New Jersey Semi-Conductor Products, Inc.

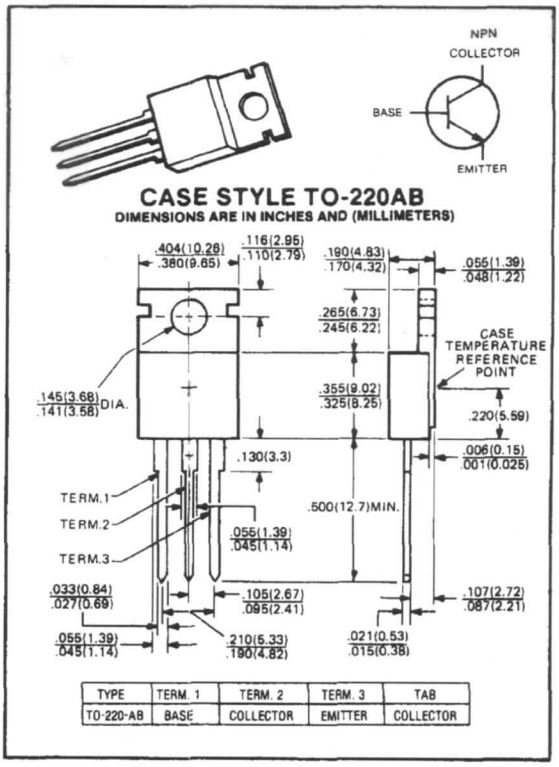
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# D44T Series

**250-300 VOLTS**
**2 AMP, 31.2 WATTS**

# HIGH VOLTAGE
# NPN POWER TRANSISTORS




**Features:**

- Very low collector saturation voltage
- Excellent linearity
- Fast switching

## maximum ratings ($T_A$ = 25°C) (unless otherwise specified)

| RATING | SYMBOL | D44T1,2 | D44T3,4 | UNITS |
|---|---|---|---|---|
| Collecto -Emitter Voltage | $V_{CEO}$ | 250 | 300 | Volts |
| Collector-Emitter Voltage | $V_{CES}$ | 300 | 400 | Volts |
| Emitter Base Voltage | $V_{EBO}$ | 5 | 5 | Volts |
| Collector Current — Continuous | $I_C$ | 2 | 2 | A |
| Base Current — Continuous | $I_B$ | 0.5 | 0.5 | A |
| Total Power Dissipation @ $T_A$ = 25°C<br>@ $T_C$ = 25C | $P_D$ | 2.1<br>31.2 | 2.1<br>31.2 | Watts |
| Operating and Storage Junction Temperature Range | $T_J$, $T_{STG}$ | -55 to +150 | -55 to +150 | °C |

## thermal characteristics

| | | | | |
|---|---|---|---|---|
| Thermal Resistance, Junction to Ambient | $R_{\theta JA}$ | 60 | 60 | °C/W |
| Thermal Resistance, Junction to Case | $R_{\theta JC}$ | 4 | 4 | °C/W |
| Maximum Lead Temperature for Soldering Purpose: ⅛" from Case for 5 Seconds | $T_L$ | 260 | 260 | °C |

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Quality Semi-Conductors

## electrical characteristics ($T_C$ = 25° C) (unless otherwise specified)

| CHARACTERISTIC | | SYMBOL | MIN | TYP | MAX | UNIT |
|---|---|---|---|---|---|---|
| **off characteristics**[1] | | | | | | |
| Collector-Emitter Breakdown Voltage ($I_C$ = 10 μA) | D44T1,2<br>D44T3,4 | $BV_{CES}$ | 300<br>400 | — | — | Volts |
| Collector Cutoff Current ($V_{CE}$ = Rated $V_{ECS}$) | | $I_{CES}$ | — | — | 10 | μA |
| Emitter Cutoff Current ($V_{EB}$ = 5V) | | $I_{EBO}$ | — | — | 10 | μA |
| **second breakdown** | | | | | | |
| Second Breakdown with Base Forward Biased | | FBSOA | SEE FIGURE 5 | | | |
| **on characteristics**[1] | | | | | | |
| DC Current Gain<br>($I_C$ = 500mA, $V_{CE}$ = 10V)<br>($I_C$ = 50mA, $V_{CE}$ = 10V)<br>($I_C$ = 500mA, $V_{CE}$ = 10V)<br>($I_C$ = 50mA, $V_{CE}$ = 10V) | D44T1,3<br><br>D44T2,4 | $h_{FE}$ | 30<br>40<br>75<br>40 | —<br>—<br>—<br>— | —<br>—<br>175<br>— | |
| Collector-Emitter Saturation Voltage ($I_C$ = 500mA, $I_B$ = 50mA) | | $V_{CE(sat)}$ | — | — | 1.0 | V |
| Base Emitter Saturation Voltage ($I_C$ = 500mA, $I_B$ = 50mA) | | $V_{BE(sat)}$ | — | — | 1.2 | V |
| **dynamic characteristics** | | | | | | |
| Collector Capacitance ($V_{CB}$ = 10V, f = 1 MHz) | | $C_{cb}$ | — | 25 | — | pF |
| Current Gain — Bandwidth Product ($I_C$ = 100mA, $V_{CE}$ = 10V, $f_{test}$ = 1.0 MHz)) | | $f_T$ | — | 45 | — | MHz |
| **switching characteristics** | | | | | | |
| Resistive Load<br>Delay Time + Rise Time | $I_C$ = 500mA, $I_{B1}$ = $I_{B2}$ = 50mA<br>$V_{CC}$ = 50V, $t_p$ = 25μsec | $t_d + t_r$ | — | 0.2 | — | μs |
| Storage Time | | $t_s$ | — | 3.3 | — | |
| Fall Time | | $t_f$ | — | 0.6 | — | |

(1) Pulse Test: Pulse Width - 300μs Duty Cycle ≤ 2%.

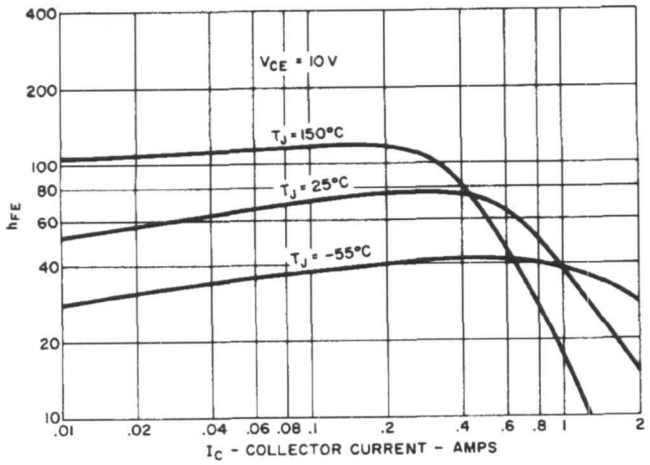



FIG. 1 TYPICAL $h_{FE}$ VS. $I_C$

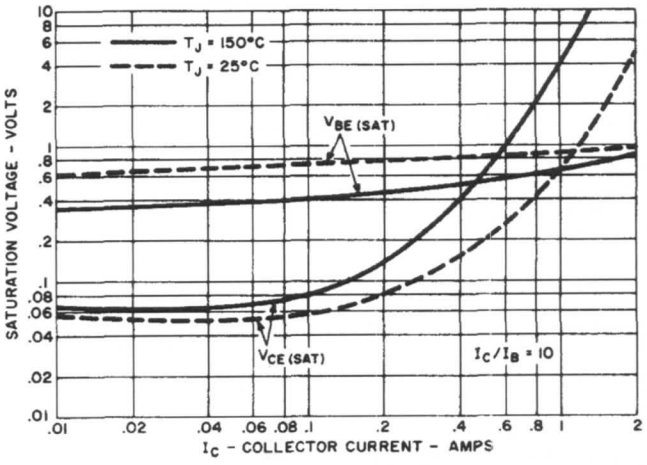



FIG. 2 TYPICAL SATURATION VOLTAGE CHARACTERISTICS