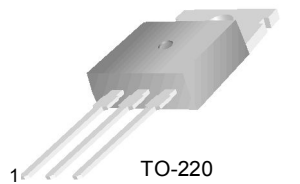


TIP47/TIP48/TIP49/TIP50 NPN Silicon Transistor

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



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

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

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

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

Typical Characteristics

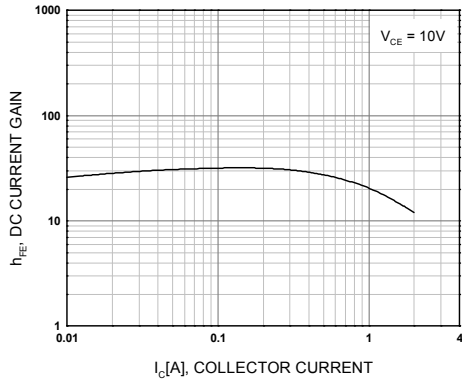


Figure 1. DC current Gain

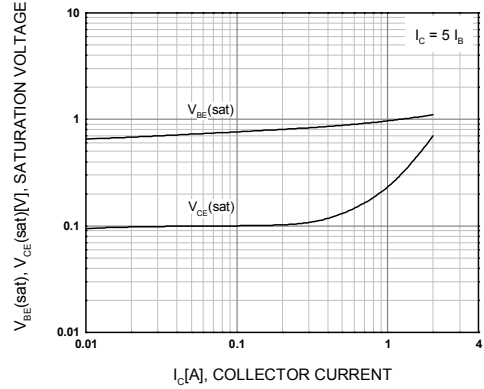


Figure 2. Collector-Emitter Saturation Voltage
Base-Emitter Saturation Voltage

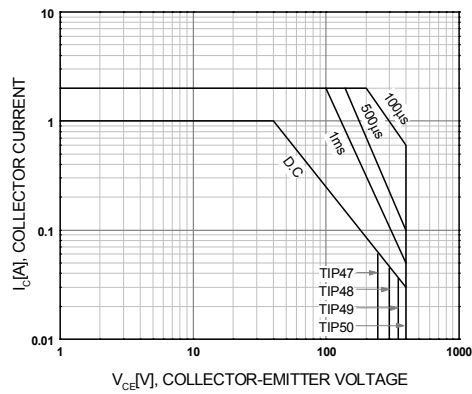


Figure 3. Safe Operating Area

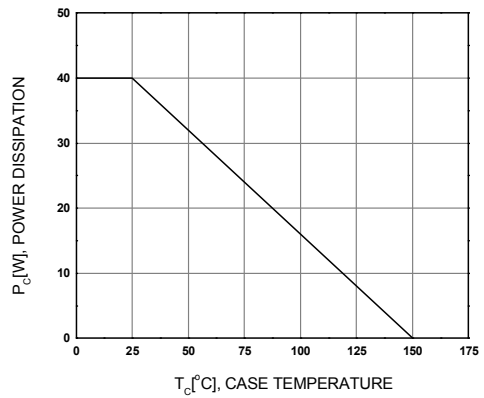
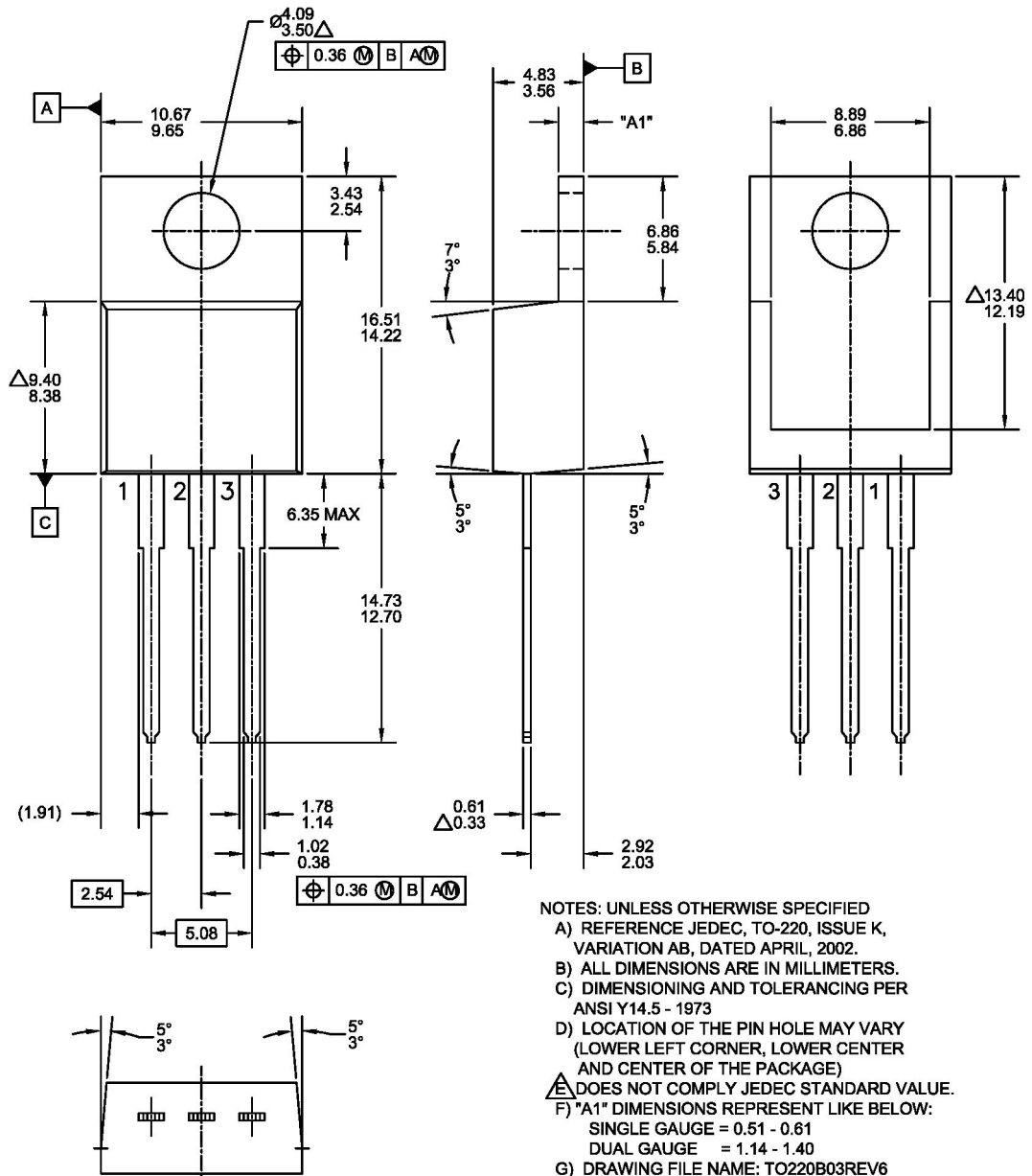


Figure 4. Power Derating

Mechanical Dimensions


TO220





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