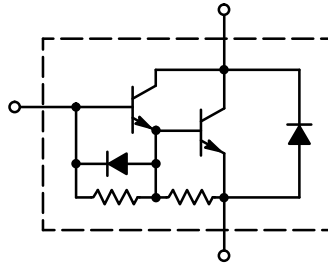


# NPN Darlington Power Transistor

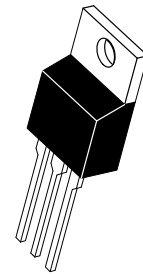
This Darlington transistor is a high voltage, high speed device for use in horizontal deflection circuits in TV's and CRT's.

- 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
<b>OFF CHARACTERISTICS</b>					
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	$\mu\text{Adc}$
Collector Cutoff Current ( $V_{CE} = \text{Rated } V_{CEV}$ , $V_{BE(off)} = 6.0\text{ Vdc}$ )	$I_{CEV}$	—	—	100	$\mu\text{Adc}$
Emitter Cutoff Current ( $V_{EB} = 6.0\text{ Vdc}$ , $I_C = 0$ )	$I_{EBO}$	—	—	3.0	mAdc

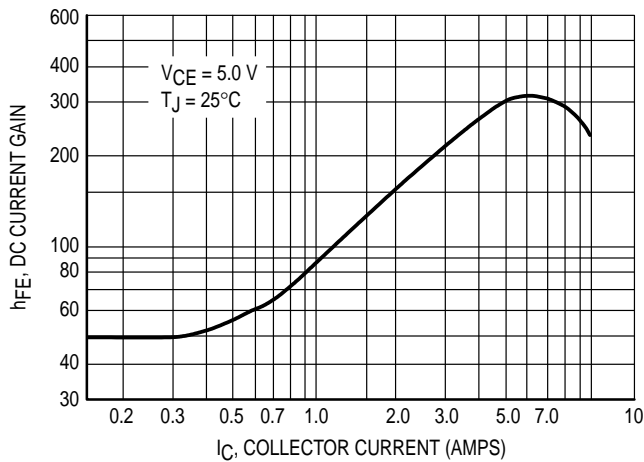
**ON CHARACTERISTICS (1)**

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

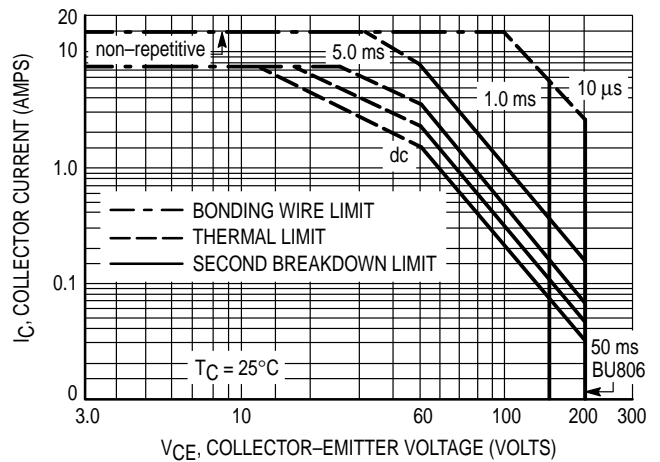
**SWITCHING CHARACTERISTICS**

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	—	$\mu\text{s}$
Storage Time		$t_s$	—	0.55	—	$\mu\text{s}$
Fall Time		$t_f$	—	0.20	—	$\mu\text{s}$
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	$\mu\text{s}$

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

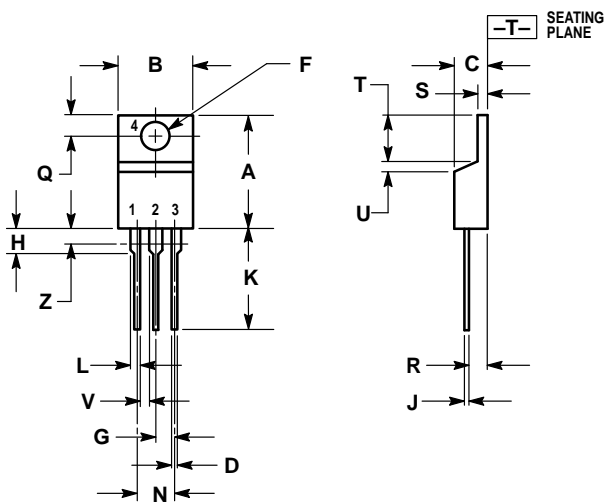


**Figure 1. DC Current Gain**



**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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