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# TIP147T

## PNP Epitaxial Silicon Darlington Transistor

### 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

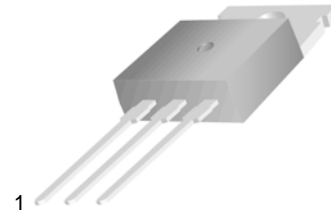
### ORDERING INFORMATION

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



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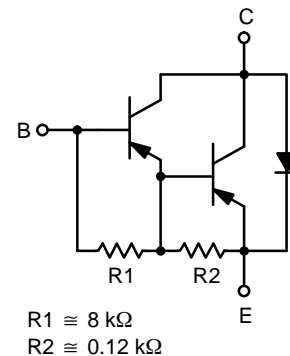
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1.Base 2.Collector 3.Emitter

**TO-220  
MOLDED  
CASE 340AT**

### EQUIVALENT CIRCUIT



# TIP147T

**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 ( $T_C = 25^\circ\text{C}$ )	80	W
$T_J$	Junction Temperature	150	$^\circ\text{C}$
$T_{STG}$	Storage Temperature Range	–65 to 150	$^\circ\text{C}$

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  $T_C = 25^\circ\text{C}$  unless otherwise noted.

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

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.

# TIP147T

## Typical Performance Characteristics

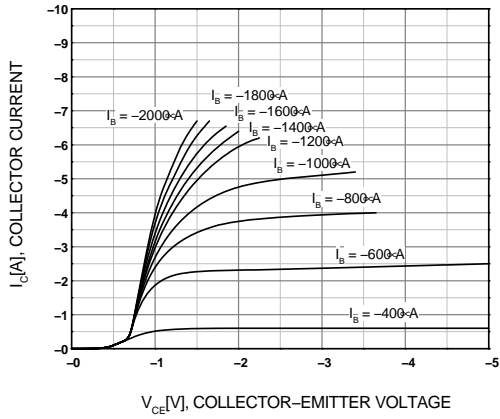


Figure 1. Static Characteristic

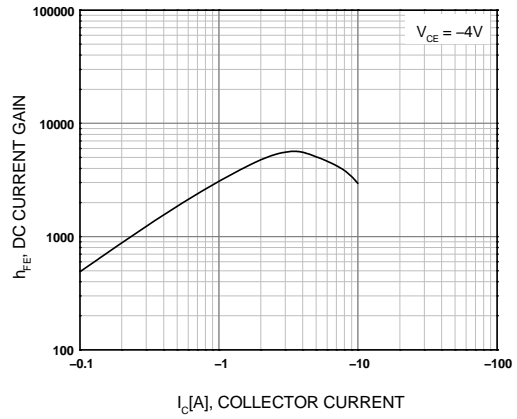


Figure 2. DC Current Gain

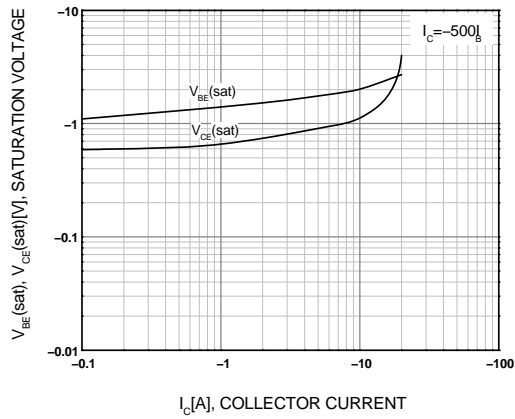


Figure 3. Collector-Emitter Voltage and Base-Emitter Saturation Voltage

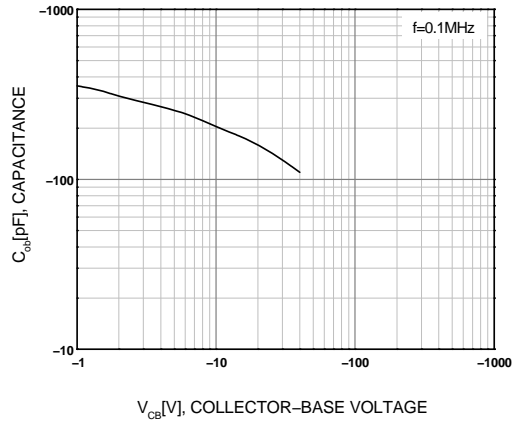


Figure 4. Collector Output Capacitance

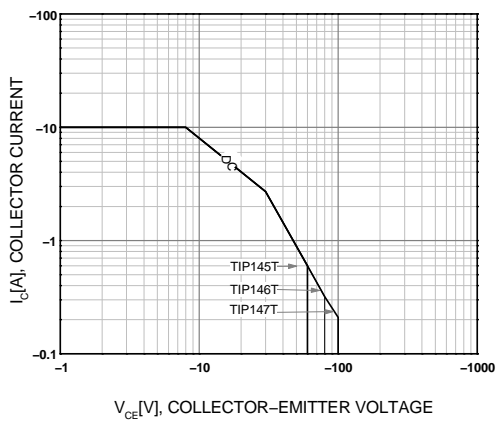


Figure 5. Safe Operating Area

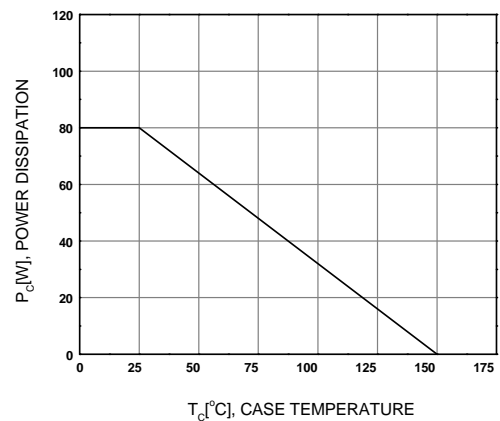
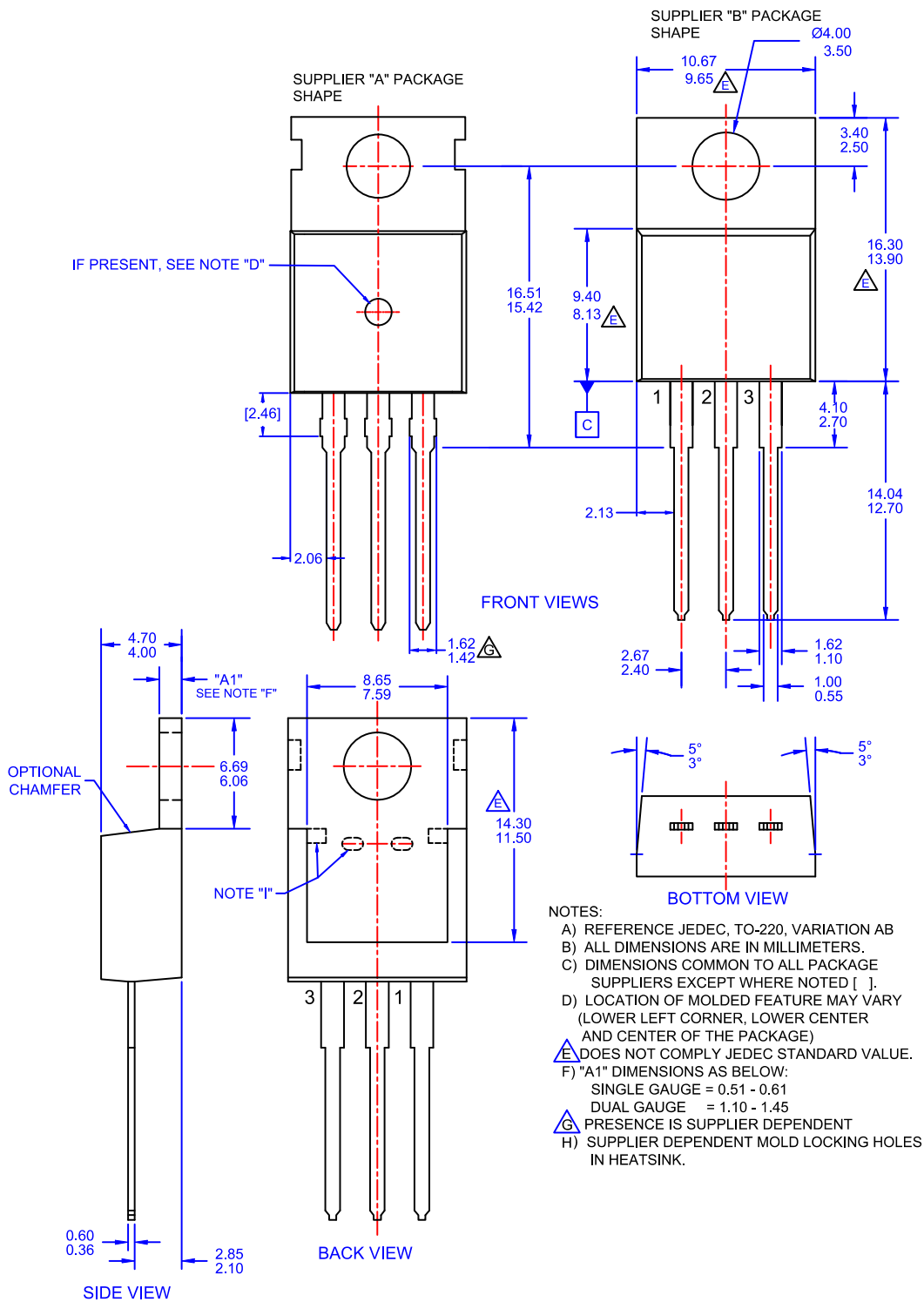


Figure 6. Power Derating

# TIP147T


## PACKAGE DIMENSIONS

TO-220-3LD  
CASE 340AT  
ISSUE O



**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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