

Features

- Collector-Emitter Sustaining Voltage - $V_{CE(sus)} = 30V$ (Minimum)
- Collector-Emitter Saturation Voltage $V_{CE(sat)} = 2V$ (Maximum) at $I_C = 5A$
- Reverse-Base SOA - 300V to 400V at 7A

NPN

TIP150

7 Amperes

Darlington

Power Transistor

300V to 400V

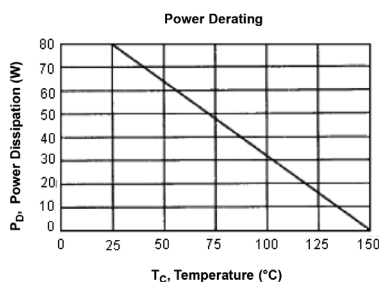
80W

Maximum Ratings

Characteristic	Symbol	Ratings	Unit
Collector - Emitter Voltage	V_{CEO}	300	V
Collector - Base Voltage	V_{CBO}		
Emitter - Base Voltage	V_{EBO}		
Collector Current - Continuous	I_C	7	A
- Peak	I_{CM}	10	
Base Current	I_B	1.5	
Total Power Dissipation at $T_C = 25^\circ C$	P_D	80	W
Derate above $25^\circ C$		0.64	W / $^\circ C$
Operating and Storage Junction Temperature Range	T_J, T_{STG}	-65 to +150	$^\circ C$

Thermal Characteristics

Characteristic	Symbol	Maximum	Unit
Thermal Resistance Junction to case	$R_{\theta JC}$	1.56	$^\circ C / W$

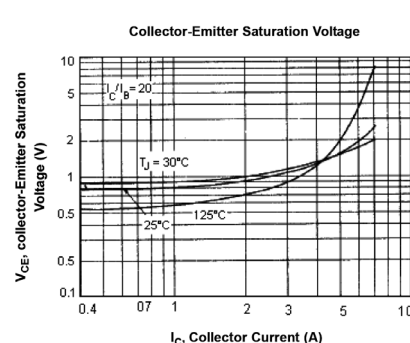
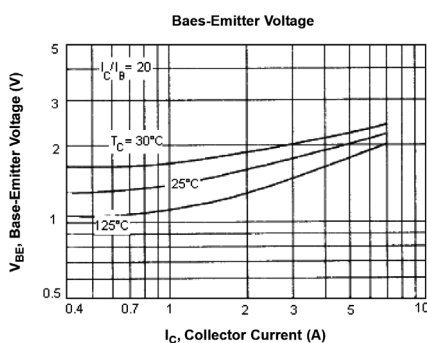
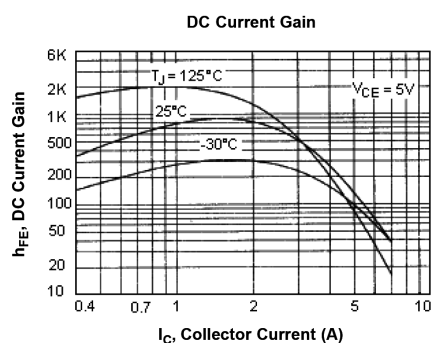


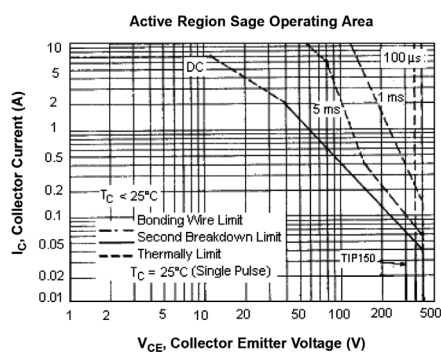
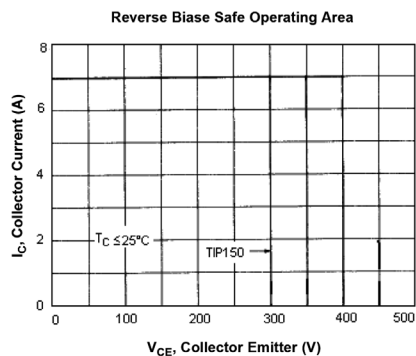
Electrical Characteristics ($T_C = 25^\circ C$ unless otherwise specified)

Characteristic	Symbol	Minimum	Maximum	Unit
OFF Characteristics				
Collector - Emitter Breakdown Voltage (1) ($I_C = 10mA, I_B = 0$)	$V_{(BR)CEO}$	300	-	V
Collector - Base Breakdown Voltage (1) ($I_C = 1mA, I_B = 0$)	$V_{(BR)CBO}$			
Collector Cutoff Current ($V_{CE} = 300V, I_B = 0$)	I_{CEO}	-	250	μA

Characteristic	Symbol	Minimum	Maximum	Unit
Emitter Cut off Current ($V_{EB} = 5V$, $I_C = 0$)	I_{EBO}	-	15	mA
ON Characteristics (1)				
DC Current Gain ($I_C = 2.5A$, $V_{CE} = 5V$) ($I_C = 5A$, $V_{CE} = 5V$) ($I_C = 7A$, $V_{CE} = 5V$)	h_{FE}	150 50 15	-	-
Collector-Emitter Saturation Voltage ($I_C = 1A$, $I_B = 10mA$) ($I_C = 2A$, $I_B = 100mA$) ($I_C = 5A$, $I_B = 250mA$)	$V_{CE(sat)}$	-	1.5 1.5 2	V
Base-Emitter Saturation Voltage ($I_C = 2A$, $I_B = 100mA$) ($I_C = 5A$, $I_B = 250mA$)	$V_{BE(sat)}$	-	2.2 2.3	
Diode Forward Voltage ($I_F = 7A$)	V_F	-	3.5	
Dynamic Characteristics				
Small-Signal Current Gain ($I_C = 0.5A$, $V_{CE} = 5V$, $f = 1kHz$)	H_{fe}	200	-	-
Output Capacitance ($V_{CB} = 10V$, $I_E = 0$, $f = 1MHz$)	C_{ob}	-	150	pF
Switching Characteristics				
Delay Time	$V_{CC} = 33V$, $I_C = 6.5A$ $I_{B1} = -I_{B2} = 250mA$ $t_p = 20\mu s$, Duty cycle $\leq 2\%$	t_d	30 (Typical)	μs
Rise Time		t_r	180 (Typical)	
Storage Time		t_s	3.5 (Typical)	
Fall Time		t_f	1.6 (Typical)	

1. Pulse Test : Pulse width = 30 μs , Duty cycle = 2%

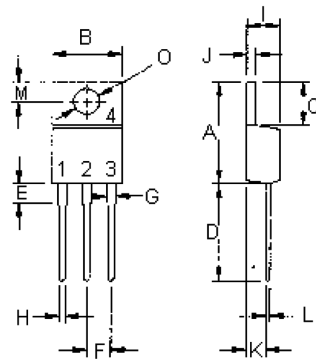




There are two limitations on the power handling ability of a transistor average junction temperature and second breakdown safe operating area curves indicate I_C - V_{CE} : limits of the transistor that must be observed for reliable operation i.e., the transistor must not be subjected to greater dissipation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

The data of figure - 6 curve is based on $T_{J(PK)} = 150^\circ\text{C}$; T_C is variable depending on power level. Second breakdown pulse limits are valid for duty cycles to 10% provided $T_{J(PK)} < 150^\circ\text{C}$. At high case temperatures, thermal limitation will reduce the power that can be handled to values less than the limitations imposed by second breakdown

Diagram



Dimensions	Minimum	Maximum
A	14.68	15.31
B	9.78	10.42
C	5.01	8.52
D	13.06	14.62
E	3.57	4.07
F	2.42	3.66
G	1.12	1.36

Dimensions	Minimum	Maximum
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

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

Part Number Table

Description	Part Number
Darlington Transistor, TO-220	TIP150

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