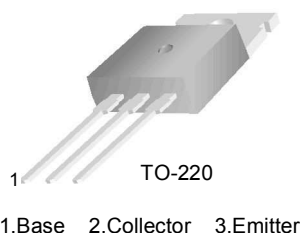


TIP47/TIP48/TIP49/TIP50

NPN Silicon Transistor

- High Voltage and Switching Applications
- High Sustaining Voltage : $V_{CEO(sus)} = 250 - 400V$
- 1A Rated Collector Current



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

Symbol	Parameter	Ratings	Units
V_{CBO}	Collector-Base Voltage : TIP47	350	V
	: TIP48	400	V
	: TIP49	450	V
	: TIP50	500	V
V_{CEO}	Collector-Emitter Voltage : TIP47	250	V
	: TIP48	300	V
	: TIP49	350	V
	: TIP50	400	V
V_{EBO}	Emitter-Base Voltage	5	V
I_C	Collector Current (DC)	1	A
I_{CP}	Collector Current (Pulse)	2	A
I_B	Base Current	0.6	A
P_C	Collector Dissipation ($T_C=25^\circ C$)	40	W
	Collector Dissipation ($T_a=25^\circ C$)	2	W
T_J	Junction Temperature	150	$^\circ C$
T_{STG}	Storage Temperature	- 65 ~ 150	$^\circ C$

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

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

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
$V_{CEX(sus)}$	Collector-Emitter Sustaining Voltage : TIP47 : TIP48 : TIP49 : TIP50	$I_C = 30\text{mA}, I_B = 0$	250 300 350 400			V V V V
I_{CEO}	Collector Cut-off Current : TIP47 : TIP48 : TIP49 : TIP50	$V_{CE} = 150\text{V}, I_B = 0$ $V_{CE} = 200\text{V}, I_B = 0$ $V_{CE} = 250\text{V}, I_B = 0$ $V_{CE} = 300\text{V}, I_B = 0$			1 1 1 1	mA mA mA mA
I_{CEX}	Collector Cut-off Current : TIP47 : TIP48 : TIP49 : TIP50	$V_{CE} = 350\text{V}, V_{BE} = 0$ $V_{CE} = 400\text{V}, V_{BE} = 0$ $V_{CE} = 450\text{V}, V_{BE} = 0$ $V_{CE} = 500\text{V}, V_{BE} = 0$			1 1 1 1	mA mA mA mA
I_{EBO}	Emitter Cut-off Current	$V_{EB} = 5\text{V}, I_C = 0$			1	mA
h_{FE}	* DC Current Gain	$V_{CE} = 10\text{V}, I_C = 0.3\text{A}$ $V_{CE} = 10\text{V}, I_C = 1\text{A}$	30 10		150	
$V_{CE(sat)}$	* Collector-Emitter Saturation Voltage	$I_C = 1\text{A}, I_B = 0.2\text{A}$			1	V
$V_{BE(sat)}$	* Base-Emitter Saturation Voltage	$V_{CE} = 10\text{V}, I_C = 1\text{A}$			1.5	V
f_T	Current Gain Bandwidth Product	$V_{CE} = 10\text{V}, I_C = 0.2\text{A}, f = 1\text{MHz}$	10			MHz

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

Typical Characteristics

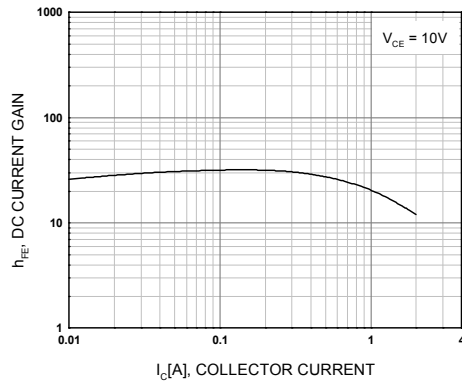


Figure 1. DC current Gain

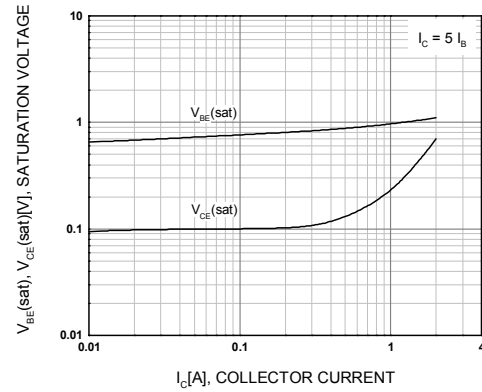


Figure 2. Collector-Emitter Saturation Voltage
Base-Emitter Saturation Voltage

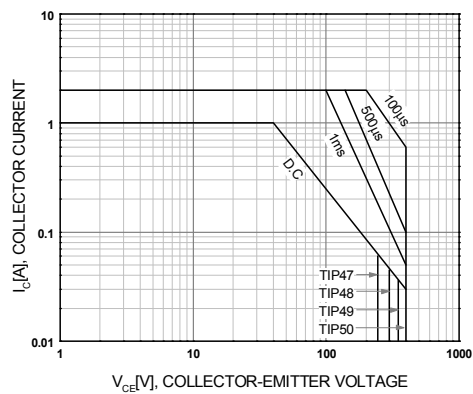


Figure 3. Safe Operating Area

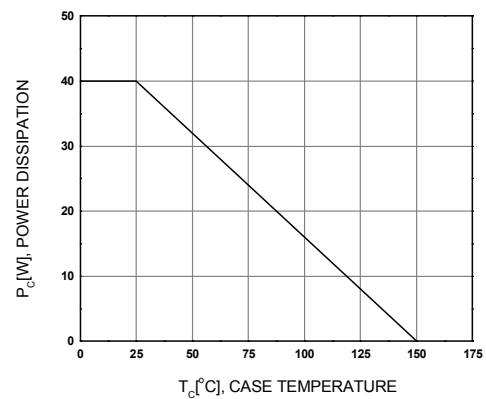
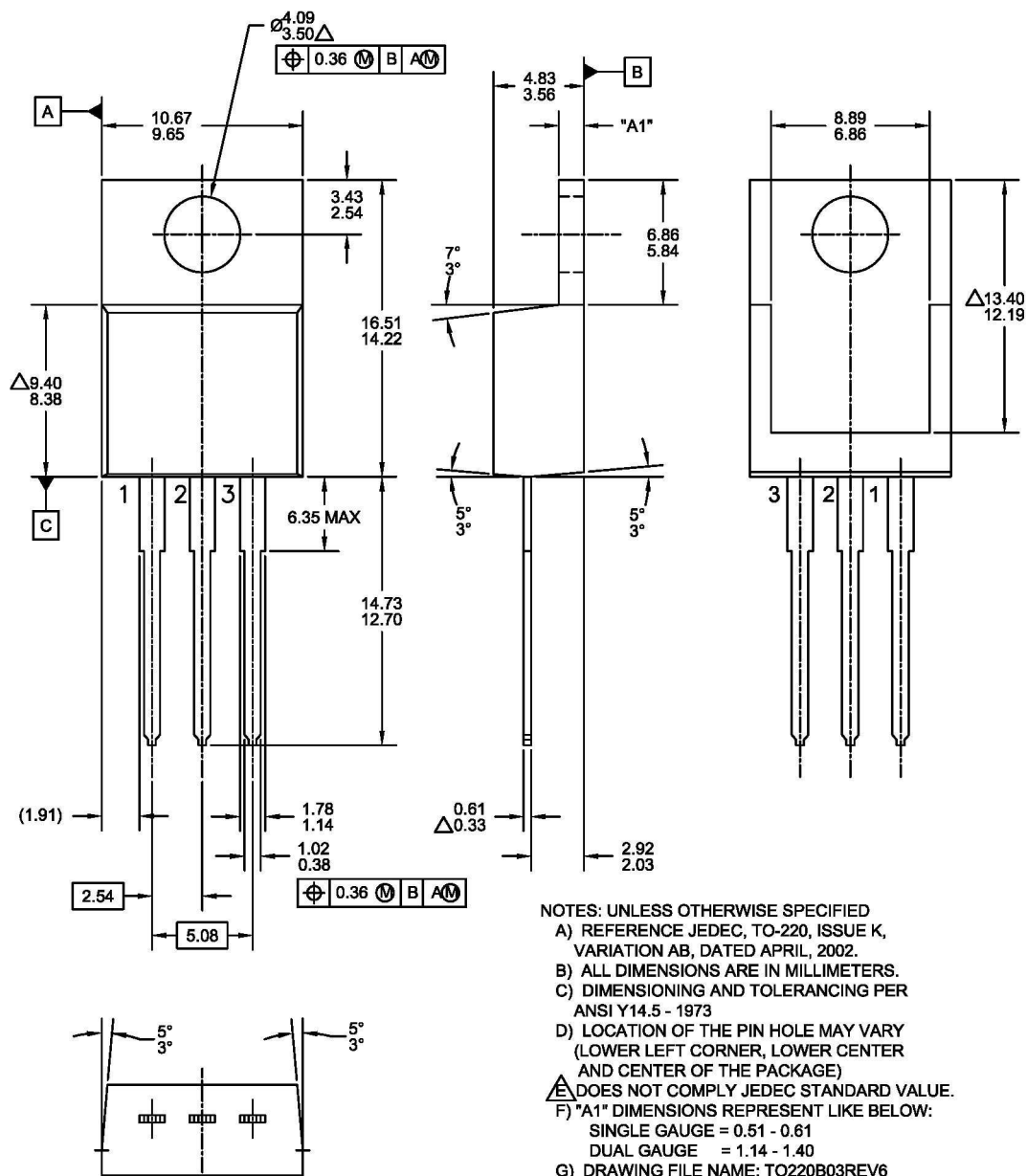


Figure 4. Power Derating

Mechanical Dimensions

TO220



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