

Features

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

NPN

TIP152

7 Amperes

Darlington

Power Transistor

300V to 400V

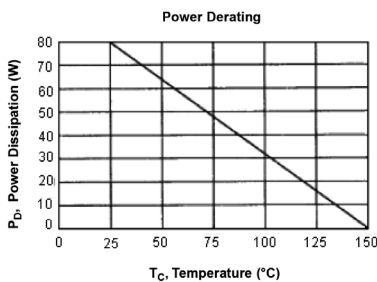
80W

Maximum Ratings

Characteristic	Symbol	Ratings	Unit
Collector - Emitter Voltage	V_{CEO}	400	V
Collector - Base Voltage	V_{CBO}		
Emitter - Base Voltage	V_{EBO}	8	
Collector Current - Continuous	I_C	7	A
- Peak	I_{CM}	1	
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	$^\circ C / W$

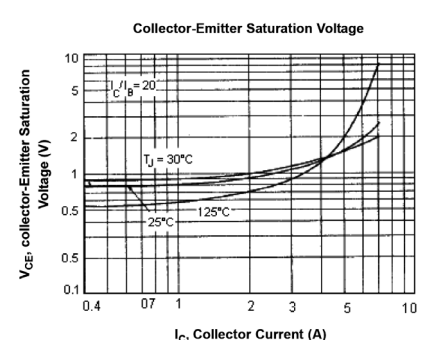
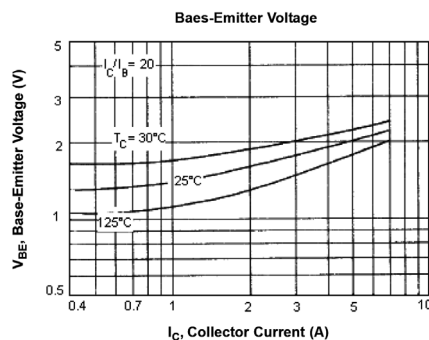
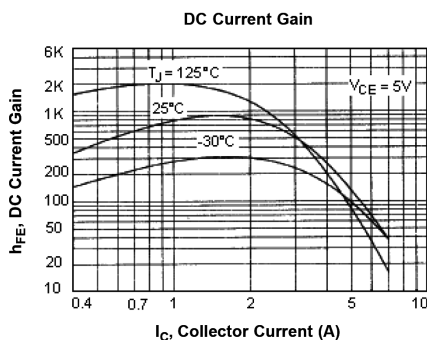


Electrical Characteristics ($T_C = 25^\circ C$ unless otherwise specified)

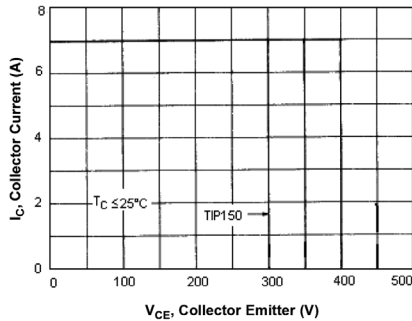
Characteristic	Symbol	Minimum	Maximum	Unit
OFF Characteristics				
Collector - Emitter Breakdown Voltage (1) ($I_C = 10mA, I_B = 0$)	$V_{(BR)CEO}$	400	-	V
Collector - Base Breakdown Voltage (1) ($I_C = 1mA, I_B = 0$)	$V_{(BR)CBO}$			
Collector Cutoff Current ($V_{CE} = 400V, I_B = 0$)	I_{CEO}	-	250	μA

Characteristic	Symbol	Minimum	Maximum	Unit
Emitter Cut off Current ($V_{EB} = 8V, I_C = 0$)	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	$V_{CC} = 250V, I_C = 5A$ $I_{B1} = -I_{B2} = 250mA$ $t_p = 20\mu s,$ Duty cycle $\leq 2\%$	t_d	30 (Typical)	-
Rise Time		t_r	180 (Typical)	-
Storage Time		t_s	3.5 (Typical)	-
Fall Time		t_f	1.6 (Typical)	-

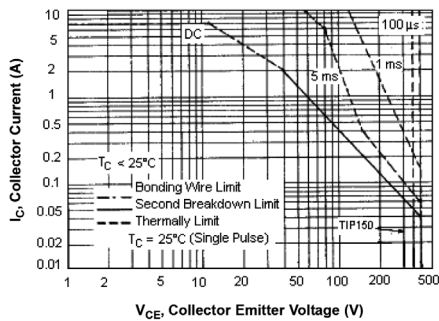
1. Pulse Test : Pulse width = $30\mu s$, Duty cycle = 2%



Reverse Biase Safe Operating Area

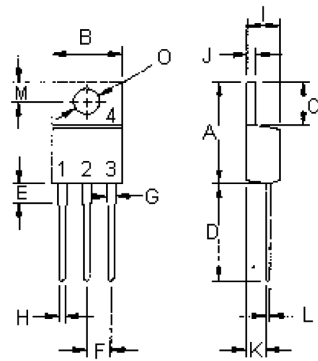


Active Region Sage Operating Area



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 $T_J (PK) = 150^\circ C$; T_C is variable depending on power level. Second breakdown pulse limits are valid for duty cycles to 10% provided $T_J (PK) < 150^\circ C$. 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	TIP152

Important Notice : This data sheet and its contents (the "Information") belong to the members of the AVNET group of companies (the "Group") or are licensed to it. No licence is granted for the use of it other than for information purposes in connection with the products to which it relates. No licence of any intellectual property rights is granted. The Information is subject to change without notice and replaces all data sheets previously supplied. The Information supplied is believed to be accurate but the Group assumes no responsibility for its accuracy or completeness, any error in or omission from it or for any use made of it. Users of this data sheet should check for themselves the Information and the suitability of the products for their purpose and not make any assumptions based on information included or omitted. Liability for loss or damage resulting from any reliance on the Information or use of it (including liability resulting from negligence or where the Group was aware of the possibility of such loss or damage arising) is excluded. This will not operate to limit or restrict the Group's liability for death or personal injury resulting from its negligence. Multicomp Pro is the registered trademark of Premier Farnell Limited 2019.