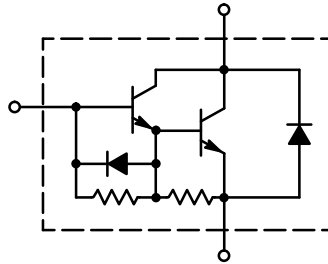


NPN Darlington Power Transistor

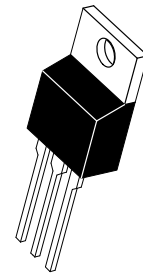
This Darlington transistor is a high voltage, high speed device for use in horizontal deflection circuits in TV's and CRT's.

- High Voltage: $V_{CEV} = 330$ or 400 V
- Fast Switching Speed:
 $t_C = 1.0 \mu s$ (max)
- Low Saturation Voltage:
 $V_{CE(sat)} = 1.5$ V (max)
- Packaged in JEDEC TO-220AB
- Damper Diode V_F is specified.
 $V_F = 2.0$ V (max)



BU806

**8.0 AMPERE
DARLINGTON
NPN POWER
TRANSISTORS
60 WATTS
200 VOLTS**



**CASE 221A-06
TO-220AB**

MAXIMUM RATINGS

| Rating | Symbol | BU806 | Unit |
|---|----------------|------------|------------------------|
| Collector-Emitter Voltage | V_{CEO} | 200 | Vdc |
| Collector-Emitter Voltage | V_{CEV} | 400 | Vdc |
| Collector-Base Voltage | V_{CBO} | 400 | Vdc |
| Emitter-Base Voltage | V_{EBO} | 6.0 | Vdc |
| Collector Current — Continuous — Peak | I_C | 8.0 15 | Adc |
| Emitter-Collector Diode Current | I_F | 10 | Adc |
| Base Current | I_B | 2.0 | Adc |
| Total Device Dissipation, $T_C = 25^\circ C$ Derate above $T_C = 25^\circ C$ | P_D | 60 0.48 | Watts W/ $^\circ C$ |
| Operating and Storage Junction Temperature Range | T_J, T_{stg} | -65 to 150 | $^\circ C$ |

THERMAL CHARACTERISTICS

| Characteristic | Symbol | Max | Unit |
|--|-----------------|------|--------------|
| Thermal Resistance, Junction to Case | $R_{\theta JC}$ | 2.08 | $^\circ C/W$ |
| Thermal Resistance, Junction to Ambient | $R_{\theta JA}$ | 70 | $^\circ C/W$ |
| Lead Temperature for Soldering Purposes, 1/8" from Case for 5.0 Seconds | T_L | 275 | $^\circ C$ |

ELECTRICAL CHARACTERISTICS ($T_C = 25^\circ\text{C}$ unless otherwise noted)

| Characteristic | Symbol | Min | Typ | Max | Unit |
|---|---------------|-----|-----|-----|-----------------|
| OFF CHARACTERISTICS | | | | | |
| Collector–Emitter Sustaining Voltage (1) ($I_C = 100\text{ mAdc}$, $I_B = 0$) | $V_{CE(sus)}$ | 200 | — | — | Vdc |
| Collector Cutoff Current ($V_{CE} = \text{Rated } V_{CBO}$, $V_{BE} = 0$) | I_{CES} | — | — | 100 | μAdc |
| Collector Cutoff Current ($V_{CE} = \text{Rated } V_{CEV}$, $V_{BE(off)} = 6.0\text{ Vdc}$) | I_{CEV} | — | — | 100 | μAdc |
| Emitter Cutoff Current ($V_{EB} = 6.0\text{ Vdc}$, $I_C = 0$) | I_{EBO} | — | — | 3.0 | mAdc |

ON CHARACTERISTICS (1)

| | | | | | |
|---|---------------|---|---|-----|-----|
| Collector–Emitter Saturation Voltage ($I_C = 5.0\text{ Adc}$, $I_B = 50\text{ mAdc}$) | $V_{CE(sat)}$ | — | — | 1.5 | Vdc |
| Base–Emitter Saturation Voltage ($I_C = 5.0\text{ Adc}$, $I_B = 50\text{ mAdc}$) | $V_{BE(sat)}$ | — | — | 2.4 | Vdc |
| Emitter–Collector Diode Forward Voltage ($I_F = 4.0\text{ Adc}$) | V_F | — | — | 2.0 | Vdc |

SWITCHING CHARACTERISTICS

| | | | | | | |
|--|--|----------|---|------|-----|---------------|
| Turn–On Time | (Resistive Load, $V_{CC} = 100\text{ Vdc}$, $I_C = 5.0\text{ Adc}$, $I_{B1} = 50\text{ mAdc}$, $I_{B2} = 500\text{ mAdc}$) | t_{on} | — | 0.35 | — | μs |
| Storage Time | | t_s | — | 0.55 | — | μs |
| Fall Time | | t_f | — | 0.20 | — | μs |
| Crossover Time ($I_C = 5.0\text{ Adc}$, $I_{B1} = 50\text{ mAdc}$, $V_{BE(off)} = 4.0\text{ Vdc}$, $V_{clamp} = 200\text{ Vdc}$, $L = 500\text{ }\mu\text{H}$) | | t_c | — | 0.40 | 1.0 | μs |

(1) Pulse Test: Pulse Width $\leq 300\text{ }\mu\text{s}$, Duty Cycle $\leq 1\%$.

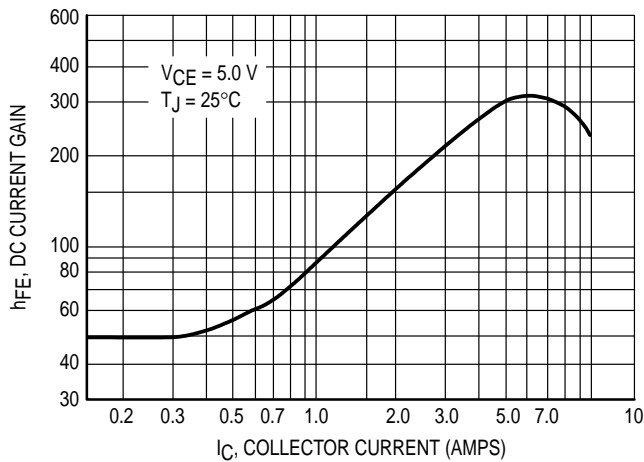


Figure 1. DC Current Gain

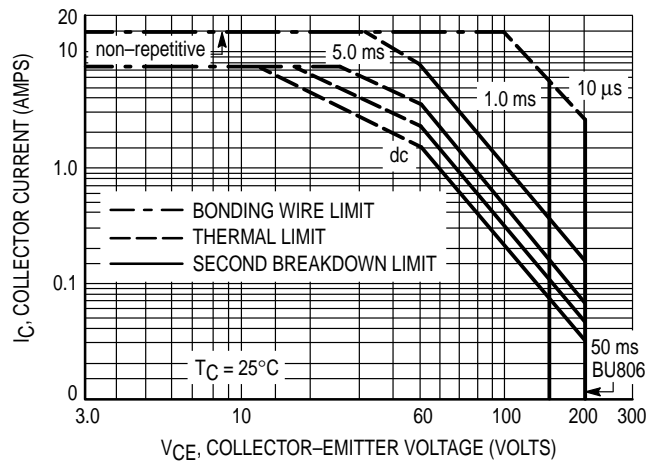
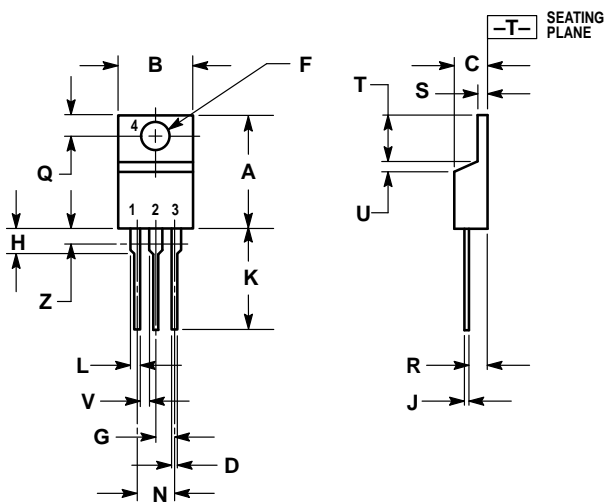


Figure 2. Safe Operating Area (FSOA)

PACKAGE DIMENSIONS




- NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
 2. CONTROLLING DIMENSION: INCH.
 3. DIMENSION Z DEFINES A ZONE WHERE ALL BODY AND LEAD IRREGULARITIES ARE ALLOWED.

| DIM | INCHES | | MILLIMETERS | |
|-----|--------|-------|-------------|-------|
| | MIN | MAX | MIN | MAX |
| A | 0.570 | 0.620 | 14.48 | 15.75 |
| B | 0.380 | 0.405 | 9.66 | 10.28 |
| C | 0.160 | 0.190 | 4.07 | 4.82 |
| D | 0.025 | 0.035 | 0.64 | 0.88 |
| F | 0.142 | 0.147 | 3.61 | 3.73 |
| G | 0.095 | 0.105 | 2.42 | 2.66 |
| H | 0.110 | 0.155 | 2.80 | 3.93 |
| J | 0.018 | 0.025 | 0.46 | 0.64 |
| K | 0.500 | 0.562 | 12.70 | 14.27 |
| L | 0.045 | 0.060 | 1.15 | 1.52 |
| N | 0.190 | 0.210 | 4.83 | 5.33 |
| Q | 0.100 | 0.120 | 2.54 | 3.04 |
| R | 0.080 | 0.110 | 2.04 | 2.79 |
| S | 0.045 | 0.055 | 1.15 | 1.39 |
| T | 0.235 | 0.255 | 5.97 | 6.47 |
| U | 0.000 | 0.050 | 0.00 | 1.27 |
| V | 0.045 | — | 1.15 | — |
| Z | — | 0.080 | — | 2.04 |

- STYLE 1:
 PIN 1. BASE
 2. COLLECTOR
 3. EMITTER
 4. COLLECTOR

CASE 221A-06
 TO-220AB
 ISSUE Y

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