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TIP147T

PNP Epitaxial Silicon Darlington Transistor

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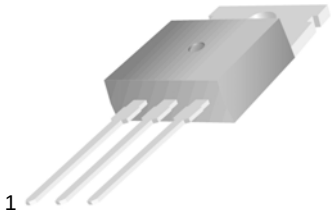
Features

- Monolithic Construction with Built−in Base−Emitter Shunt Resistors
- High DC Current Gain: h_{FE} = 1000 at V_{CE} = −4 V, I_C = −5 A (Minimum)
- Industrial Use
- Complement to TIP142T

ORDERING INFORMATION

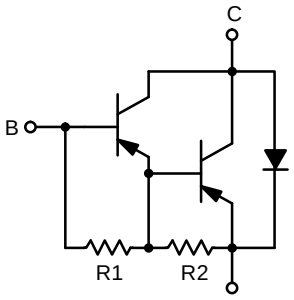
Part Number	Top Mark	Package	Packing Method
TIP147T	TIP147	TO−220 3L (Single Gauge)	Bulk
TIP147TTU	TIP147	TO−220 3L (Single Gauge)	Rail



1.Base 2.Collector 3.Emitter

TO−220
MOLDED
CASE 340AT

EQUIVALENT CIRCUIT



R1 ≅ 8 kΩ
R2 ≅ 0.12 kΩ

Table 1. ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V_{CBO}	Collector−Base Voltage	−100	V
V_{CEO}	Collector−Emitter Voltage	−100	V
V_{EBO}	Emitter−Base Voltage	−5	V
I_C	Collector Current (DC)	−10	A
I_{CP}	Collector Current (Pulse)	−15	A
I_B	Base Current (DC)	−0.5	A
P_C	Collector Dissipation (T_C = 25°C)	80	W
T_J	Junction Temperature	150	°C
T_{STG}	Storage Temperature Range	−65 to 150	°C

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

Table 2. ELECTRICAL CHARACTERISTICS Values are at T_C = 25°C unless otherwise noted.

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$V_{CEO(sus)}$	Collector−Emitter Sustaining Voltage	I_C = −30 mA, I_B = 0	−100			V
I_{CEO}	Collector Cut−Off Current	V_{CE} = −50 V, I_B = 0			−2	mA
I_{CBO}	Collector Cut−Off Current	V_{CB} = −100 V, I_E = 0			−1	mA
I_{EBO}	Emitter Cut−Off Current	V_{EB} = −5 V, I_C = 0			−2	mA
h_{FE}	DC Current Gain	V_{CE} = −4 V, I_C = −5 A	1000			
		V_{CE} = −4 V, I_C = −10 A	500			
$V_{CE(sat)}$	Collector−Emitter Saturation Voltage	I_C = −5 A, I_B = −10 mA			−2	V
		I_C = −10 A, I_B = −40 mA			−3	
$V_{BE(sat)}$	Base−Emitter Saturation Voltage	I_C = −10 A, I_B = −40 mA			−3.5	V
$V_{BE(on)}$	Base−Emitter On Voltage	V_{CE} = −4 V, I_C = −10 A			−3	V
t_D	Delay Time	V_{CC} = −30 V, I_C = −5 A, I_{B1} = −20 mA, I_{B2} = 20 mA, R_L = 6 Ω		0.15		μs
t_R	Rise Time			0.55		μs
t_{STG}	Storage Time			2.50		μs
t_F	Fall Time			2.50		μs

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

Typical Performance Characteristics

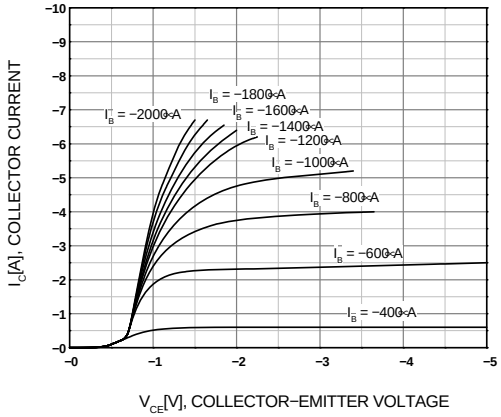


Figure 1. Static Characteristic

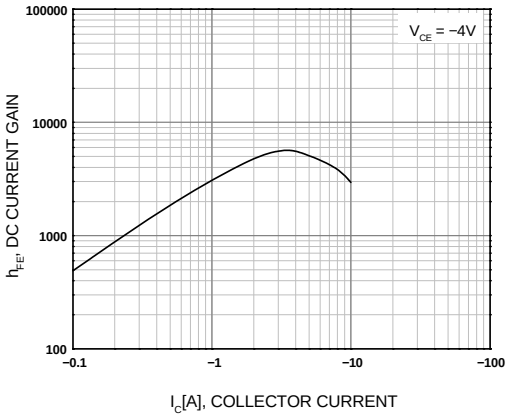


Figure 2. DC Current Gain

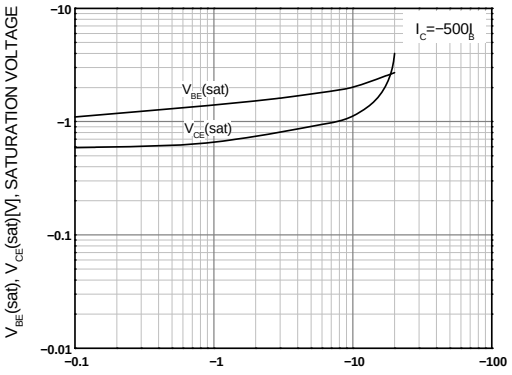


Figure 3. Collector−Emitter Voltage and Base−Emitter Saturation Voltage

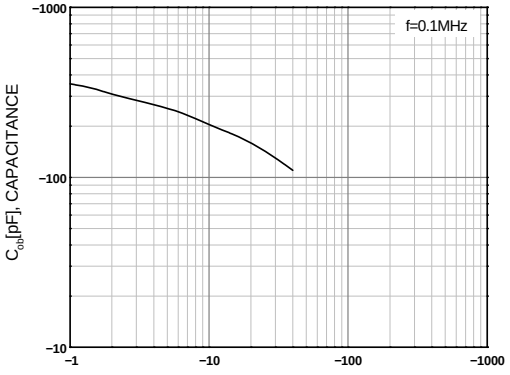


Figure 4. Collector Output Capacitance

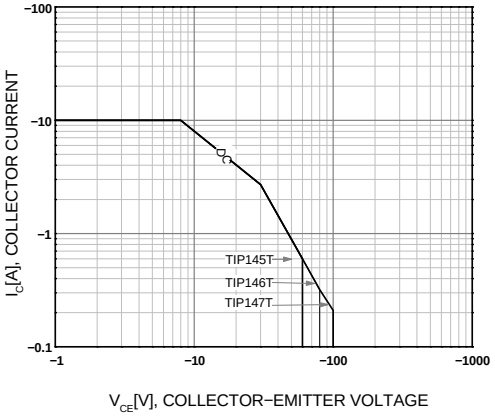


Figure 5. Safe Operating Area

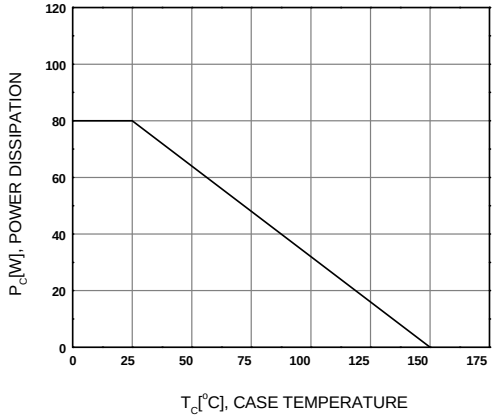


Figure 6. Power Derating

PACKAGE DIMENSIONS

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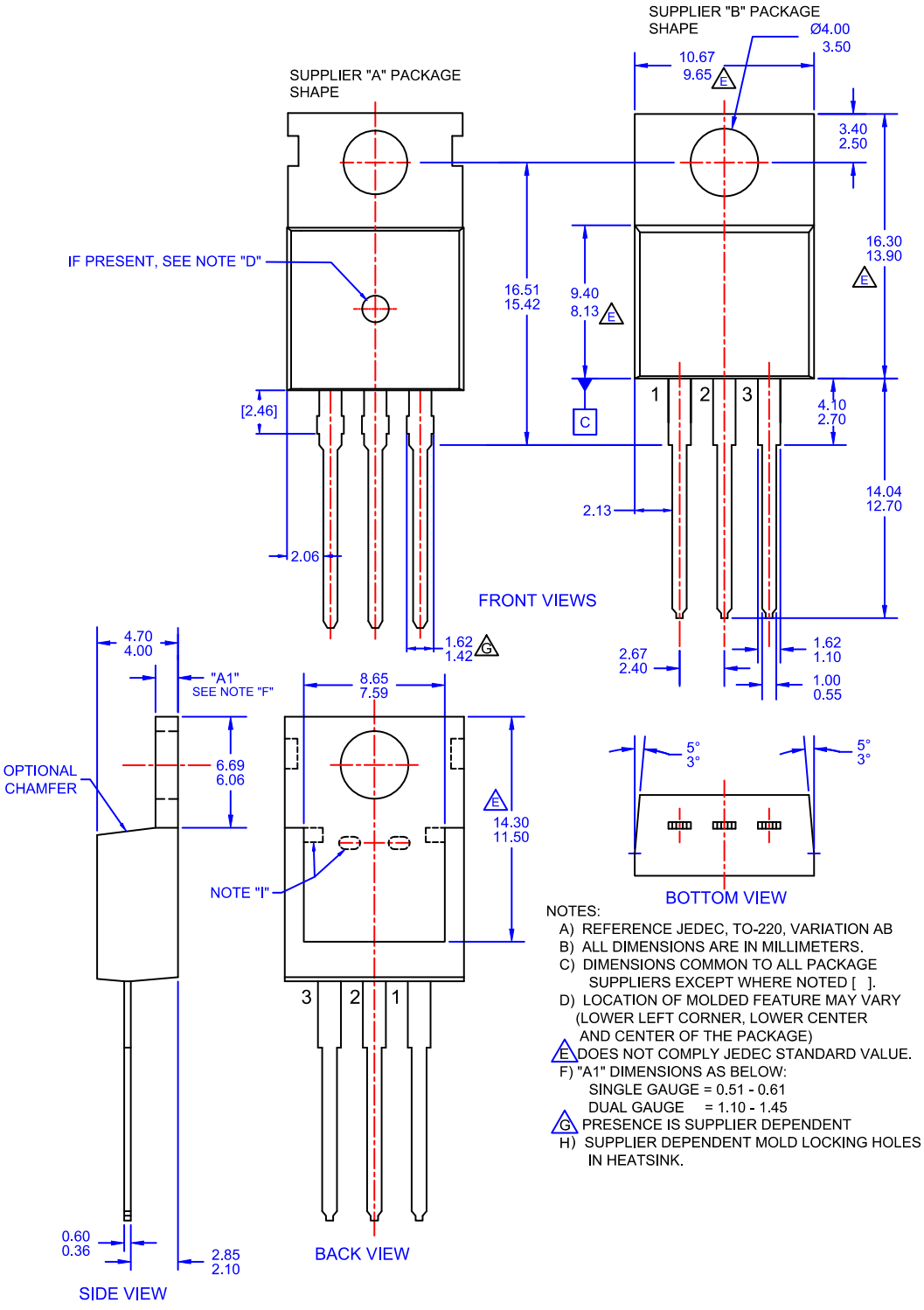

NOTES:
A) REFERENCE JEDEC, TO-220, VARIATION AB
B) ALL DIMENSIONS ARE IN MILLIMETERS.
C) DIMENSIONS COMMON TO ALL PACKAGE SUPPLIERS EXCEPT WHERE NOTED [ ].
D) LOCATION OF MOLDED FEATURE MAY VARY (LOWER LEFT CORNER, LOWER CENTER AND CENTER OF THE PACKAGE)
E DOES NOT COMPLY JEDEC STANDARD VALUE.
F) "A1" DIMENSIONS AS BELOW:
SINGLE GAUGE = 0.51 - 0.61
DUAL GAUGE = 1.10 - 1.45
G PRESENCE IS SUPPLIER DEPENDENT
H) SUPPLIER DEPENDENT MOLD LOCKING HOLES IN HEATSINK.

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