

BU522B

**7 AMPERES
DARLINGTON
POWER TRANSISTORS
NPN SILICON
450 VOLTS
75 WATTS**

High Voltage Silicon Power Darlington

Power Transistor mainly intended for use as ignition circuit output transistor.

- Specified minimum sustaining voltage:
 $V_{CE(sus)} = 425\text{ V}$ at $I_C = 1\text{ A}$
- High S.O.A. capability:
 $V_{CE} = 400\text{ V}$
- Low $V_{CE(sat)} = 2.0\text{ V}$ max. at $I_C = 4\text{ A}$

MAXIMUM RATINGS

| Rating | Symbol | BU522B | Unit |
|--|----------------|------------|------------------------------|
| Collector–Emitter Voltage Sust. | $V_{CE(sus)}$ | 425 | Vdc |
| Collector–Emitter Voltage | V_{CE} | 450 | Vdc |
| Collector–Base Voltage | V_{CBO} | 475 | Vdc |
| Emitter–Base Voltage | V_{EBO} | 5.0 | Vdc |
| Collector Current Continuous | I_C | 7.0 | Adc |
| Base Current | I_B | 2.0 | Adc |
| Total Device Dissipation @ $T_C = 25^\circ\text{C}$ Derate above 25°C | P_D | 75 0.60 | Watts W/ $^\circ\text{C}$ |
| Operating and Storage Junction Temperature Range | T_J, T_{stg} | -65 to 150 | $^\circ\text{C}$ |

THERMAL CHARACTERISTICS

| Characteristic | Symbol | Max. | Unit |
|--------------------------------------|---------------|------|--------------------|
| Thermal Resistance, Junction to Case | θ_{JC} | 1.67 | $^\circ\text{C/W}$ |

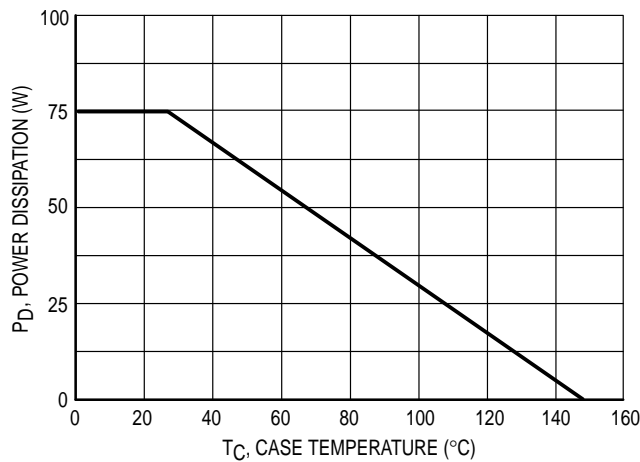
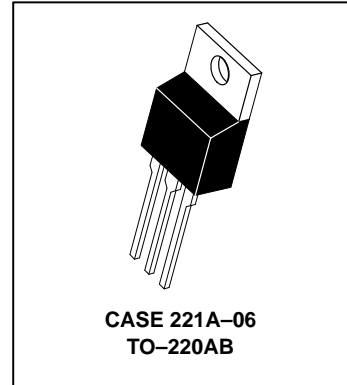
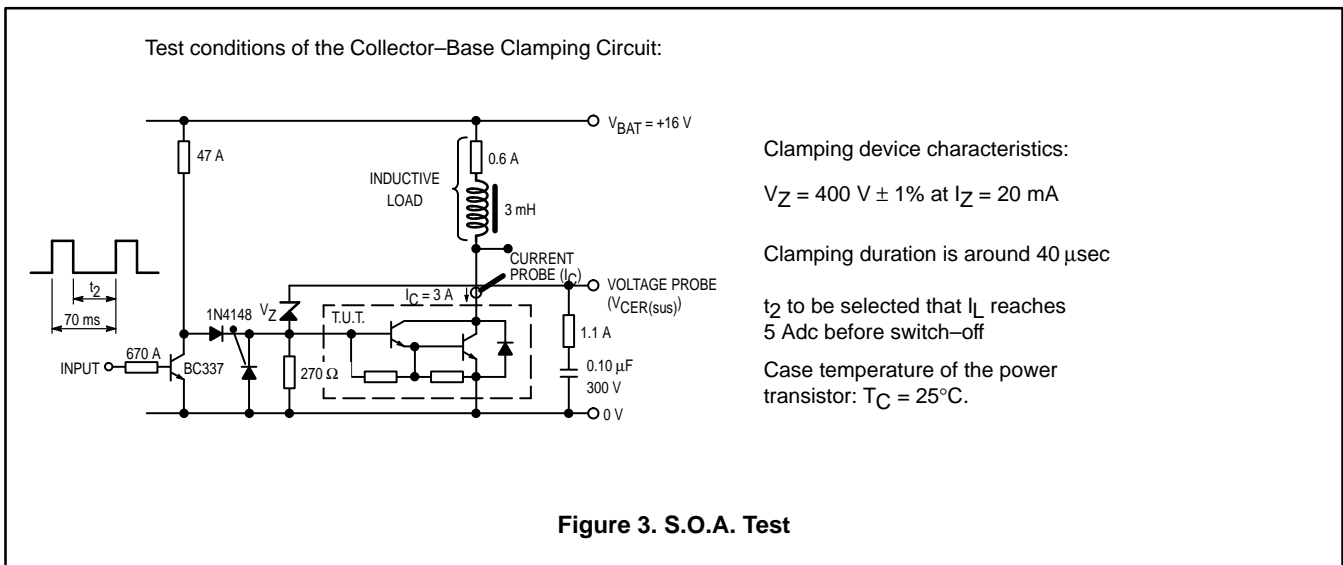
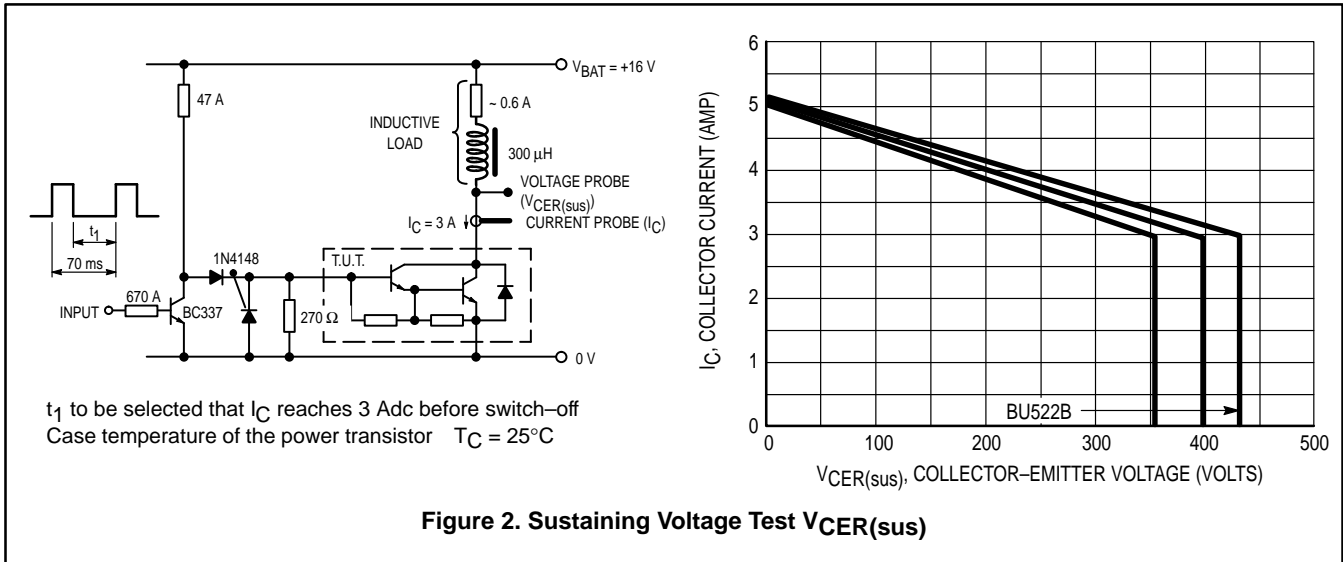


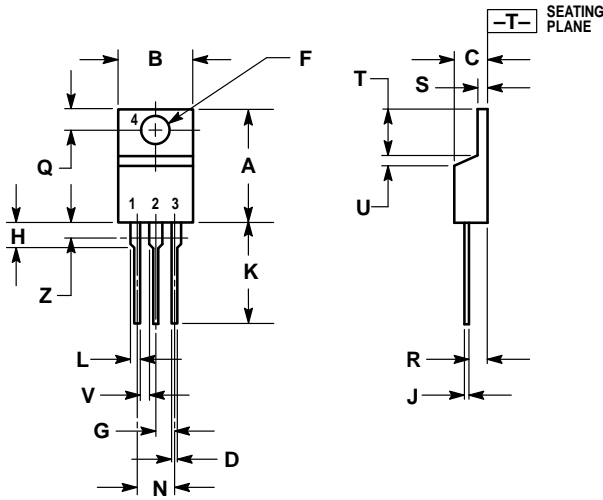
Figure 1. Power Derating

BU522B**ELECTRICAL CHARACTERISTICS** ($T_C = 25^\circ\text{C}$ unless otherwise noted)

| Characteristic | Symbol | Min | Typ | Max | Unit |
|--|---------------|-----|-----|-----|------|
| OFF CHARACTERISTICS | | | | | |
| Collector–Emitter Sustaining Voltage (See Figure 2) ($I_C = 1.0\text{ A}$) See Figure 2 | $V_{CE(sus)}$ | 425 | | | Vdc |
| Collector Cutoff Current (Rated V_{CE} , $R_{BE} = 270\ \Omega$) | I_{CER} | | | 1.0 | mAdc |
| Collector Cutoff Current (Rated V_{CBO} , $I_E = 0$) | I_{CBO} | | | 1.0 | mAdc |
| Emitter Cutoff Current ($V_{EB} = 5.0\text{ Vdc}$, $I_C = 0$) | I_{EBO} | | | 40 | mAdc |
| ON CHARACTERISTICS | | | | | |
| DC Current Gain ($I_C = 2.5\text{ Adc}$, $V_{CE} = 5\text{ Vdc}$) | h_{FE} | 250 | | | — |
| Collector–Emitter Saturation Voltage ($I_C = 4\text{ Adc}$, $I_B = 80\text{ mAdc}$) | $V_{CE(sat)}$ | | | 2 | Vdc |
| Base–Emitter Saturation Voltage ($I_C = 4\text{ Adc}$, $I_B = 80\text{ mAdc}$) | $V_{BE(sat)}$ | | | 2.5 | Vdc |
| DYNAMIC CHARACTERISTICS | | | | | |
| Current Gain — Bandwidth Product ($I_C = 0.3\text{ mAdc}$, $V_{CE} = 5.0\text{ Vdc}$, $f_{test} = 10\text{ MHz}$) | f_T | | 7.5 | | MHz |
| Output Capacitance ($V_{CB} = 10\text{ Vdc}$, $I_E = 0$, $f = 0.1\text{ MHz}$) | C_{ob} | | 150 | | pF |



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:
1. BASE
 2. COLLECTOR
 3. EMITTER
 4. COLLECTOR

CASE 221A-06
TO-220AB
ISSUE Y

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