

## NTE477 Silicon NPN Transistor RF Power Output

**Description:**

The NTE477 is a silicon NPN epitaxial planar type transistor designed for RF power amplifiers in VHF band mobile radio applications.

**Features:**

- High power gain:  $G_{pe} \geq 8.2\text{dB}$  @  $V_{CC} = 13.5\text{V}$ ;  $V_O = 40\text{W}$ ;  $f = 175\text{MHz}$
- Emitter ballasted construction and gold metallization for high reliability, and good performances
- Low thermal resistance ceramic package with flange
- Ability of withstanding more than 20:1 load VSWR when operated at  $V_{CC} = 15.2\text{V}$ ,  $P_O = 40\text{W}$ ,  $f = 175\text{MHz}$ ,  $T_C = 25^\circ\text{C}$

**Applications:**

30 to 35 watts output power amplifiers in VHF band mobile radio applications.

**Absolute Maximum Ratings:** ( $T_C = +25^\circ\text{C}$  unless otherwise specified)

|  |                                     |
|--|-------------------------------------|
| Collector–Base Voltage, $V_{CBO}$ .....                          | 35V                                 |
| Emitter–Base Voltage, $V_{EBO}$ .....                            | 4V                                  |
| Collector–Emitter Voltage ( $R_{BE} = \infty$ ), $V_{CEO}$ ..... | 17V                                 |
| Collector Current, $I_C$ .....                                   | 10A                                 |
| Collector Dissipation, $P_C$                                     |                                     |
| $T_A = +25^\circ\text{C}$ .....                                  | 4.5W                                |
| $T_C = +25^\circ\text{C}$ .....                                  | 75W                                 |
| Junction Temperature, $T_j$ .....                                | $+175^\circ\text{C}$                |
| Storage Temperature Range, $T_{stg}$ .....                       | $-55^\circ$ to $+175^\circ\text{C}$ |
| Thermal Resistance, Junction–to–Ambient, $R_{thJA}$ .....        | $33.3^\circ\text{C/W}$              |
| Thermal Resistance, Junction–to–Case, $R_{thJC}$ .....           | $2^\circ\text{C/W}$                 |

**Electrical Characteristics:** ( $T_C = +25^\circ\text{C}$  unless otherwise specified)

| Parameter                           | Symbol        | Test Conditions                         | Min | Typ | Max | Unit |
|-------------------------------------|---------------|---|-----|-----|-----|------|
| Emitter–Base Breakdown Voltage      | $V_{(BR)EBO}$ | $I_E = 10\text{mA}$ , $I_O = 0$         | 3   | –   | –   | V    |
| Collector–Base Breakdown Voltage    | $V_{(BR)CBO}$ | $I_O = 10\text{mA}$ , $I_E = 0$         | 35  | –   | –   | V    |
| Collector–Emitter Breakdown Voltage | $V_{(BR)CEO}$ | $I_O = 0.1\text{A}$ , $R_{BE} = \infty$ | 17  | –   | –   | V    |

**Electrical Characteristics (Cont'd):** ( $T_C = +25^\circ\text{C}$  unless otherwise specified)

| Parameter                | Symbol    | Test Conditions  | Min | Typ | Max | Unit |
|--------------------------|-----------|--|-----|-----|-----|------|
| Collector Cutoff Current | $I_{CBO}$ | $V_{OB} = 15\text{V}, I_E = 0$                                 | –   | –   | 2.5 | mA   |
| Emitter Cutoff Current   | $I_{EBO}$ | $V_{EB} = 3\text{V}, I_O = 0$                                  | –   | –   | 2   | mA   |
| DC Forward Current Gain  | $h_{FE}$  | $V_{CE} = 10\text{V}, I_C = 0.2\text{A}$                       | 10  | 60  | 180 | –    |
| Output Power             | $P_O$     | $V_{CC} = 13.5\text{V}, P_{in} = 6\text{W}, f = 175\text{MHz}$ | 40  | 45  | –   | W    |
|                          |           |  | 60  | 70  | –   | %    |

