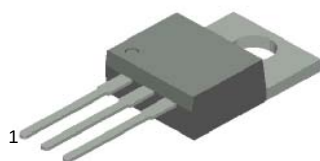


TIP145T/146T/147T

PNP Epitaxial Silicon Darlington Transistor

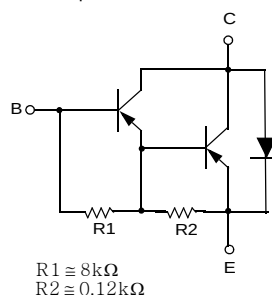
Monolithic Construction With Built In Base-Emitter Shunt Resistors

- High DC Current Gain : $h_{FE} = 1000@ V_{CE} = -4V, I_C = -5A$ (Min.)
- Industrial Use
- Complement to TIP140T/141T/142T



TO-220
1.Base 2.Collector 3.Emitter

Equivalent Circuit



Absolute Maximum Ratings * $T_C=25^\circ C$ unless otherwise noted

Symbol	Parameter	Value	Units
BV_{CBO}	Collector-Base Voltage : TIP145T	- 60	V
	: TIP146T	- 80	V
	: TIP147T	- 100	V
BV_{CEO}	Collector-Emitter Voltage : TIP145T	- 60	V
	: TIP146T	- 80	V
	: TIP147T	- 100	V
BV_{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 ($T_C=25^\circ C$)	80	W
T_J	Junction Temperature	150	$^\circ C$
T_{STG}	Storage Junction Temperature Range	- 65 ~ 150	$^\circ C$

* These ratings are limiting values above which the serviceability of any semiconductor device may be impaired.

Electrical Characteristics * $T_C=25^{\circ}\text{C}$ unless otherwise noted

Symbol	Parameter	Conditions	Min.	Typ.	Max	Units
$V_{CEO(sus)}$	Collector-Emitter Sustaining Voltage : TIP145T : TIP146T : TIP147T	$I_C = -30\text{mA}, I_B = 0$	- 60 - 80 - 100			V V V
I_{CEO}	Collector Cut-off Current : TIP145T : TIP146T : TIP147T	$V_{CE} = -30\text{V}, I_B = 0$ $V_{CE} = -40\text{V}, I_B = 0$ $V_{CE} = -50\text{V}, I_B = 0$			- 2 - 2 - 2	mA mA mA
I_{CBO}	Collector Cut-off Current : TIP145T : TIP146T : TIP147T	$V_{CB} = -60\text{V}, I_E = 0$ $V_{CB} = -80\text{V}, I_E = 0$ $V_{CB} = -100\text{V}, I_E = 0$			- 1 - 1 - 1	mA mA mA
I_{EBO}	Emitter Cut-off Current	$V_{BE} = -5\text{V}, I_C = 0$			- 2	mA
h_{FE}	DC Current Gain	$V_{CE} = -4\text{V}, I_C = -5\text{A}$ $V_{CE} = -4\text{V}, I_C = -10\text{A}$	1000 500			
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C = -5\text{A}, I_B = -10\text{mA}$ $I_C = -10\text{A}, I_B = -40\text{mA}$			- 2 - 3	V V
$V_{BE(sat)}$	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		μs
t_r	Rise Time			0.55		μs
t_{stg}	Storage Time			2.5		μs
t_f	Fall Time			2.5		μs

* Pulse Test: Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 2\%$

Typical Characteristics

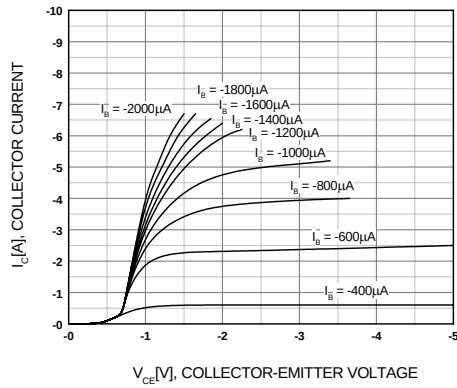


Figure 1. Static Characteristic

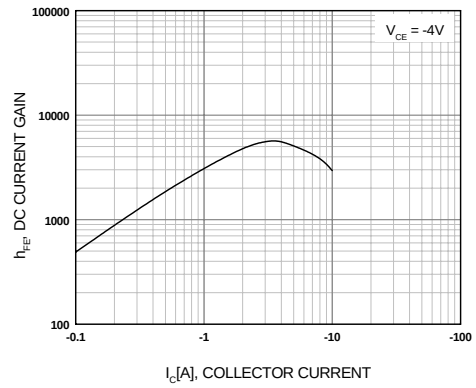


Figure 2. DC current Gain

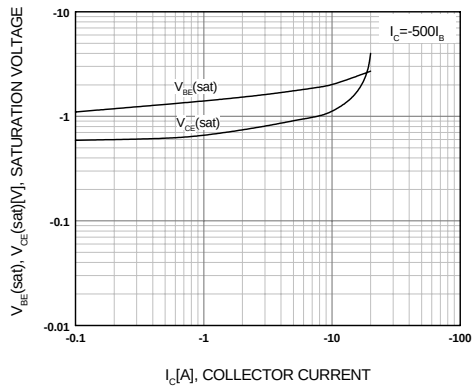


Figure 3. Collector-Emitter Saturation Voltage
Base-Emitter Saturation Voltage

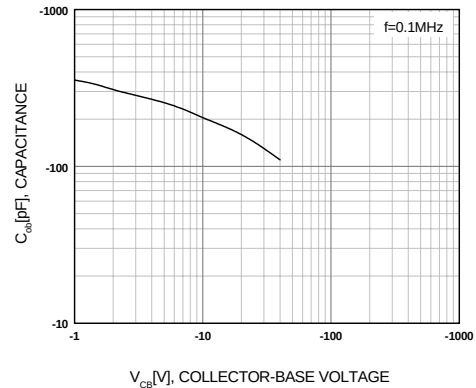


Figure 4. Collector Output Capacitance

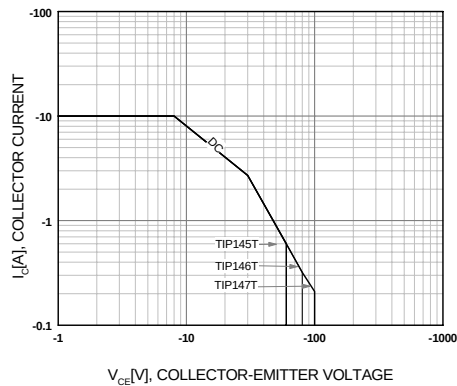


Figure 5. Safe Operating Area

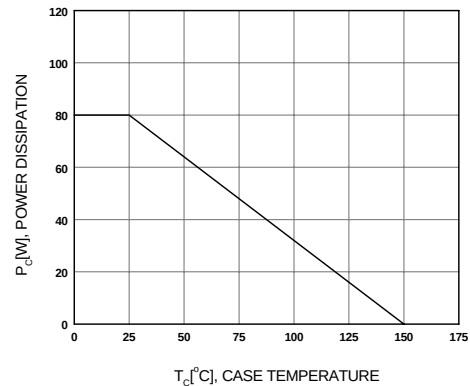
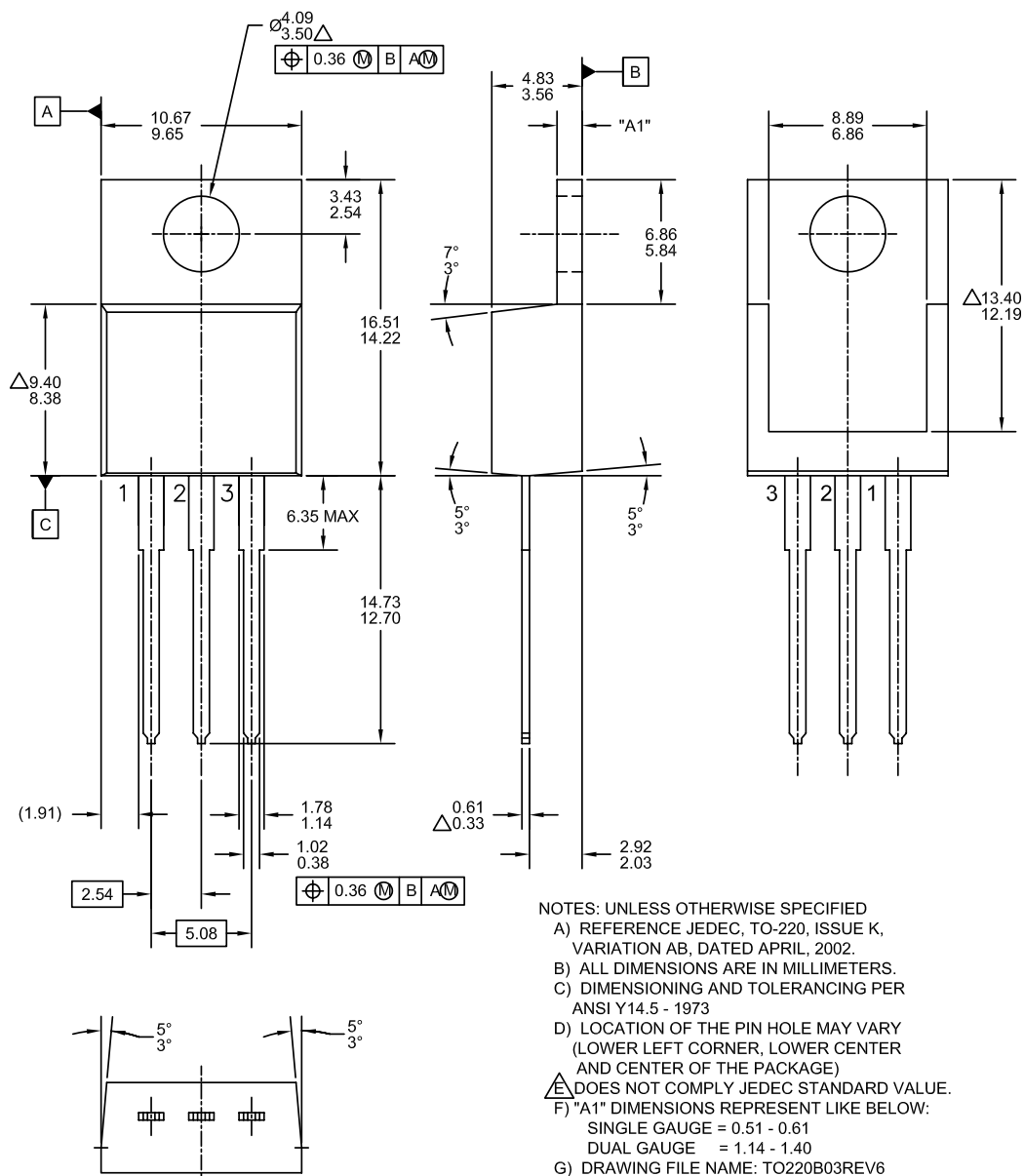


Figure 6. Power Derating

Mechanical Dimensions

TO220



NOTES: UNLESS OTHERWISE SPECIFIED

A) REFERENCE JEDEC, TO-220, ISSUE K, VARIATION AB, DATED APRIL, 2002.

B) ALL DIMENSIONS ARE IN MILLIMETERS.

C) DIMENSIONING AND TOLERANCING PER
ANSI Y14.5 - 1973

D) LOCATION OF THE PIN HOLE MAY VARY
(LOWER LEFT CORNER, LOWER CENTER
AND CENTER OF THE PACKAGE)

△ DOES NOT COMPLY JEDEC STANDARD VALUE.

F) "A1" DIMENSIONS REPRESENT LIKE BELOW:

SINGLE GAUGE = 0.51 - 0.61

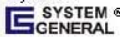
DUAL GAUGE = 1.14 - 1.40

G) DRAWING FILE NAME: TO220B03REV6



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