BU322 • BU322A

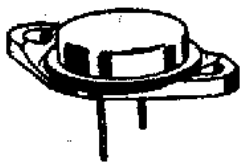
HIGH VOLTAGE SILICON POWER DARLINGTONS

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

- Specified minimum sustaining voltage:
  $V_{CER(sus)}$ – 350 V (BU322) I_C – 3 A
  425 V (BU322A)
- High S.O.A. capability:
  V_{CE} – 325 V (BU322) at I_C – 7 A
  400 V (BU322A)
- Low $V_{CE(sat)}$ – 1.7 V max. at I_C – 4 A

DARLINGTON TRIPLE DIFFUSED POWER TRANSISTORS NPN SILICON

7 AMPERE
400, 475 VOLTS
100 WATTS



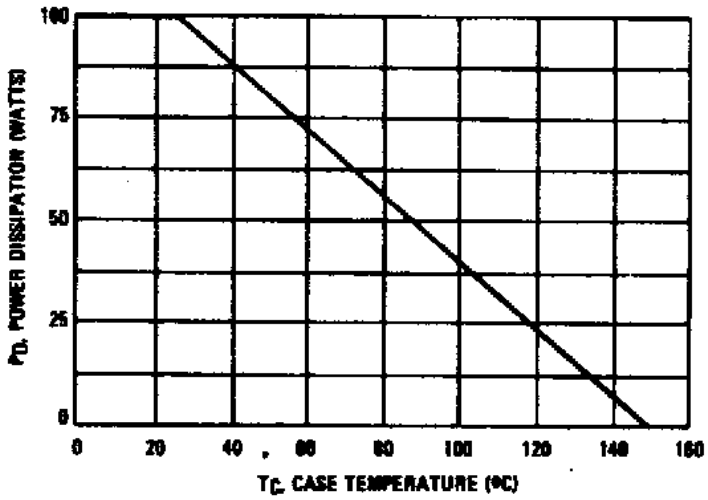
MAXIMUM RATINGS

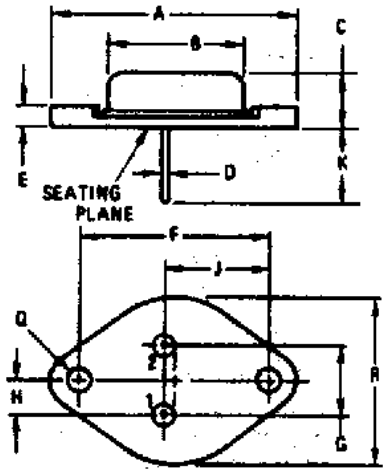
Rating	Symbol	BU322	BU322A	Unit
Collector-Emitter Voltage (R_{BE} = 100Ω)	V_{CER}	400	475	Vdc
Collector-Base Voltage	V_{CB0}	460	525	Vdc
Emitter-Base Voltage	V_{EB0}	6.0		Vdc
Collector Current – Continuous – Peak	I_C	7.0 12.0		Adc
Base Current	I_B	2.0		Adc
Total Device Dissipation @ T_C = 25°C Derate Above 25°C	P_D	100 0.8		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	$R_{\theta JC}$	1.25	°C/W

FIGURE 1 – POWER DERATING





STYLE 1:
PIN 1. BASE
2. EMITTER
CASE: COLLECTOR

NOTE:
1. DIM "Q" IS DIA.

DIM	MILLIMETERS MIN	MILLIMETERS MAX	INCHES MIN	INCHES MAX
A	–	39.37	–	1.550
B	–	21.08	–	0.830
C	6.35	7.62	0.250	0.300
D	0.99	1.09	0.039	0.043
E	–	3.43	–	0.135
F	29.90	30.40	1.177	1.197
G	10.67	11.18	0.420	0.440
H	5.33	5.59	0.210	0.220
J	14.64	17.15	0.576	0.675
K	11.18	12.19	0.440	0.480
Q	3.84	4.09	0.151	0.161
R	–	26.67	–	1.050

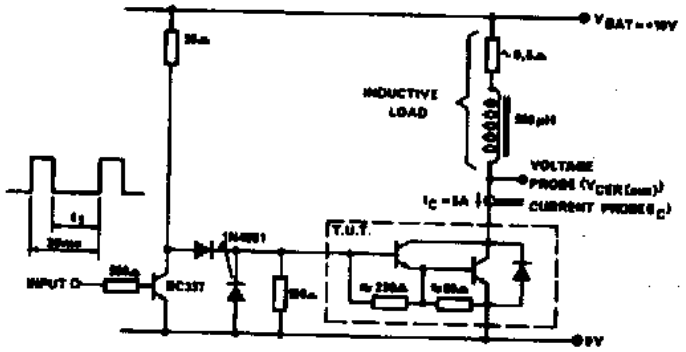
Collector connected to case.
CASE 11-01
TO–3

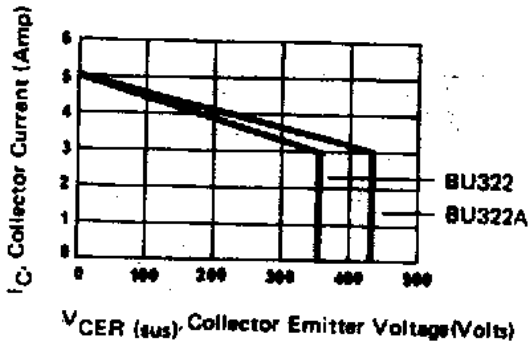
ELECTRICAL CHARACTERISTICS (T_C = 25°C unless otherwise noted.)

Characteristic		Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS						
Collector-Emitter Sustaining Voltage (See Figure 2) (I_C = 3.0 A)	(BU322) (BU322A)	$V_{CER(sus)}$	350 425			Vdc
Collector Cutoff Current (Rated V_{CER}, R_{BE} = 100Ω)		I_{CER}			1.0	mAdc
Collector Cutoff Current (Rated V_{CBO}, I_E = 0)		I_{CBO}			1.0	mAdc
Emitter Cutoff Current (V_{EB} = 6.0 Vdc, I_C = 0)		I_{EBO}			30	mAdc
ON CHARACTERISTICS						
Collector-Emitter Saturation Voltage (I_C = 4.0 Adc, I_B = 80 mAdc) (I_C = 7.0 Adc, I_B = 240 mAdc)		$V_{CE(sat)}$			1.7 2.7	Vdc
Base-Emitter Saturation Voltage (I_C = 4.0 Adc, I_B = 80 mAdc) (I_C = 7.0 Adc, I_B = 240 mAdc)		$V_{BE(sat)}$			2.5 3.0	Vdc
DYNAMIC CHARACTERISTICS						
Current-Gain--Bandwidth Product (1) (I_C = 0.3 Adc, V_{CE} = 5.0 Vdc, f_{test} = 1.0 MHz)		f_T		7.5		MHz
Output Capacitance (V_{CB} = 10 Vdc, I_E = 0, f = 0.1 MHz)		C_{ob}		150		pF

(1) $f_T = h_{fe} \cdot f_{test}$

FIGURE 2 – SUSTAINING VOLTAGE TEST $V_{CER\ (sus)}$

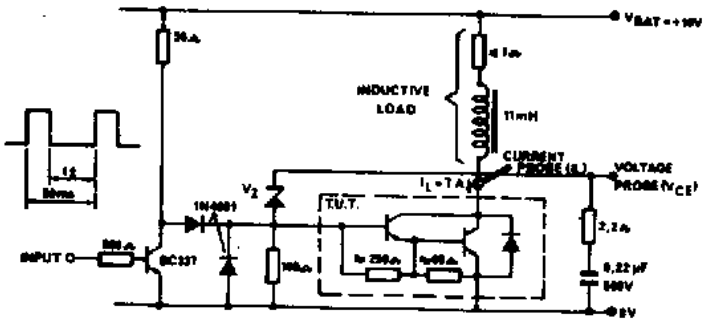




t_1 to be selected that I_C reaches 5 Adc before switch-off

Case temperature of the power transistor: $T_C = 25^oC$

Test conditions of the Collector-Base Clamping Circuit:



Clamping device characteristics:

V_Z = 325 V (BU322) / 400 V (BU322A) ±1% at I_Z = 20 mA

Clamping duration is around 235 µsec (BU322) / 195 µsec (BU322A)

t_2 to be selected that I_L reaches 7 Adc before switch-off

Case temperature of the power transistor: $T_C = 25^oC$.

FIGURE 3 – S.O.A. TEST