TIP145

PNP power Darlington transistor

Features

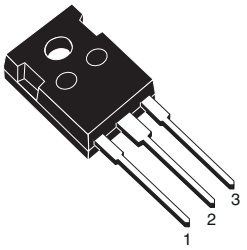
- Monolithic Darlington configuration
- Integrated antiparallel collector-emitter diode

Application

- Linear and switching industrial equipment

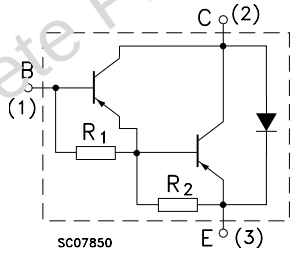
Description

The TIP145 is an Epitaxial-base PNP power transistor in monolithic Darlington configuration, mounted in TO-247 plastic package. It is intended for use in power linear and switching applications.



TO-247

Figure 1. Internal schematic diagram



R_1 typ. =5 KΩ R_2 typ. =150 Ω

Table 1. Device summary

Order code	Marking	Package	Packaging
TIP145	TIP145	TO-247	Tube

1 Absolute maximum ratings

Table 2. Absolute maximum ratings

Symbol	Parameter	Value	Unit
V_{CBO}	Collector-base voltage (I_E = 0)	-60	V
V_{CEO}	Collector-emitter voltage (I_B = 0)	-60	V
V_{EBO}	Emitter-base voltage (I_C = 0)	-5	V
I_C	Collector current	-10	A
I_{CM}	Collector peak current	-20	A
I_B	Base current	-0.5	A
P_{TOT}	Total dissipation at T_{case} = 25°C	125	W
T_{stg}	Storage temperature	-65 to 150	°C
T_J	Max. operating junction temperature	150	°C

Table 3. Thermal data

Symbol	Parameter		Value	Unit
$R_{thj\text{-}case}$	Thermal resistance junction-case	max	1	°C/W

2 Electrical characteristics

(T_{case} = 25°C; unless otherwise specified)

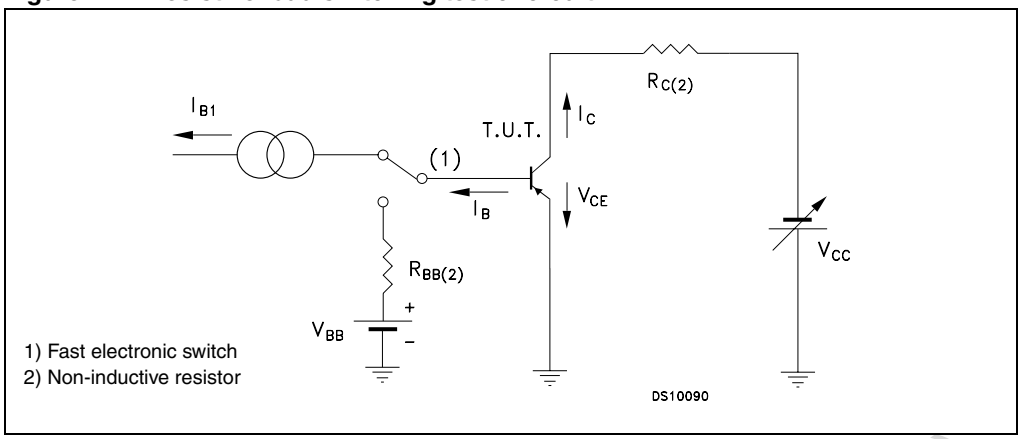
Table 4. Electrical characteristics

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
I_{CBO}	Collector cut-off current (I_E = 0)	V_{CB} = -60 V			-1	mA
I_{CEO}	Collector cut-off current (I_B = 0)	V_{CE} = -30 V			-2	mA
I_{EBO}	Emitter cut-off current (I_C = 0)	V_{EB} = -5 V			-2	mA
$V_{CEO(sus)}$(1)	Collector-emitter sustaining voltage (I_B = 0)	I_C = -30 mA	-60			V
$V_{CE(sat)}$(1)	Collector-emitter saturation voltage	I_C = -5 A I_B = -10 mA I_C = -10 A I_B = -40 mA			-2 -3	V V
$V_{BE(on)}$(1)	Base-emitter on voltage	I_C = -10 A V_{CE} = -4 V			-3	V
h_{FE}(1)	DC current gain	I_C = -5 A V_{CE} = -4 V I_C = -10 A V_{CE} = -4 V	1000 500			
t_{on} t_{off}	Resistive load Turn-on time Turn-off time	I_C = -10 A R_L = 3 Ω I_{B1} = -I_{B2} = -40 mA		0.9 4		µs µs

1. Pulsed duration = 300 µs, duty cycle ≤1.5%.

2.1 Test circuit

Figure 2. Resistive load switching test circrcuit



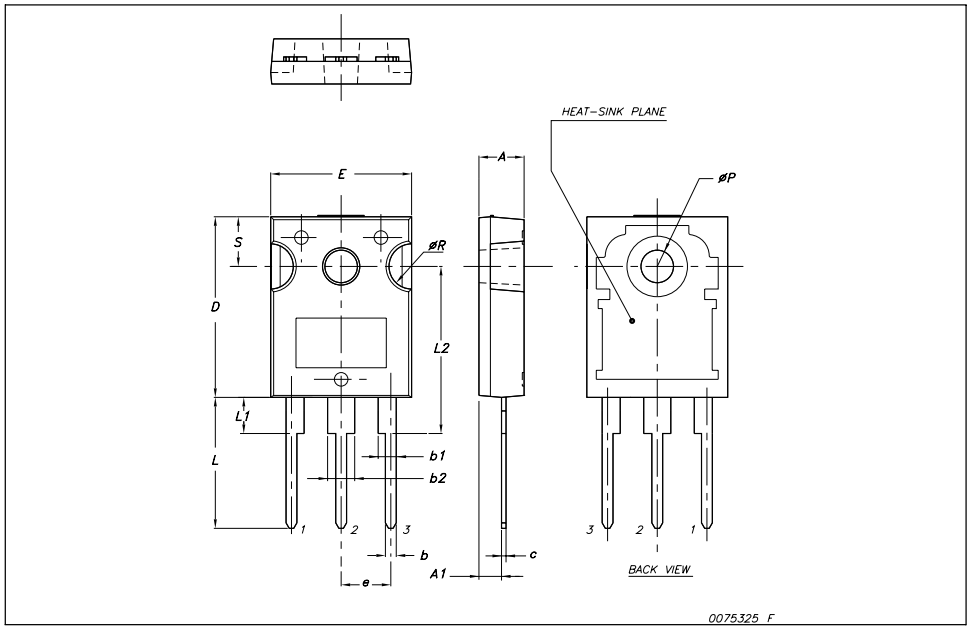
1) Fast electronic switch
2) Non-inductive resistor

3 Package mechanical data

In order to meet environmental requirements, ST offers these devices in ECOPACK® packages. These packages have a lead-free second level interconnect . The category of second level interconnect is marked on the package and on the inner box label, in compliance with JEDEC Standard JESD97. The maximum ratings related to soldering conditions are also marked on the inner box label. ECOPACK is an ST trademark. ECOPACK specifications are available at: www.st.com

TO-247 Mechanical data

Dim.	mm.		
	Min.	Typ	Max.
A	4.85		5.15
A1	2.20		2.60
b	1.0		1.40
b1	2.0		2.40
b2	3.0		3.40
c	0.40		0.80
D	19.85		20.15
E	15.45		15.75
e		5.45	
L	14.20		14.80
L1	3.70		4.30
L2		18.50	
øP	3.55		3.65
øR	4.50		5.50
S		5.50	



4 Revision history

Table 5. Document revision history

Date	Revision	Changes
19-Oct-2007	1	Initial version
26-Oct-2007		Minor text changes
09-Nov-2007	3	Package change from SOT-93 to TO-247, according to: PCN APM-PWR/07/2362.

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