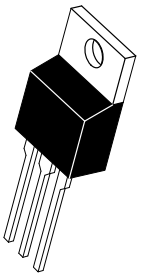
BU522B

High Voltage Silicon Power Darlingtons

7 AMPERES
DARLINGTON
POWER TRANSISTORS
NPN SILICON
450 VOLTS
75 WATTS

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

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



CASE 221A–06
TO–220AB

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	Adc
Base Current	I_B	2.0	Adc
Total Device Dissipation @ T_C = 25°C Derate above 25°C	P_D	75 0.60	Watts W/°C
Operating and Storage Junction Temperature Range	T_J, T_{stg}	–65 to 150	°C

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max.	Unit
Thermal Resistance, Junction to Case	θ_{JC}	1.67	°C/W

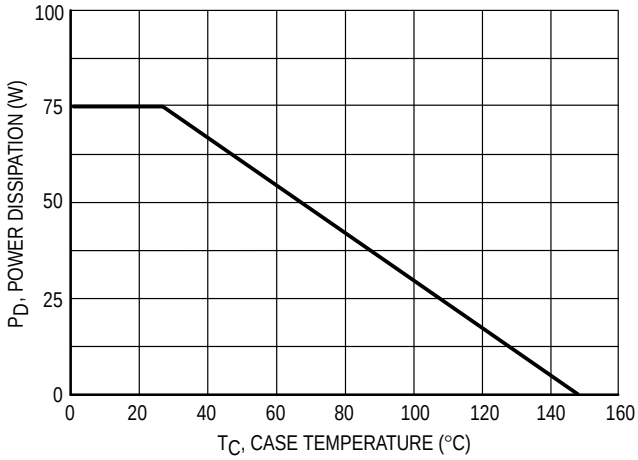
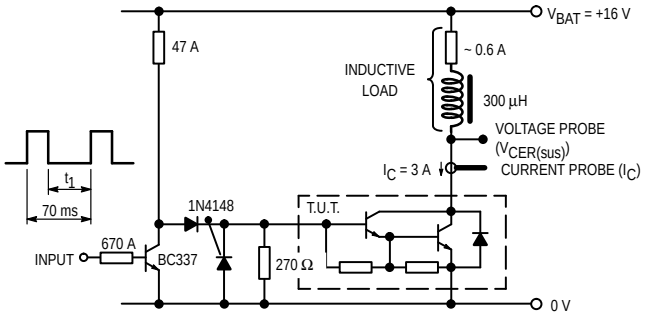


Figure 1. Power Derating

ELECTRICAL CHARACTERISTICS (T_C = 25°C unless otherwise noted)

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



t_1 to be selected that I_C reaches 3 Adc before switch–off
Case temperature of the power transistor T_C = 25°C

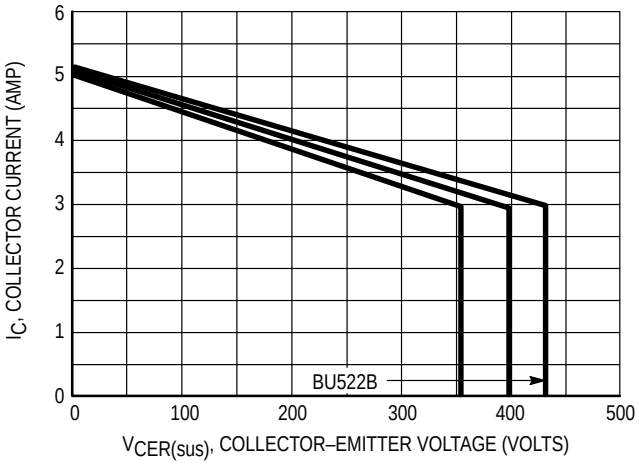
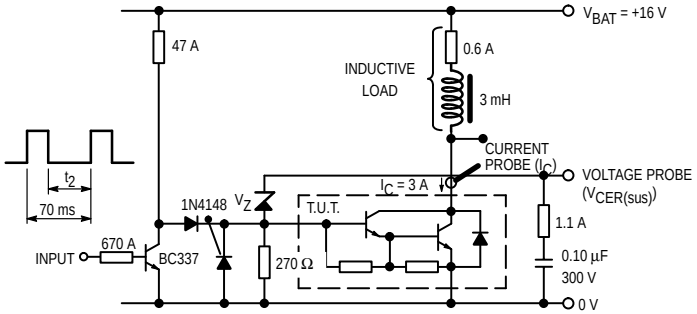


Figure 2. Sustaining Voltage Test $V_{CER(sus)}$

Test conditions of the Collector–Base Clamping Circuit:



Clamping device characteristics:

V_Z = 400 V ± 1% at I_Z = 20 mA

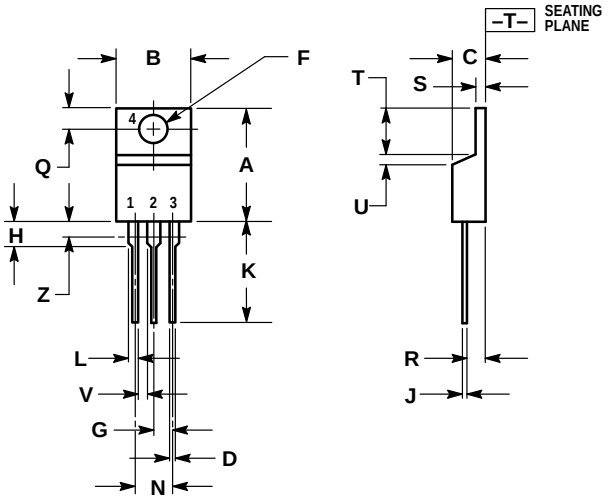
Clamping duration is around 40 µsec

t_2 to be selected that I_L reaches 5 Adc before switch–off

Case temperature of the power transistor: T_C = 25°C.

Figure 3. S.O.A. Test

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.

	INCHES		MILLIMETERS	
DIM	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

How to reach us:
USA / EUROPE: Motorola Literature Distribution;
P.O. Box 20912; Phoenix, Arizona 85036. 1–800–441–2447

MFAX: RMFAX0@email.sps.mot.com – TOUCHTONE (602) 244–6609
INTERNET: http://Design–NET.com

JAPAN: Nippon Motorola Ltd.; Tatsumi–SPD–JLDC, Toshikatsu Otsuki,
6F Seibu–Butsuryu–Center, 3–14–2 Tatsumi Koto–Ku, Tokyo 135, Japan. 03–3521–8315

HONG KONG: Motorola Semiconductors H.K. Ltd.; 8B Tai Ping Industrial Park,
51 Ting Kok Road, Tai Po, N.T., Hong Kong. 852–26629298