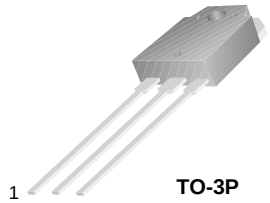
FAIRCHILD SEMICONDUCTOR®

October 2009

TIP145 / TIP146 / TIP147
PNP Epitaxial Silicon Darlington Transistor

Features

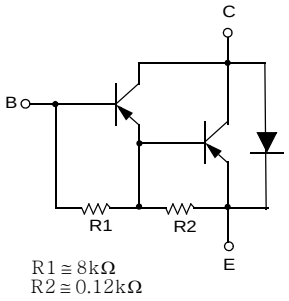
- Monolithic Construction With Built In Base-Emitter Shunt Resistors
- High DC Current Gain : h_{FE} = 1000 @ V_{CE} = -4V, I_C = -5A (Min.)
- Industrial Use
- Complement to TIP140/141/142



TO-3P

1.Base 2.Collector 3.Emitter

Equivalent Circuit



$R1 \cong 8k\Omega$
$R2 \cong 0.12k\Omega$

Absolute Maximum Ratings* T_A = 25°C unless otherwise noted

Symbol	Parameter	Value	Units
V_{CBO}	Collector-Base Voltage : TIP145 : TIP146 : TIP147	- 60 - 80 - 100	V V V
V_{CEO}	Collector-Emitter Voltage : TIP145 : TIP146 : TIP147	- 60 - 80 - 100	V V 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)	125	W
T_J	Junction Temperature	150	°C
T_{STG}	Storage Temperature	- 65 to +150	°C

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

Electrical Characteristics* T_A=25°C unless otherwise noted

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
V_{CEO}(sus)	Collector-Emitter Sustaining Voltage : TIP145 : TIP146 : TIP147	I_C = - 30mA, I_B = 0	 - 60 - 80 - 100			 V V V
I_{CEO}	Collector Cut-off Current : TIP145 : TIP146 : TIP147	 V_{CE} = - 30V, I_B = 0 V_{CE} = - 40V, I_B = 0 V_{CE} = - 50V, I_B = 0			 - 2 - 2 - 2	 mA mA mA
I_{CBO}	Collector Cut-off Current : TIP145 : TIP146 : TIP147	 V_{CB} = - 60V, I_E = 0 V_{CB} = - 80V, I_E = 0 V_{CB} = - 100V, I_E = 0			 - 1 - 1 - 1	 mA mA mA
I_{EBO}	Emitter Cut-off Current	V_{BE} = - 5V, I_C = 0			- 2	mA
h_{FE}	DC Current Gain	V_{CE} = - 4V,I_C = - 5A V_{CE} = - 4V, I_C = - 10A	1000 500			
V_{CE}(sat)	Collector-Emitter Saturation Voltage	I_C = - 5A, I_B = - 10mA I_C = - 10A, I_B = - 40mA			- 2 - 3	V V
V_{BE}(sat)	Base-Emitter Saturation Voltage	I_C = - 10A, I_B = - 40mA			- 3.5	V
V_{BE}(on)	Base-Emitter On Voltage	V_{CE} = - 4V, I_C = - 10A			- 3	V
t_D	Delay Time	V_{CC} = - 30V, I_C = - 5A I_{B1}= -20mA, I_{B2} = 20mA R_L = 6Ω		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≤300µs, Duty Cycle≤2%

Typical Performance Characteristics

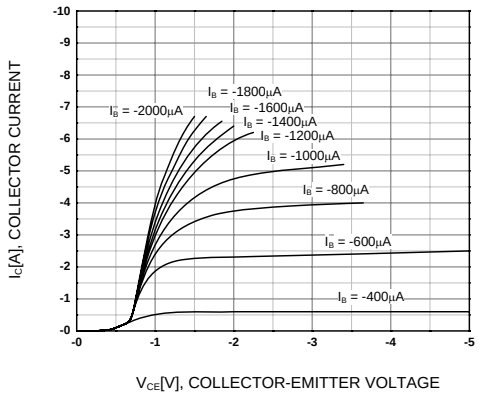


Figure 1. Static Characteristic

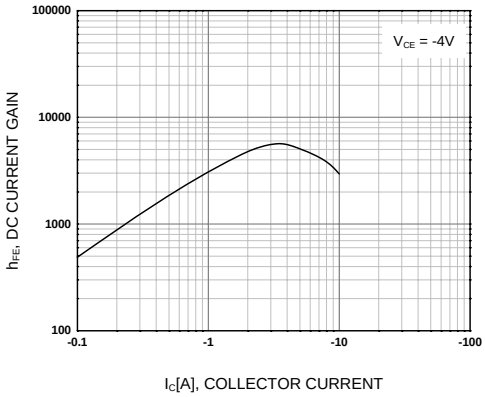


Figure 2. DC current Gain

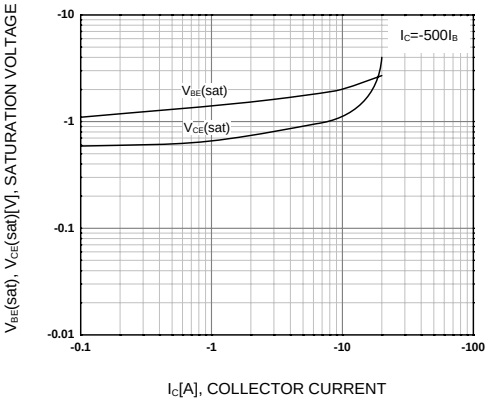


Figure 3. Collector-Emitter Saturation Voltage Base-Emitter Saturation Voltage

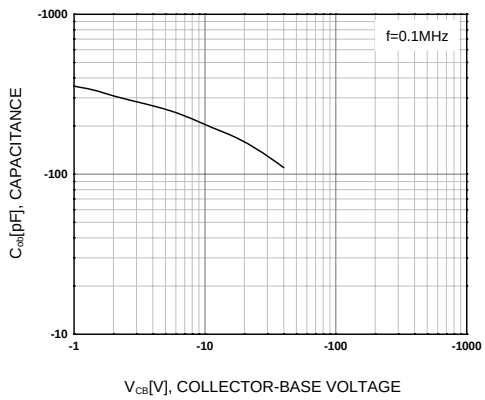


Figure 4. Collector Output Capacitance

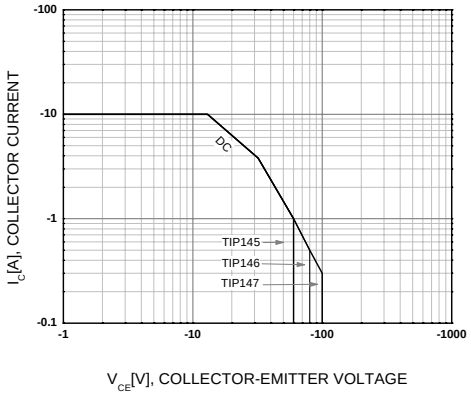


Figure 5. Safe Operating Area

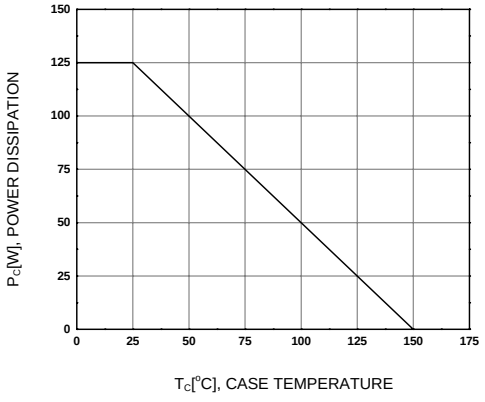
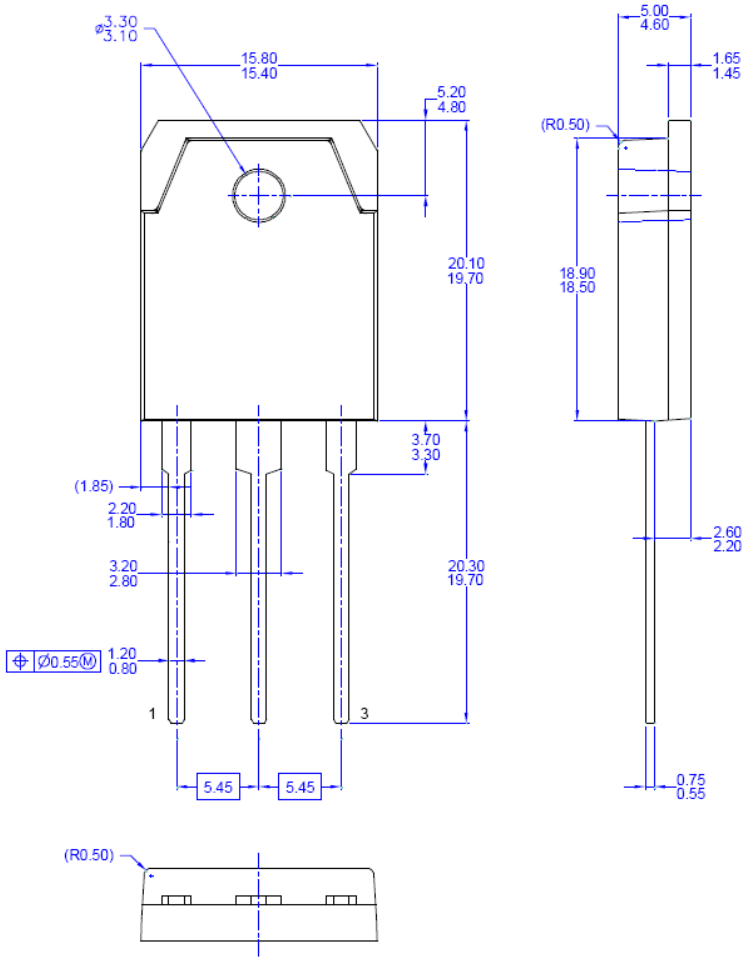


Figure 6. Power Derating

Physical Dimensions

TO-3P



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