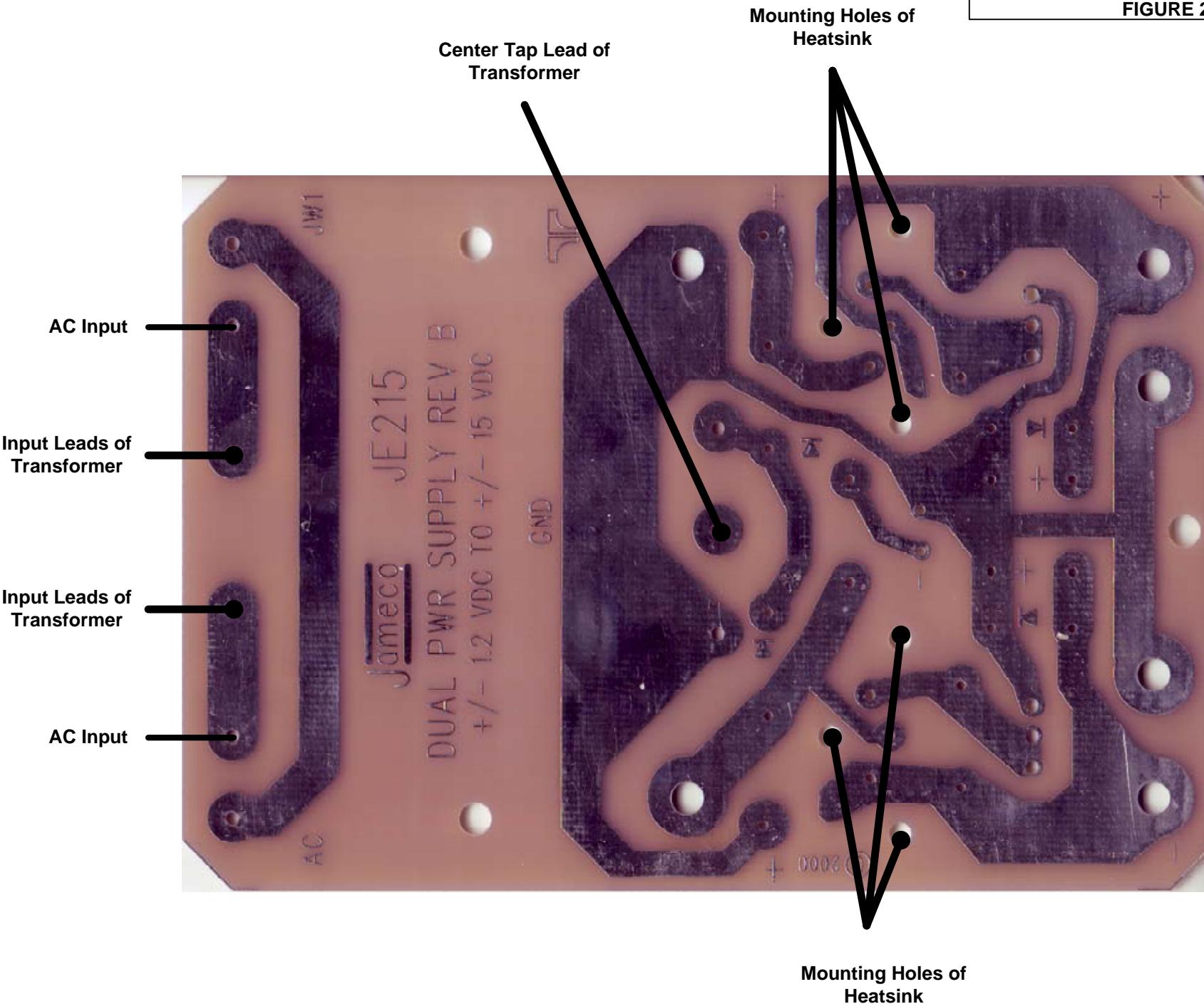
JE215 POWER SUPPLY  
SCHEMATIC DIAGRAM



PRINTED CIRCUIT BOARD COMPONENT SIDE  
FIGURE 1



PRINTED CIRCUIT BOARD SOLDER SIDE  
FIGURE 2



**Note: C1 and C2 are  
2200uF @ 35V**

## **COMPONENT LAYOUT (COMPONENT SIDE OF PRINTED CIRCUIT BOARD)**

## FIGURE 3

