

## NTE342

### Silicon NPN Transistor

### RF Power Output

### ( $P_O = 6W, 175MHz$ )

#### **Description:**

The NTE342 is a silicon NPN epitaxial planer type transistor designed for RF power amplifiers on VHF band mobile radio applications.

#### **Features:**

- High Power Gain:  $G_{pe} \geq 10dB$  ( $V_{CC} = 13.5V, P_O = 6W, f = 175MHz$ )
- Ability to Withstand more than 20:1 VSWR Load when Operated at:  
 $V_{CC} = 15.2V, P_O = 6W, f = 175MHz$

#### **Application:**

- 4 to 5 Watt Output Power Amplifiers Applications in VHF band

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

|                                                            |                |
|------------------------------------------------------------|----------------|
| Collector–Base Voltage, $V_{CBO}$                          | 35V            |
| Collector–Emitter Voltage ( $R_{BE} = \infty$ ), $V_{CEO}$ | 17V            |
| Emitter–Base Voltage, $V_{EBO}$                            | 4V             |
| Collector Current, $I_C$                                   | 2A             |
| Collector Dissipation, $P_C$                               |                |
| $T_A = +25^\circ C$                                        | 1.5W           |
| $T_C = +25^\circ C$                                        | 12.5W          |
| Operating Junction Temperature, $T_J$                      | +150°C         |
| Storage Temperature Range, $T_{stg}$                       | –55° to +150°C |
| Thermal Resistance, Junction–to–Ambient, $R_{thJA}$        | 83°C/W         |
| Thermal Resistance, Junction–to–Case, $R_{thJC}$           | 10°C/W         |

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

| Parameter                                 | Symbol        | Test Conditions                                                            | Min | Typ | Max | Unit          |
|-------------------------------------------|---------------|----------------------------------------------------------------------------|-----|-----|-----|---------------|
| Breakdown Voltage<br>Emitter to Base      | $V_{(BR)EBO}$ | $I_E = 5\text{mA}$ , $I_C = 0$                                             | 4   | —   | —   | V             |
| Breakdown Voltage<br>Collector to Base    | $V_{(BR)CBO}$ | $I_C = 10\text{mA}$ , $I_E = 0$                                            | 35  | —   | —   | V             |
| Breakdown Voltage<br>Collector to Emitter | $V_{(BR)CEO}$ | $I_C = 50\text{mA}$ , $R_{BE} = \infty$                                    | 17  | —   | —   | V             |
| Collector Cutoff Current                  | $I_{CBO}$     | $V_{CB} = 25\text{V}$ , $I_E = 0$                                          | —   | —   | 500 | $\mu\text{A}$ |
| Emitter Cutoff Current                    | $I_{EBO}$     | $V_{EB} = 3\text{V}$ , $I_C = 0$                                           | —   | —   | 500 | $\mu\text{A}$ |
| DC Forward Current Gain                   | $h_{FE}$      | $V_{CE} = 10\text{V}$ , $I_C = 100\text{mA}$ , Note 1                      | 10  | 50  | 180 | —             |
| Output Power                              | $P_O$         | $V_{CC} = 13.5\text{V}$ , $P_{in} = 600\text{mW}$ ,<br>$f = 175\text{MHz}$ | 6   | 7   | —   | W             |
| Collector Efficiency                      | $\eta_C$      |                                                                            | 60  | 70  | —   | %             |

Note 1. Pulse Test: Pulse Width =  $150\mu\text{s}$ , Duty Cycle = 5%.

