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## NTE335 & NTE336 Silicon NPN Transistor RF Power Output

### **Description:**

The NTE335 and NTE336 are silicon NPN RF power transistors designed for power amplifier applications in industrial, commercial and amateur radio equipment to 30MHz.

### **Features:**

- Specified 12.5V, 30MHz Characteristics:
  - Output Power = 80W
  - Minimum Gain = 12dB
  - Efficiency = 50%
- Available in Two Different Package Designs:
  - NTE335 (W52N, Flange Mount)
  - NTE336 (T93D, Stud Mount)

### **Absolute Maximum Ratings:**

Collector-Emitter Voltage,  $V_{CE0}$  ..... 25V  
Collector-Base Voltage,  $V_{CBO}$  ..... 45V  
Emitter-Base Voltage,  $V_{EBO}$  ..... 4V  
Continuous Collector Current,  $I_C$  ..... 20A  
Total Device Dissipation ( $T_C = +25^\circ\text{C}$ ),  $P_D$  ..... 250W  
Derate above  $25^\circ\text{C}$  ..... 1.43W/ $^\circ\text{C}$   
Storage Temperature Range,  $T_{stg}$  .....  $-65^\circ$  to  $+150^\circ\text{C}$   
Thermal Resistance, Junction-to-Case,  $R_{thJC}$  .....  $0.7^\circ\text{C/W}$

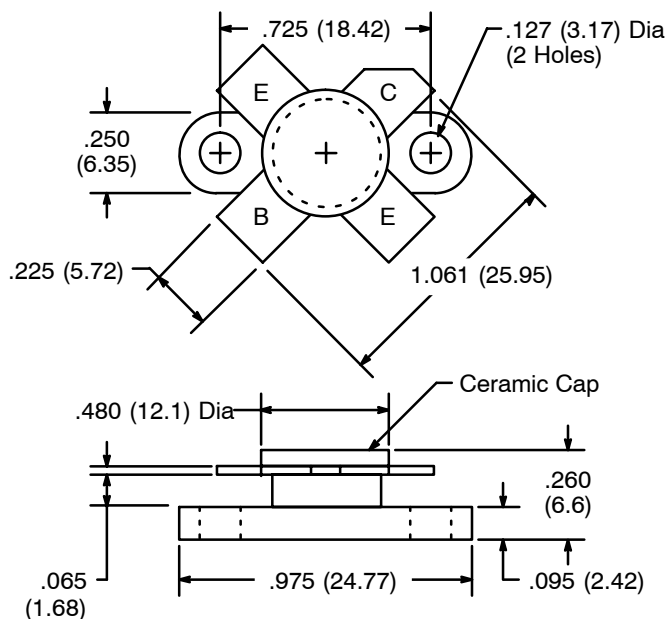
### **Electrical Characteristics:** ( $T_C = +25^\circ\text{C}$ unless otherwise specified)

| Parameter                           | Symbol        | Test Conditions                    | Min | Typ | Max | Unit |
|-------------------------------------|---------------|------------------------------------|-----|-----|-----|------|
| <b>OFF Characteristics</b>          |               |                                    |     |     |     |      |
| Collector-Emitter Breakdown Voltage | $V_{(BR)CEO}$ | $I_C = 100\text{mA}$ , $I_B = 0$   | 18  | –   | –   | V    |
|                                     | $V_{(BR)CES}$ | $I_C = 50\text{mA}$ , $V_{BE} = 0$ | 36  | –   | –   | V    |
| Emitter-Base Breakdown Voltage      | $V_{(BR)EBO}$ | $I_E = 10\text{mA}$ , $I_C = 0$    | 4   | –   | –   | V    |

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

| Parameter                            | Symbol    | Test Conditions                                             | Min | Typ                             | Max | Unit     |
|--------------------------------------|-----------|-------------------------------------------------------------|-----|---------------------------------|-----|----------|
| <b>ON Characteristics</b>            |           |                                                             |     |                                 |     |          |
| DC Current Gain                      | $h_{FE}$  | $I_C = 5A, V_{CE} = 5V$                                     | 10  | –                               | 150 |          |
| <b>Dynamic Characteristics</b>       |           |                                                             |     |                                 |     |          |
| Output Capacitance                   | $C_{ob}$  | $V_{CB} = 15V, I_E = 0,$<br>$f = 1\text{MHz}$               | –   | –                               | 250 | pF       |
| <b>Functional Tests</b>              |           |                                                             |     |                                 |     |          |
| Common-Emitter Amplifier Power Gain  | $G_{pe}$  | $V_{CC} = 12.5V,$<br>$P_{OUT} = 80W,$<br>$f = 30\text{MHz}$ | 12  | –                               | –   | dB       |
| Collector Efficiency                 | $\eta$    |                                                             | 50  | –                               | –   | %        |
| Series Equivalent Input Impedance    | $Z_{in}$  |                                                             | –   | $.938 - j.341$                  | –   | $\Omega$ |
| Series Equivalent Output Impedance   | $Z_{out}$ |                                                             | –   | $1.16 - j.201$                  | –   | $\Omega$ |
| Parallel Equivalent Input Impedance  | –         |                                                             | –   | $1.06\Omega$<br>$1817\text{pF}$ | –   |          |
| Parallel Equivalent Output Impedance | –         |                                                             | –   | $1.19\Omega$<br>$777\text{pF}$  | –   |          |

**NTE335**



**NTE336**

