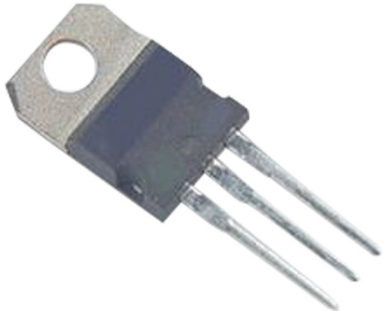
Darlington Transistor



Features:

- They are high voltage, high current devices for fast switching applicatons
- Collector-emitter sustaining voltage-$V_{CEO\ (sus)}$ = 200V (Min.) - BU806
- Low Collector-emitter Saturation Voltage - $V_{CE\ (SAT)}$ = 1.5V (Max.) at I_C = 5A, I_B = 50mA

Maximum Ratings

Characteristic	Symbol	BU406	Unit
Collector-Emitter Voltage	V_{CEO}	200	V
Collector-Base Voltage	V_{CEV}	400	
Emitter-Base Voltage	V_{CBO}	6	
Collector Current-Continuous -Peak	I_C I_{CM}	8 15	A
Base Current-Continuous	I_B	2	
Total Power Dissipation at T_C = 25°C Derate above 25°C	P_D	60 0.48	W W/°C
Operating and Storage Junction Temperature Range	T_J, T_{STG}	-65 to +150	°C

Thermal Characteristics

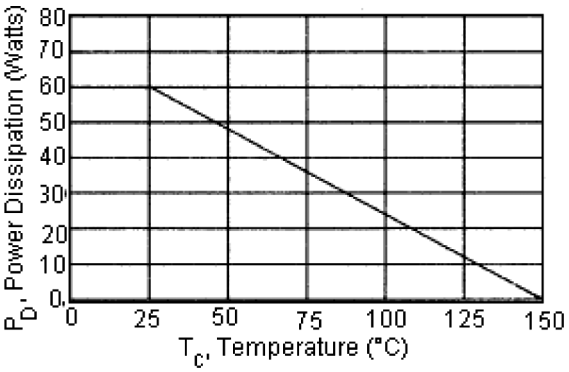
Characteristic	Symbol	Max.	Unit
Thermal Resistance Junction to Case	$R_{\theta jc}$	2.08	°C/W

Electrical Characteristics (T_C = 25°C unless otherwise noted)

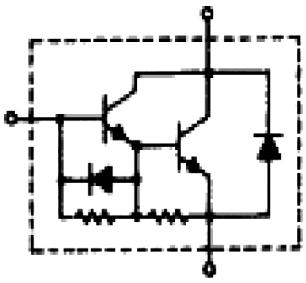
Characteristic	Symbol	Min.	Max.	Unit
OFF Characteristics				
Collector-Emitter Sustaining Voltage (1) I_C = 100mA, I_B = 0	$V_{CEO(sus)}$	200	-	V
Collector Cut off Current V_{CE} = 400V, V_{BE} = 0	I_{CES}	-	0.1	mA
Emitter Cut off Current V_{EB} = 6V, I_C = 0	I_{EBO}	-	3	mA
ON Characteristics (1)				
Collector-Emitter Saturation Voltage I_C = 5A, I_B = 50mA	$V_{CE\ (sat)}$	-	1.5	-
Base-Emitter Saturation Voltage I_C = 5A, I_B = 50mA	$V_{BE(sat)}$	-	2.4	V
Diode Forward Voltage I_C = 4A	V_F	-	2	V
Switching Characteristics				
Turn On Time	V_{CC} = 100V, I_C = 5A I_{B1} = 50mA, I_{B2} = -500mA V_{CC} = 100V	t_{on}	0.35 (Typ.)	µs
Storage Time		t_s	0.55 (Typ.)	µs
Fall Time		t_f	0.2 (Typ.)	µs

(1) Pulse Test: Pulse Width = 300µs, Duty Cycle ≤2%

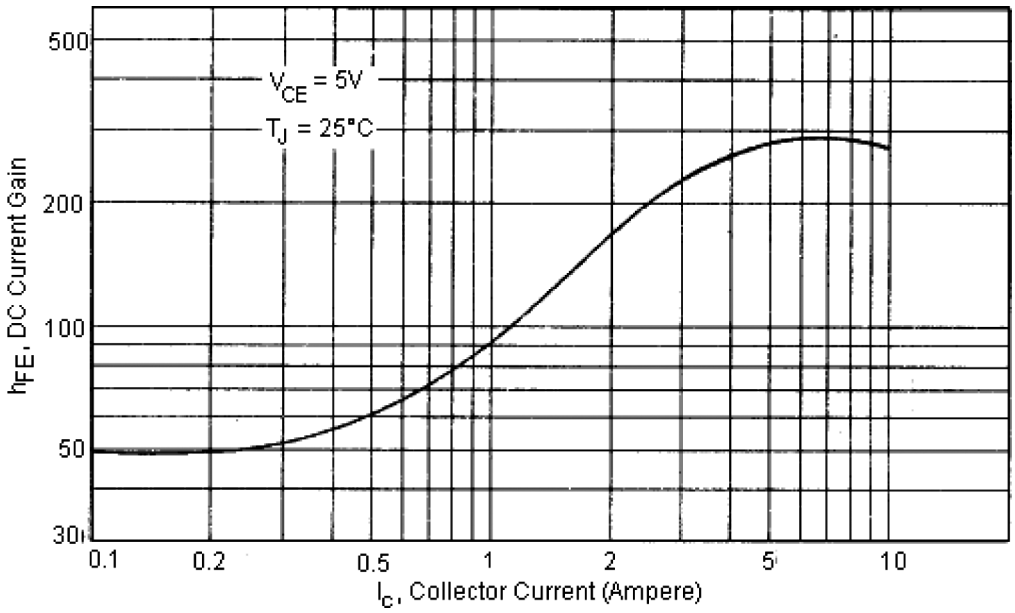
Power Derating



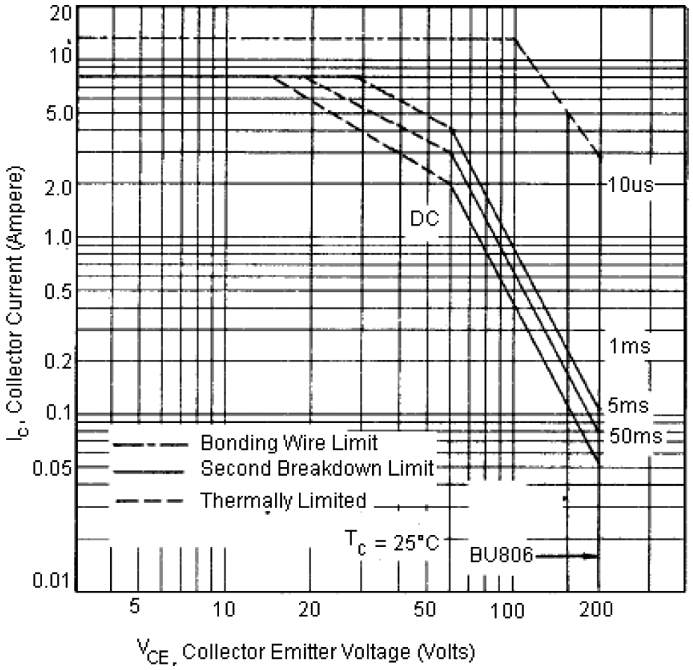
Schematic Diagram



DC Current Gain



Active-Region Safe Operating Area (SOA)



There are two limitations 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 the curves indicate.

The data of SOA curve is based on $T_{J(PK)}$ = 150°C; T_C is variable depending on power level. Second breakdown pulse limits are valid for duty cycles to 10% provided $T_{J(PK)}$ ≤150°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.

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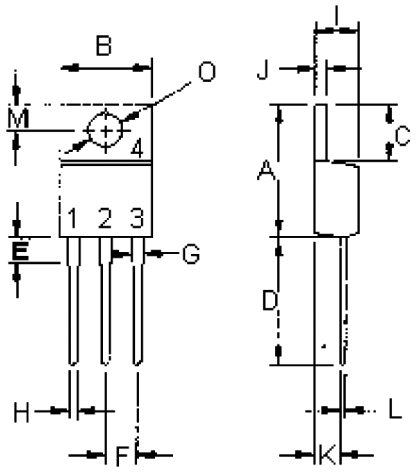

Pin Configuration:

1. Base
2. Collector
3. Emitter
4. Collector(Case)

Dimensions	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	2.2	2.97
L	0.33	0.55
M	2.48	2.98
O	3.7	3.9

Dimensions : Millimetres

Part Number Table

Description	Part Number
Darlington Transistor, TO-220	BU806