

AM TUBE TRANSMITTER

SKU PCB-0002

PCB COMPONENT LIST

Part	Value	Description	Suggested Part Number
J1	NA	3.5mm mono audio connector	Digikey CP-3536NG-ND
J2	NA	DC barrel power connector	Digikey CP-037A-ND
R1	220K	1/2 watt resistor	
R2	100K	1/2 watt resistor	
R3	22K	1/2 watt resistor	
R4	4.7K	1/2 watt resistor	
R5	3.3M	1/2 watt resistor	
R6	Wire	Wire	
R7	50K	Potentiometer (5mm pitch pins)	Digikey 987-1305-ND
R8	10K	1/2 watt resistor	
R10	27K	1/4 watt resistor	
R11	10K	1/4 watt resistor	
R12	220K	1/4 watt resistor	
R13	1K	1/4 watt resistor	
R14	470	1/2 watt resistor	
C1	0.1uF	50V film capacitor, 5mm spacing	Digikey 399-5863-ND
C2	680pF	50V ceramic disc capacitor, 5mm spacing	Digikey 1293PH-ND
C3	NA	Do not populate	
C4	4.7uF	250V electrolytic capacitor, 5mm spacing	Digikey 493-5402-1-ND
C5	Variable	50-200pF 175V trimmer capacitor, 0.65-0.85" spacing Do not populate C17 if using this trimmer (optional to optimize transmitter modulation)	Sprague Goodman GM30500, GM30600, or similar. Arco 425.
C6	0.05uF	200V film capacitor, 5mm spacing	Digikey 495-1190-ND
C7	0.1uF	50V film capacitor, 5mm spacing	Digikey 399-5863-ND
C8	680pF	50V ceramic disc capacitor, 5mm spacing	Digikey 1293PH-ND
C9	0.1uF	250V film capacitor, 5mm spacing	Digikey ECQ-E2104KB
C10	680pF	50V ceramic disc capacitor, 5mm spacing	Digikey 1293PH-ND
C11	4.7uF	250V electrolytic capacitor, 5mm spacing	Digikey 493-5402-1-ND
C13	0.1uF	250V film capacitor, 5mm spacing	Digikey ECQ-E2104KB
C14	0.1uF	250V film capacitor, 5mm spacing	Digikey ECQ-E2104KB
C15	0.001uF	50V ceramic disc capacitor, 5mm spacing	Digikey BC2659CT-ND
C16	100uF	16V electrolytic capacitor, 2.5mm spacing	Digikey 338-1692-ND
C17	100pF	250V ceramic disc capacitor, 5mm spacing	Digikey 445-173557-1-ND
L1	100uH	1.7A ferrite inductor	Digikey AIUR-08-101K-ND
L2	100uH	1.7A ferrite inductor	Digikey AIUR-08-101K-ND
D1	UF4004	At least 250V 0.2A fast rectifier with < 50ns reverse recovery similar to BAV21	Digikey 1655-1691-1-ND
D2	IN4733	5.1V 1W zener	Digikey 568-1362-1-ND
D3	LED	5mm T-1 3/4 LED (NOTE)	Red: Digikey 754-1264-ND

PCB COMPONENT LIST (CONTINUED)

Part	Value	Description	Suggested Part Number
Q1	Oscillator	5V oscillator 14-DIP (NOTE)	1MHz: Digikey CTX775-ND Socket: Digikey ED3045-5-ND
Q2	IRF640	N-Channel 200V Power MOSFET	Digikey IRF640PBF-ND
Q3	2N3904	General purpose NPN	Digikey 2N3904FS-ND
Q4	NE555	555 timer IC	IC: Digikey 296-1411-5-ND Socket: AE9986-ND
V1	6SQ7	High-mu triode (audio preamp) 8-pin octal tube base	Tube: Any tube supplier Socket: Tube Depot SK-8PINPC
V2	6888	Dual-control pentode (modulator) 8-pin octal tube base	Tube: Any tube supplier Socket: Tube Depot SK-8PINPC

EXTERNAL COMPONENT LIST

Part	Description	Suggested Part Number
6V SUPPLY	6VDC \geq 2A power supply brick with 2.1mm ID 3.5mm OD 9.5mm positive center barrel connector	Digikey 102-3427-ND

NOTES

1. The PCB silkscreen for D3 (LED) incorrectly indicates the flat side (cathode) of the LED nearest the board edge. The LED should be reversed with the flat side (cathode) away from the board edge.
2. Oscillator package will have 3 rounded corners and 1 sharp corner. The sharp corner is pin 1 and is placed on the PCB at the pin that is surrounded by a rectangle.
3. **CAUTION:** Although the design receives only 6 VDC, the tube high voltage B+ rail will be between 140 to 190 VDC. The feedback loop from B+ to Q3 controls the switching power supply to keep the B+ below 200VDC. The feedback resistor network R12 and R13 may be adjusted to lower the B+ voltage if desired.

SCHEMATIC

