

**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.

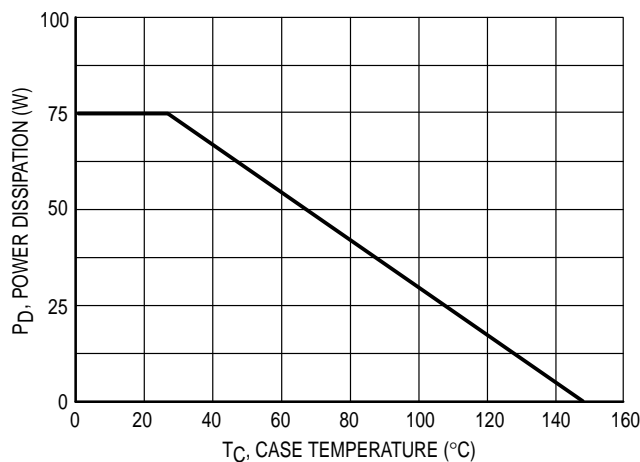
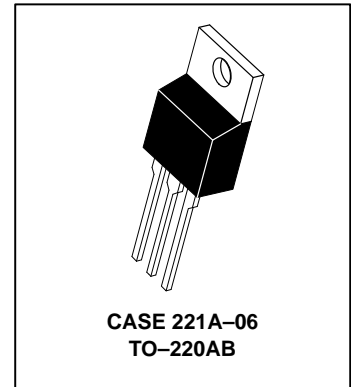
- Specified minimum sustaining voltage:  
 $V_{CER(sus)} = 425\text{ V}$  at  $I_C = 1\text{ A}$
- High S.O.A. capability:  
 $V_{CE} = 400\text{ V}$
- Low  $V_{CE(sat)} = 2.0\text{ V}$  max. at  $I_C = 4\text{ A}$

**MAXIMUM RATINGS**

Rating	Symbol	BU522B	Unit
Collector–Emitter Voltage Sust.	$V_{CER(sus)}$	425	Vdc
Collector–Emitter Voltage	$V_{CER}$	450	Vdc
Collector–Base Voltage	$V_{CBO}$	475	Vdc
Emitter–Base Voltage	$V_{EBO}$	5.0	Vdc
Collector Current Continuous	$I_C$	7.0	A <sub>dc</sub>
Base Current	$I_B$	2.0	A <sub>dc</sub>
Total Device Dissipation @ $T_C = 25^\circ\text{C}$ Derate above $25^\circ\text{C}$	$P_D$	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**

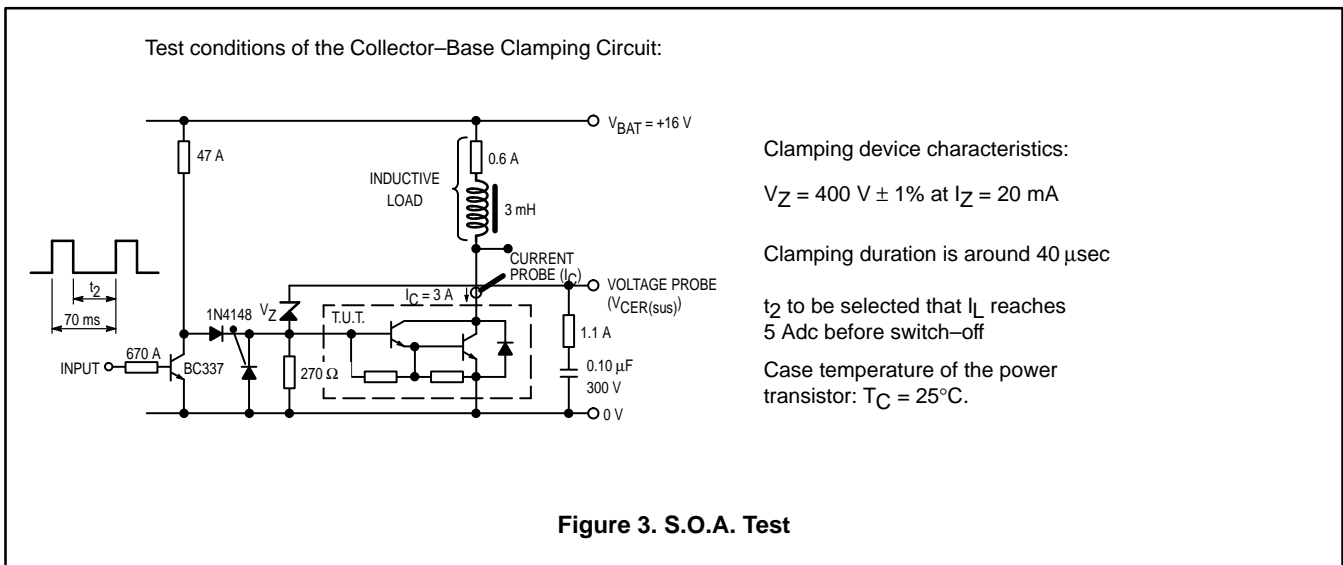
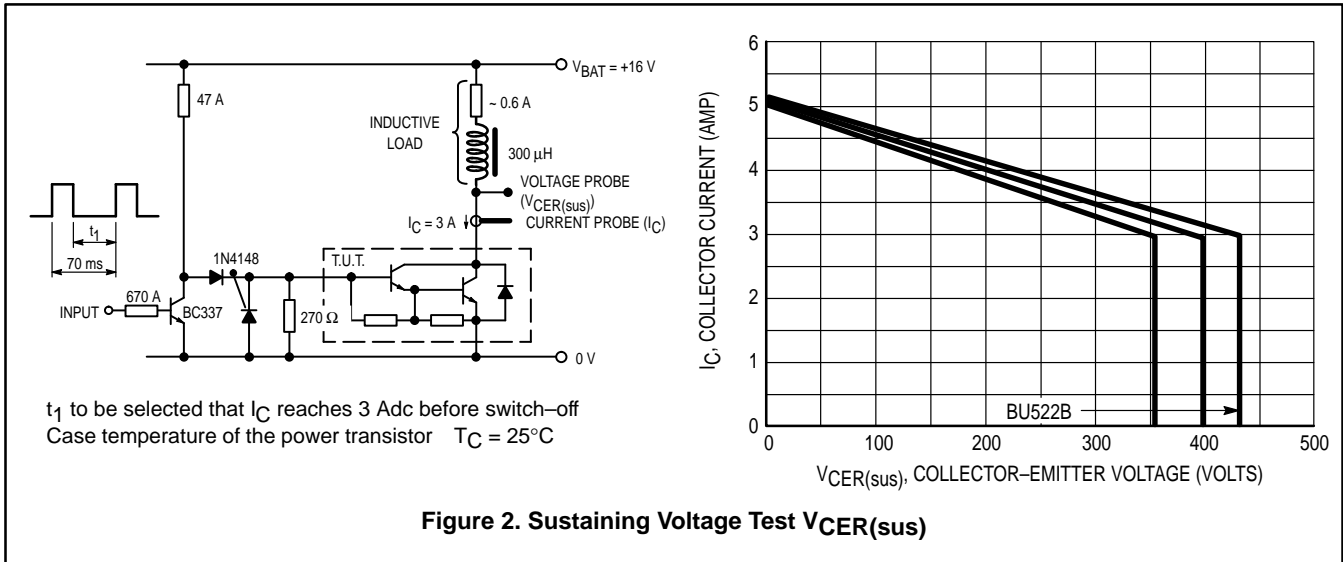
Characteristic	Symbol	Max.	Unit
Thermal Resistance, Junction to Case	$\theta_{JC}$	1.67	$^\circ\text{C}/\text{W}$



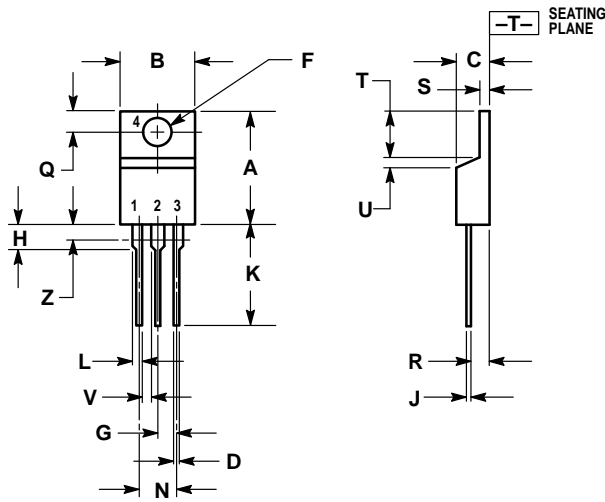
**Figure 1. Power Derating**

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

Characteristic	Symbol	Min	Typ	Max	Unit
<b>OFF CHARACTERISTICS</b>					
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
<b>ON CHARACTERISTICS</b>					
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
<b>DYNAMIC CHARACTERISTICS</b>					
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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