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TIP145
Silicon PNP Transistor
Darlington Power Amp, Switch
TO–247 Type Package

Description:

The TIP145 is a silicon PNP Darlington transistor in a TO–247 type package designed for general purpose amplifier and low frequency switching applications.

Features:

- High DC Current Gain: h_{FE} = 1000 (Min) at I_C = 5A, V_{CE} = 4V
- Collector–Emitter Sustaining Voltage: $V_{CEO(sus)}$ = 60V (Min) at I_C = 30mA

Absolute Maximum Ratings: (Note 1)

Collector–Emitter Voltage, V_{CEO} 60V
Collector–Base Voltage, V_{CB} 60V
Emitter–Base Voltage, V_{EB} 5V
Collector Current, I_C
  Continuous 10A
  Peak (Note 2) 15A
Base Current, I_B 500mA
Total Power Dissipation (T_C = +25°C), P_D 125W
Operating Junction Temperature Range, T_J . . . . . –65° to +150°C
Storage Temperature Range, T_{stg} . . . . . –65° to +150°C
Thermal Resistance, Junction–to–Case, R_{thJC} . . . . . 1.0°C/W
Thermal Resistance, Junction–to–Ambient, R_{thJA} . . . . . 35.7°C/W

Note 1. Stresses exceeding those listed in the Absolute Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damages may occur and reliability may be affected.

Note 2. 5ms, ≤10% Duty Cycle

Electrical Characteristics: (T_C = +25°C unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
OFF Characteristics						
Collector–Emitter Sustaining Voltage	$V_{CEO(sus)}$	I_C = 30mA, I_B = 0, Note 3	60	–	–	V
Collector Cutoff Current	I_{CBO}	V_{CB} = 60V, I_E = 0	–	–	1.0	mA
	I_{CEO}	V_{CE} = 30V, I_B = 0	–	–	2.0	mA
Emitter Cutoff Current	I_{EBO}	V_{BE} = 5V	–	–	2	mA

Note 3. Pulse Test: Pulse Width = 300μs, Duty Cycle ≤ 2%.

Electrical Characteristics (Cont'd): (T_C = +25°C unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
ON Characteristics (Note 3)						
DC Current Gain	h_{FE}	V_{CE} = 4V, I_C = 5A	1000	–	–	
		V_{CE} = 4V, I_C = 10A	500	–	–	
Collector−Emitter Saturation Voltage	$V_{CE(sat)}$	I_C = 5A, I_B = 10mA	–	–	2.0	V
		I_C = 10A, I_B = 40mA	–	–	3.0	V
Base−Emitter Saturation Voltage	$V_{BE(sat)}$	I_C = 10A, I_B = 40mA	–	–	3.5	V
Base−Emitter On Voltage	$V_{BE(on)}$	I_C = 10A, V_{CE} = 4V	–	–	3.0	V
Switching Characteristics						
Delay Time	t_d	V_{CC} = 30V, I_C = 5A, I_B = 20mA, Duty Cycle ≤ 2%, I_{B1} = I_{B2}, R_C & R_B Varied, T_J = +25°C	–	0.15	–	μs
Rise Time	t_r		–	0.55	–	μs
Storage Time	t_s		–	2.5	–	μs
Fall Time	t_f		–	2.5	–	μs

Note 3. Pulse Test: Pulse Width = 300μs, Duty Cycle ≤ 2%.