TIP150

SILICON DARLINGTON POWER TRANSISTORS

NPN epitaxial-base transistors in a monolithic Dalrington circuit and housed in a TO-220 enveloppe.
High voltage, high forward and reverse energy designed for industrial and consumer applications.
Compliance to RoHS.

ABSOLUTE MAXIMUM RATINGS

Symbol	Ratings		Value	Unit
V_{CBO}	Collector-Base Voltage		300	V
V_{CEO}	Collector-Emitter Voltage		300	V
V_{EBO}	Emitter-Base Voltage		8	V
I_C	Collector Current		7	A
I_{CM}	Collector Peak Current (1)		10	A
I_B	Base Current		1.5	A
P_T	Power Dissipation at Case Temperature (2)	@ T_{mb} < 25°	80	Watts
	Power Dissipation at free Air Temperature (3)		2	
t_J	Junction Temperature		-65 to +150	°C
t_s	Storage Temperature range		-65 to +150	
t_L	Lead Temperature 3.2 mm from case for 10 seconde		260	

1. This value applies for t_p <5ms, duty cycle <10%.
2. Derate linearly to 150°C case temperature at the rate of 0.64 W/°C.
3. Derate linearly to 150°C free air temperature at the rate of 16 mW/°C.

THERMAL CHARACTERISTICS

Symbol	Ratings	Value	Unit
R_{thJC}	From Junction to Case Thermal Resistance	2.5	°C/W
R_{thJA}	From Junction to Free-Air Thermal Resistance	62.5	

TIP150

ELECTRICAL CHARACTERISTICS

TC=25°C unless otherwise noted

Symbol	Ratings	Test Condition(s)	Min	Typ	Max	Unit
V_{CBO}	Collector-Base Breakdown Voltage	I_C= 1 mA, I_E= 0	300	-	-	V
V_{CEO}	Collector-Emitter Breakdown Voltage (4)	I_C= 10 mA, I_B= 0	300	-	-	V
I_{CEO}	Collector-Emitter Cutoff Current	I_B= 0, V_{CE} = 300 V	-	-	250	µA
$I_{CEOX(sus)}$	Collector-Emitter sustaining Current	I_E= 0, V_{CLAMP} = V_{CEO}	7	-	-	A
I_{EBO}	Emitter Cutoff Current	V_{EB}= 8 V, I_C= 0	-	-	15	mA
$V_{CE(SAT)}$	Collector-Emitter saturation Voltage (4-5)	I_C= 1 A, I_B= 10 mA	-	-	1.5	V
		I_C= 2 A, I_B= 100 mA	-	-	1.5	
		I_C= 5 A, I_B= 250 mA	-	-	2	
$V_{BE(SAT)}$	Base-Emitter Saturation Voltage (4-5)	I_C= 2 A, I_B= 100 mA	-	-	2.2	V
		I_C= 5 A, I_B= 250 mA	-	-	2.3	
h_{FE}	Forward Current transfer ratio (4-5)	V_{CE}= 5.0 V, I_C= 2.5 A	150	-	-	-
		V_{CE}= 5.0 V, I_C= 5 A	50	-	-	
		V_{CE}= 5.0 V, I_C= 7 A	15	-	-	
h_{fe}	Small Signal Forward Current transfer ratio	V_{CE}= 5.0 V, I_C= 0.5 A f= 1 kHz	200	-	-	-
V_F	Diode forward Voltage	I_F= 7 A	-	-	3.5	V
C_{OB}	Output Capacitance	I_E= 0 ; V_{CB}= 10 V f= 1 MHz	-	-	150	pF

SWITCHING TIMES.

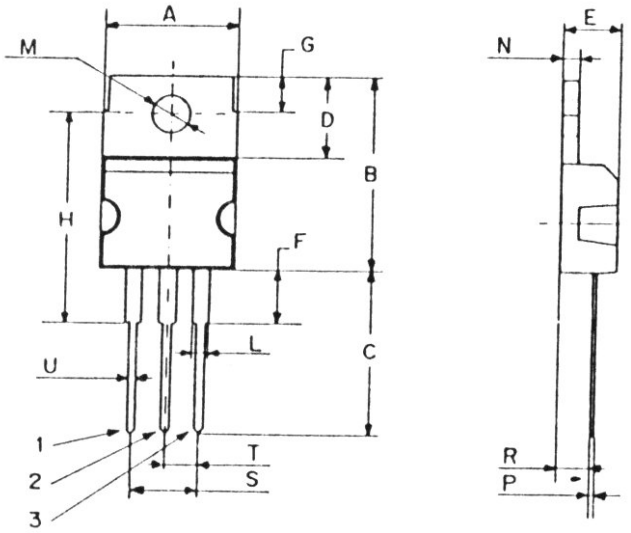
Symbol	Ratings	Test Condition(s)	Min	Typ	Max	Unit
t_d	Delay Time	V_{CC}= 250 V; I_C= 5 A I_{B1}= -I_{B2}= 250 mA t_p = 20 µs, duty cycle <2%.	-	0.03	-	µs
t_r	Rise time		-	0.18	-	
t_s	Storage Time		-	3.5	-	
t_f	Fall Time		-	1.6	-	

4. These parameters must be measured using pulse techniques, t_p 300 µs, Duty Cycle ∠ 2.0%
5. These parameters must be measured using voltage-sensing contacts, separate from the current carrying contacts.

TIP150

MECHANICAL DATA CASE TO-220

DIMENSIONS (mm)		
	Min.	Max.
A	9,90	10,30
B	15,65	15,90
C	13,20	13,40
D	6,45	6,65
E	4,30	4,50
F	2,70	3,15
G	2,60	3,00
H	15,75	17.15
L	1,15	1,40
M	3,50	3,70
N	-	1,37
P	0,46	0,55
R	2,50	2,70
S	4,98	5,08
T	2.49	2.54
U	0,70	0,90



Pin 1 :	Base
Pin 2 :	Collector
Pin 3 :	Emitter
Package	Collector

Revised August 2012