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# NTE195A
# Silicon NPN Transistor
# RF Power Amp/Driver, CB

**Description:**

The NTE195A is designed primarily for use in large–signal output amplifier stages. Intended for use in Citizen–Band communications equipment operating to 30MHz. High breakdown voltages allow a high percentage of up–modulation in AM circuits.

**Features:**

- Specified 12.5V, 28MHz Characteristic:
  Power Output = 3.5W
  Power Gain = 10dB
  Efficiency = 70% Typical

**Absolute Maximum Ratings:**

Collector–Emitter Voltage, $V_{CER}$ . . . . . 70V
Collector–Base Voltage, $V_{CBO}$ . . . . . 70V
Emitter–Base Voltage, $V_{EBO}$ . . . . . 3.0V
Collector Current–Continuous, $I_C$ . . . . . 1.5A
Total Device Dissipation ($T_C$ = +25°C), $P_D$ . . . . . 8W
Derate above 25°C . . . . . 28.6mW/°C
Storage Temperature Range, $T_{stg}$ . . . . . –65° to +200°C

**Electrical Characteristics:** ($T_A$ = +25°C, unless otherwise specified)

| Parameter | Symbol | Test Conditions | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| **OFF Characteristics** | | | | | | |
| Collector–Emitter Breakdown Voltage | $V_{(BR)CES}$ | $I_C$ = 200mA, $V_{BE}$ = 0 | 70 | – | – | V |
| Emitter–Base Breakdown Voltage | $V_{(BR)EBO}$ | $I_E$ = 1mA, $I_C$ = 0 | 4 | – | – | V |
| Collector Cutoff Current | $I_{CBO}$ | $V_{CB}$ = 15V, $I_E$ = 0 | – | – | 0.01 | mA |
| **ON Characteristics** | | | | | | |
| DC Current Gain | $h_{FE}$ | $V_{CE}$ = 2V, $I_C$ = 400mA | 30 | – | – | – |
| **Dynamic Characteristics** | | | | | | |
| Capacitance | $C_{ob}$ | $V_{CB}$ = 12.5V, $I_E$ = 0, f = 1MHz | – | 35 | 70 | pF |

**Electrical Characteristics (Cont'd):** ($T_A$ = +25°C, unless otherwise specified)

| Parameter | Symbol | Test Conditions | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| **Functional Test** | | | | | | |
| Common Emitter Amplifier Power Gain | $G_{PE}$ | $P_{OUT}$ = 3.5W, $V_{CC}$ = 12.5V, f = 27MHz | 10 | – | – | dB |
| Collector Efficiency | $\eta$ | $P_{OUT}$ = 3.5W, $V_{CC}$ = 12.5V, f = 27MHz, Note 1 | 62.5 | 70.0 | – | % |
| Percent Up–Modulation | – | f = 27MHz, Note 2 | – | 85 | – | % |
| Parallel Equivalent Input Resistance | $R_{in}$ | $P_{OUT}$ = 3.5W, $V_{CC}$ = 12.5V, f = 27MHz | – | 21 | – | Ω |
| Parallel Equivalent Input Capacitance | $C_{in}$ | $P_{OUT}$ = 3.5W, $V_{CC}$ = 12.5V, f = 27MHz | – | 900 | – | pF |
| Parallel Equivalent Output Capaciatnce | $C_{out}$ | $P_{OUT}$ = 3.5W, $V_{CC}$ = 12.5V, f = 27MHz | – | 200 | – | pF |

Note 1. $\eta = R_F \dfrac{P_{OUT} \cdot 100}{(V_{CC})\,(I_C)}$

Note 2. Percentage Up–Modulation is measured by setting the Carrier Power ($P_C$) to 3.5 Watts with $V_{CC}$ = 12.5Vdc and noting the power input. The peak envelope power (PEP) is noted after doubling the original power input to simulate driver modulation (at a 25% duty cycle for thermal considerations) and raising the $V_{CC}$ to 25Vdc (to simulate the modulating voltage). Percentage Up–Modulation is then determined by the relation:

$$\text{Percentage Up–Modulation} = (\text{PEP})\ \frac{1/2_{-1} \cdot 100}{P_C}$$