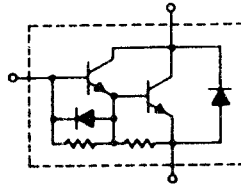


# FAST SWITCHING DARLINGTON TRANSISTOR

They are high voltage, high current devices for fast switching applications.

## FEATURES:

- \* Collector-Emitter Sustaining Voltage -  
 $V_{CE(SUS)} = 150 \text{ V (Min.) - BU807}$   
 $= 200 \text{ V (Min.) - BU806}$
- \* Low Collector-Emitter Saturation Voltage -  
 $V_{CE(sat)} = 1.5 \text{ V (Max.) @ } I_C = 5.0 \text{ A, } I_B = 50 \text{ mA}$

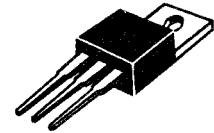


**NPN**  
**BU806**  
**BU807**

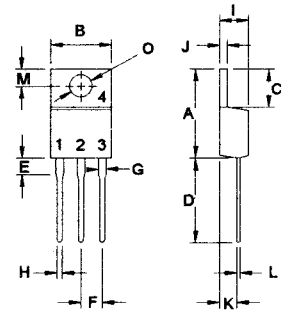
**8.0 AMPERE**  
**DARLINGTON**  
**POWER TRANSISTORS**  
**150-200 VOLTS**  
**60 WATTS**

## MAXIMUM RATINGS

Characteristic	Symbol	BU806	BU807	Unit
Collector-Emitter Voltage	$V_{CEO}$	200	150	V
Collector-Base Voltage	$V_{CBO}$	400	330	V
Emitter-Base Voltage	$V_{EBO}$	6.0		V
Collector Current - Continuous - Peak	$I_C$	8.0 15		A
Base Current - Continuous	$I_B$	2.0		A
Total Power Dissipation @ $T_C = 25^\circ\text{C}$ Derate above $25^\circ\text{C}$	$P_D$	60 0.48		W W/ $^\circ\text{C}$
Operating and Storage Junction Temperature Range	$T_J, T_{STG}$	- 65 to +150		$^\circ\text{C}$



**TO-220**



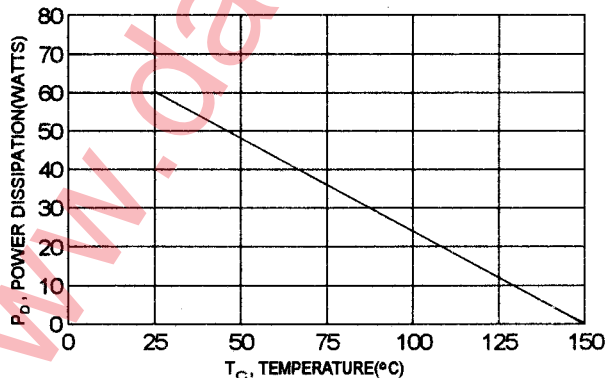
PIN 1.BASE  
 2.COLLECTOR  
 3.EMITTER  
 4.COLLECTOR(CASE)

## THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance Junction to Case	$R_{\theta JC}$	2.08	$^\circ\text{C/W}$

DIM	MILLIMETERS	
	MIN	MAX
A	14.68	15.31
B	9.78	10.42
C	5.01	6.52
D	13.06	14.62
E	3.57	4.07
F	2.42	3.66
G	1.12	1.36
H	0.72	0.96
I	4.22	4.98
J	1.14	1.38
K	2.20	2.97
L	0.33	0.55
M	2.48	2.98
O	3.70	3.90

**FIGURE -1 POWER DERATING**



**Boca Semiconductor Corp**  
**BSC**  
<http://www.bocasemi.com>

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

Characteristic	Symbol	Min	Max	Unit
----------------	--------	-----	-----	------

**OFF CHARACTERISTICS**

Collector - Emitter Sustaining Voltage (1) ( $I_C = 100\text{ mA}$ , $I_B = 0$ )	BU807 BU806	$V_{CE(sus)}$	150 200	V
Collector Cutoff Current ( $V_{CE} = 330\text{ V}$ , $V_{BE} = 0$ ) ( $V_{CE} = 400\text{ V}$ , $V_{BE} = 0$ )	BU807 BU806	$I_{CES}$	0.1 0.1	mA
Emitter Cutoff Current ( $V_{EB} = 6.0\text{ V}$ , $I_C = 0$ )		$I_{EBO}$	3.0	mA

**ON CHARACTERISTICS (1)**

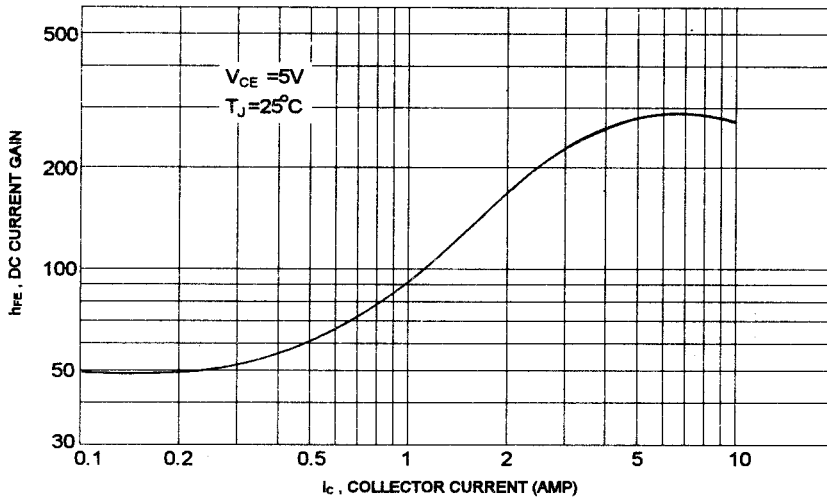
Collector - Emitter Saturation Voltage ( $I_C = 5.0\text{ A}$ , $I_B = 50\text{ mA}$ )		$V_{CE(sat)}$	1.5	V
Base - Emitter Saturation Voltage ( $I_C = 5.0\text{ A}$ , $I_B = 50\text{ mA}$ )		$V_{BE(sat)}$	2.4	V
Diode Forward Voltage ( $I_F = 4.0\text{ A}$ )		$V_F$	2.0	V

**SWITCHING CHARACTERISTICS**

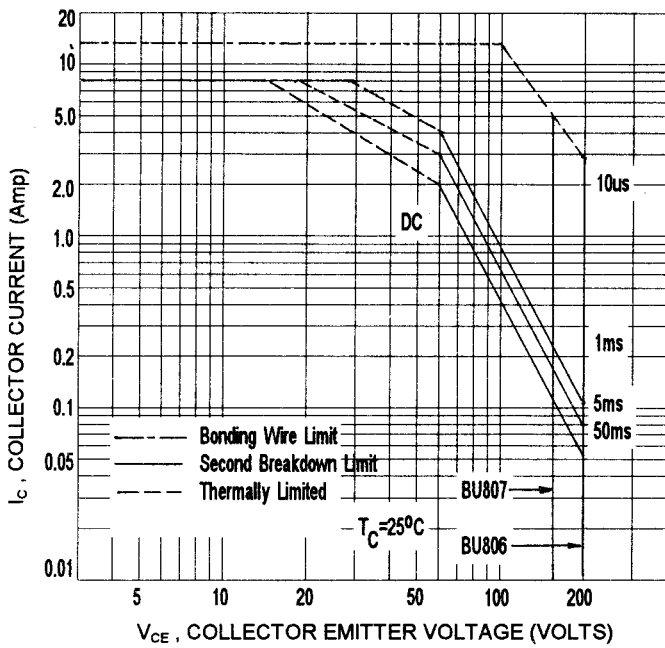
Turn On Time	$V_{CC} = 100\text{V}$ , $I_C = 5.0\text{A}$ $I_{B1} = 50\text{mA}$ , $I_{B2} = -500\text{mA}$ $V_{CC} = 100\text{V}$	$t_{on}$	0.35(typ)		us
Storage Time		$t_s$	0.55(typ)		us
Fall Time		$t_f$	0.20(typ)		us

(1) Pulse Test: Pulse width  $\leq 300\text{ us}$ , Duty Cycle  $\leq 2.0\%$

DC CURRENT GAIN



ACTIVE-REGION SAFE OPERATING AREA (SOA)



There are two limitation on the power handling ability of a transistor: average junction temperature and second breakdown safe operating area curves indicate  $I_C$ - $V_{CE}$  limits of the transistor that must be observed for reliable operation i.e., the transistor must not be subjected to greater dissipation than curves indicate.

The data of SOA curve is base on  $T_{j(PK)}=150^\circ\text{C}$ ;  $T_C$  is variable depending on conditions. second breakdown pulse limits are valid for duty cycles to 10% provided  $T_{j(PK)}\leq 150^\circ\text{C}$ . At high case temperatures, thermal limitation will reduce the power that can be handled to values less than the limitations imposed by second breakdown.

Boca Semiconductor Corp  
 BSC  
<http://www.bocasemi.com>