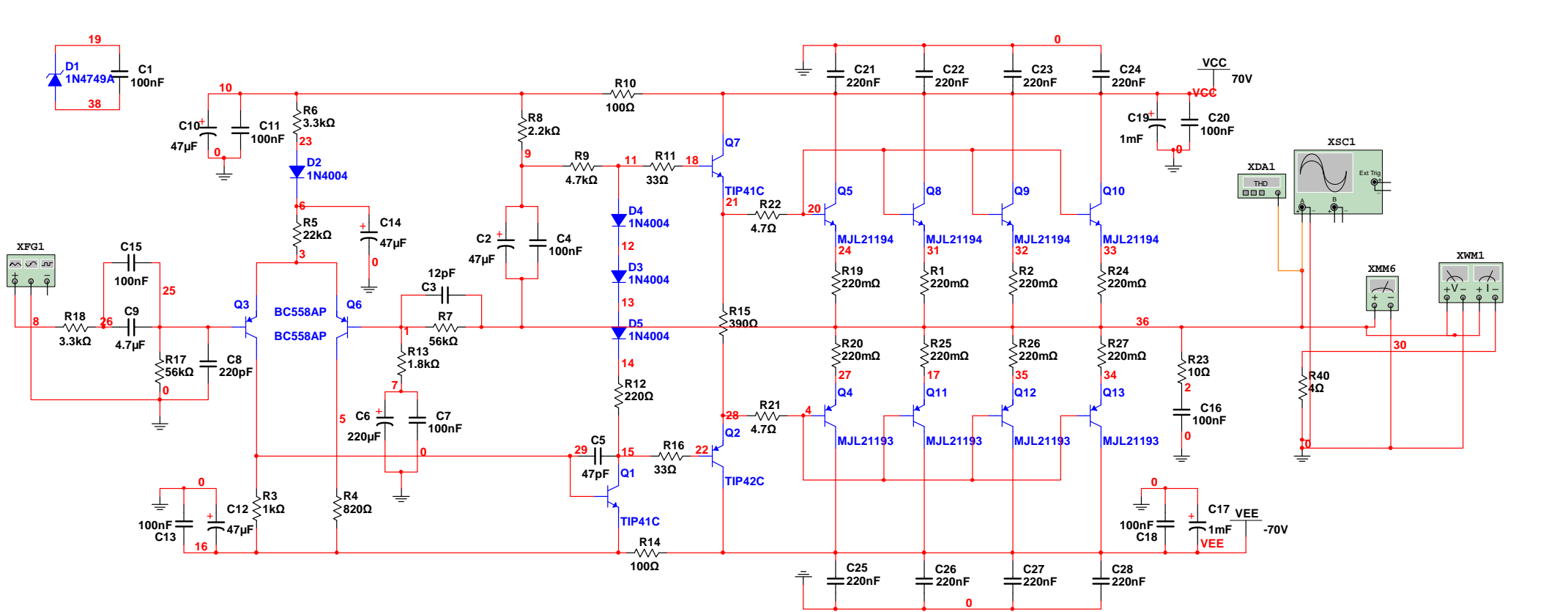


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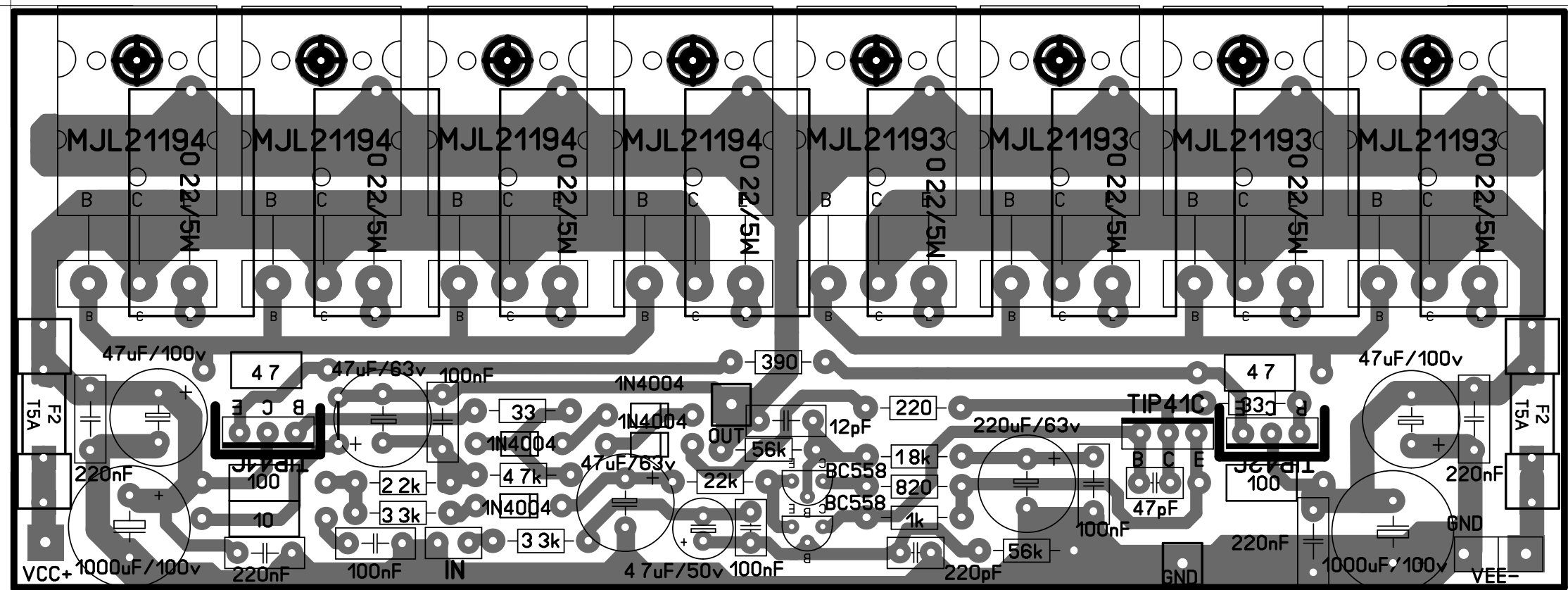
National Instruments  
801-111 Peter Street  
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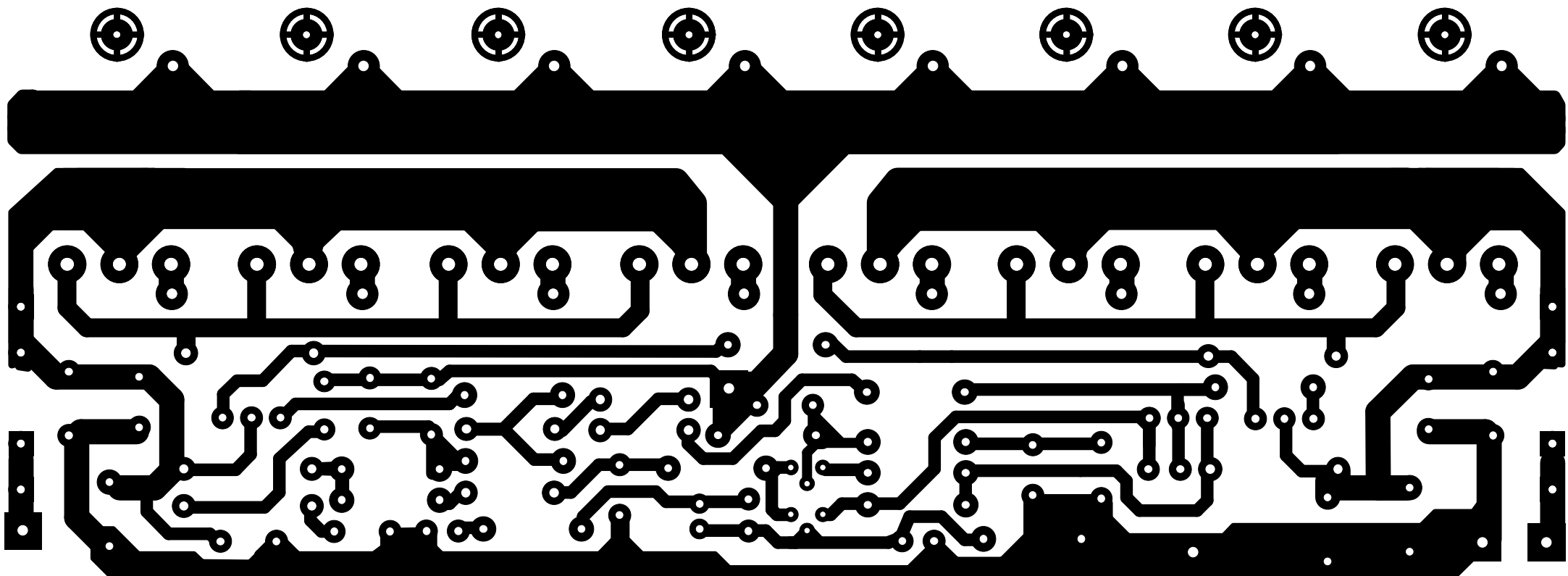


ELECTRONICS WORKBENCH GROUP

|                            |                  |                            |  |
|----------------------------|------------------|----------------------------|--|
| Title: DX Amplifier IE-400 |                  | Desc.: DX Amplifier IE-400 |  |
| Designed by:               | Document No: 01  | Revision: 2.0              |  |
| Checked by:                | Date: 2009-11-05 | Size: A3                   |  |
| Approved by:               | Sheet 1 of 1     |                            |  |

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17





| RefDes | Family   | Value    | Footprint | Coordinate X/Y | Q4  | BJT_PNP     | MJL21193 | TO-3PBL  | F10 |
|--------|----------|----------|-----------|----------------|-----|-------------|----------|----------|-----|
| R27    | RESISTOR | 220mΩ    |           | E13            | Q3  | BJT_PNP     | BC558AP  | TO-92    | E3  |
| R26    | RESISTOR | 220mΩ    |           | E12            | Q2  | BJT_PNP     | TIP42C   | TO-220AB | F8  |
| R25    | RESISTOR | 220mΩ    |           | E11            | Q1  | BJT_NPN     | TIP41C   | TO-220AB | G7  |
| R24    | RESISTOR | 220mΩ    |           | D13            | D5  | DIODE       | 1N4004   | DO-35    | E7  |
| R23    | RESISTOR | 10Ω      |           | E14            | D4  | DIODE       | 1N4004   | DO-35    | D7  |
| R22    | RESISTOR | 4.7Ω     |           | D9             | D3  | DIODE       | 1N4004   | DO-35    | D7  |
| R21    | RESISTOR | 4.7Ω     |           | F9             | D2  | DIODE       | 1N4004   | DO-35    | C3  |
| R20    | RESISTOR | 220mΩ    |           | E10            | C28 | CAPACITOR   | 220nF    |          | H13 |
| R19    | RESISTOR | 220mΩ    |           | D10            | C27 | CAPACITOR   | 220nF    |          | H12 |
| R18    | RESISTOR | 3.3kΩ    |           | E1             | C26 | CAPACITOR   | 220nF    |          | H11 |
| R17    | RESISTOR | 56kΩ     |           | E2             | C25 | CAPACITOR   | 220nF    |          | H10 |
| R16    | RESISTOR | 33Ω      |           | F8             | C24 | CAPACITOR   | 220nF    |          | B13 |
| R15    | RESISTOR | 390Ω     |           | E8             | C23 | CAPACITOR   | 220nF    |          | B12 |
| R14    | RESISTOR | 100Ω     |           | H8             | C22 | CAPACITOR   | 220nF    |          | B11 |
| R13    | RESISTOR | 1.8kΩ    |           | E5             | C21 | CAPACITOR   | 220nF    |          | B10 |
| R12    | RESISTOR | 220Ω     |           | F7             | C20 | CAPACITOR   | 100nF    |          | C14 |
| R11    | RESISTOR | 33Ω      |           | C8             | C19 | CAP_ELECTRC | 1mF      |          | C13 |
| R10    | RESISTOR | 100Ω     |           | B7             | C18 | CAPACITOR   | 100nF    |          | G14 |
| R9     | RESISTOR | 4.7kΩ    |           | C7             | C17 | CAP_ELECTRC | 1mF      |          | G14 |
| R8     | RESISTOR | 2.2kΩ    |           | C6             | C16 | CAPACITOR   | 100nF    |          | F14 |
| R7     | RESISTOR | 56kΩ     |           | E5             | C15 | CAPACITOR   | 100nF    |          | D2  |
| R6     | RESISTOR | 3.3kΩ    |           | C3             | C14 | CAP_ELECTRC | 47μF     |          | D4  |
| R5     | RESISTOR | 22kΩ     |           | D3             | C13 | CAPACITOR   | 100nF    |          | G2  |
| R4     | RESISTOR | 820Ω     |           | G4             | C12 | CAP_ELECTRC | 47μF     |          | G2  |
| R3     | RESISTOR | 1kΩ      |           | G3             | C11 | CAPACITOR   | 100nF    |          | C3  |
| R2     | RESISTOR | 220mΩ    |           | D12            | C10 | CAP_ELECTRC | 47μF     |          | C2  |
| R1     | RESISTOR | 220mΩ    |           | D11            | C9  | CAPACITOR   | 4.7μF    |          | E2  |
| Q13    | BJT_PNP  | MJL21193 | TO-3PBL   | F13            | C8  | CAPACITOR   | 220pF    |          | E2  |
| Q12    | BJT_PNP  | MJL21193 | TO-3PBL   | F12            | C7  | CAPACITOR   | 100nF    |          | F5  |
| Q11    | BJT_PNP  | MJL21193 | TO-3PBL   | F11            | C6  | CAP_ELECTRC | 220μF    |          | F4  |
| Q10    | BJT_NPN  | MJL21194 | TO-3PBL   | D13            | C5  | CAPACITOR   | 47pF     |          | F7  |
| Q9     | BJT_NPN  | MJL21194 | TO-3PBL   | D12            | C4  | CAPACITOR   | 100nF    |          | D6  |
| Q8     | BJT_NPN  | MJL21194 | TO-3PBL   | D11            | C3  | CAPACITOR   | 12pF     |          | E5  |
| Q7     | BJT_NPN  | TIP41C   | TO-220AB  | C8             | C2  | CAP_ELECTRC | 47μF     |          | D6  |
| Q6     | BJT_PNP  | BC558AP  | TO-92     | E4             |     |             |          |          |     |
| Q5     | BJT_NPN  | MJL21194 | TO-3PBL   | D10            |     |             |          |          |     |