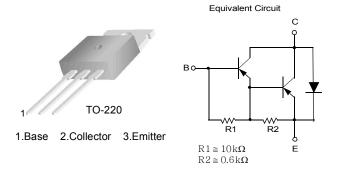


October 2008

# TIP105/TIP106/TIP107 PNP Epitaxial Silicon Darlington Transistor

- · Monolithic Construction With Built In Base-Emitter Shunt Resistors
- High DC Current Gain :  $h_{FE}$ =1000 @  $V_{CE}$ = -4V,  $I_{C}$ = -3A (Min.)
- Collector-Emitter Sustaining Voltage
- Low Collector-Emitter Saturation Voltage
- Industrial Use
- Complementary to TIP100/101/102



## Absolute Maximum Ratings\* T<sub>a</sub> = 25°C unless otherwise noted

Symbol	Parameter	Ratings	Units
$V_{CBO}$	Collector-Base Voltage : TIP105	- 60	V
	: TIP106	- 80	V
	: TIP107	- 100	V
V <sub>CEO</sub>	Collector-Emitter Voltage : TIP105	- 60	V
	: TIP106	- 80	V
	: TIP107	- 100	V
V <sub>EBO</sub>	Emitter-Base Voltage	- 5	V
I <sub>C</sub>	Collector Current (DC)	- 8	Α
I <sub>CP</sub>	Collector Current (Pulse)	- 15	Α
I <sub>B</sub>	Base Current (DC)	- 1	Α
P <sub>C</sub>	Collector Dissipation (T <sub>a</sub> =25°C)	2	W
	Collector Dissipation (T <sub>C</sub> =25°C)	80	W
TJ	Junction Temperature	150	°C
T <sub>STG</sub>	Storage Temperature	- 65 ~ 150	°C

<sup>\*</sup> These ratings are limiting values above which the serviceability of any semiconductor device may be impaired.

# $\textbf{Electrical Characteristics*} \ \textbf{T}_{a} = 25^{\circ}\textbf{C} \ \textbf{unless otherwise noted}$

Symbol	Parameter	Test Condition	Min.	Тур.	Max.	Units
V <sub>CEO</sub> (sus)	Collector-Emitter Sustaining Voltage : TIP105 : TIP106 : TIP107	I <sub>C</sub> = -30mA, I <sub>B</sub> = 0	-60 -80 -100			V V V
I <sub>CEO</sub>	Collector Cut-off Current : TIP105 : TIP106 : TIP107	$V_{CE} = -30V, I_{B} = 0$ $V_{CE} = -40V, I_{B} = 0$ $V_{CE} = -50V, I_{B} = 0$			-50 -50 -50	μΑ μΑ μΑ
I <sub>CBO</sub>	Collector Cut-off Current : TIP105 : TIP106 : TIP107	$V_{CB} = -60V, I_{E} = 0$ $V_{CB} = -80V, I_{E} = 0$ $V_{CB} = -100V, I_{E} = 0$			-50 -50 -50	μΑ μΑ μΑ
I <sub>EBO</sub>	Emitter Cut-off Current	$V_{BE} = -5V, I_{C} = 0$			-2	mA
h <sub>FE</sub>	DC Current Gain	$V_{CE} = -4V, I_{C} = -3A$ $V_{CE} = -4V, I_{C} = -8A$	1000 200		20000	
V <sub>CE</sub> (sat)	Collector-Emitter Saturation Voltage	$I_C = -3A$ , $I_B = -6mA$ $I_C = -8A$ , $I_B = -80mA$			-2 -2.5	V V
V <sub>BE</sub> (on)	Base-Emitter On Voltage	$V_{CE} = -4V, I_{C} = -8A$			-2.8	V
C <sub>ob</sub>	Output Capacitance	$V_{CB} = -10V, I_{E} = 0, f = 0.1MHz$			300	pF

<sup>\*</sup> Pulse Test: Pulse Width≤300μs, Duty Cycle≤2%

# **Typical Characteristics**

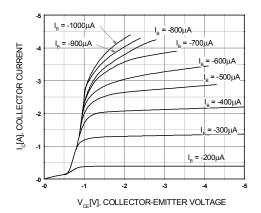


Figure 1. Static Characteristic

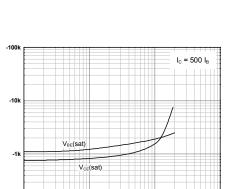


Figure 3. Collector-Emitter Saturation Voltage Base-Emitter Saturation Voltage

I<sub>C</sub>[A], COLLECTOR CURRENT

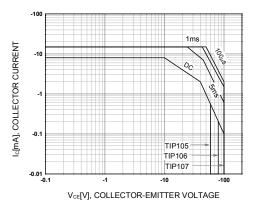


Figure 5. Safe Operating Area

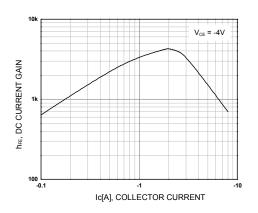


Figure 2. DC current Gain

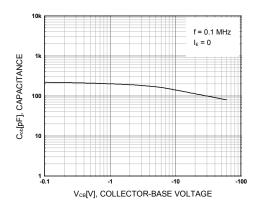


Figure 4. Collector Output Capacitance

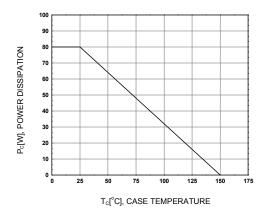
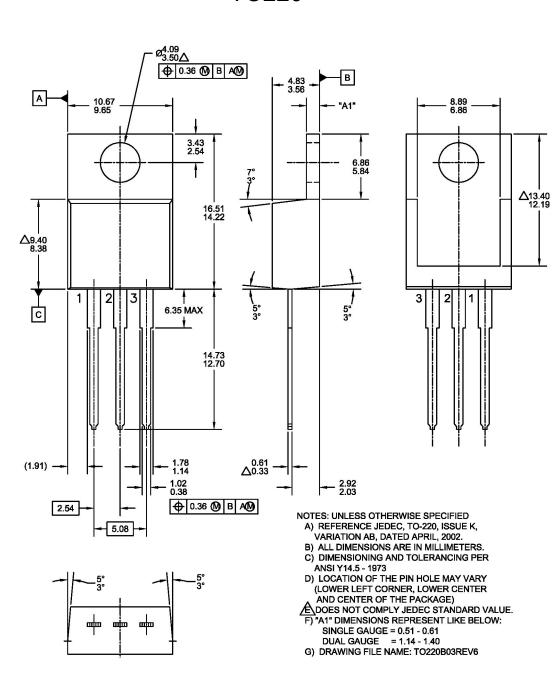


Figure 6. Power Derating

VBE(Sat), VCE(Sat)[V], SATURATION VOLTAGE

#### **Mechanical Dimensions**

## TO220







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