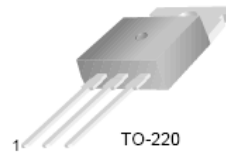


# TIP29/TIP29A/TIP29B/TIP29C

## NPN Epitaxial Silicon Transistor

### Features

- Complementary to TIP30/TIP30A/TIP30B/TIP30C



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

### Absolute Maximum Ratings $T_C=25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	Value	Units
$V_{CBO}$	Collector-Base Voltage : TIP29	40	V
	: TIP29A	60	V
	: TIP29B	80	V
	: TIP29C	100	V
$V_{CEO}$	Collector-Emitter Voltage : TIP29	40	V
	: TIP29A	60	V
	: TIP29B	80	V
	: TIP29C	100	V
$V_{EBO}$	Emitter-Base Voltage	5	V
$I_C$	Collector Current (DC)	1	A
$I_{CP}$	Collector Current (Pulse)	3	A
$I_B$	Base Current	0.4	A
$P_C$	Collector Dissipation ( $T_C=25^\circ\text{C}$ )	30	W
	Collector Dissipation ( $T_a=25^\circ\text{C}$ )	2	W
$T_J$	Junction Temperature	150	$^\circ\text{C}$
$T_{STG}$	Storage Temperature	- 65 ~ 150	$^\circ\text{C}$

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

Symbol	Parameter	Test Condition	Min.	Max.	Units
$V_{CEO(sus)}$	*Collector-Emitter Sustaining Voltage : TIP29 : TIP29A : TIP29B : TIP29C	$I_C = 30\text{mA}, I_B = 0$	40 60 80 100		V V V V
$I_{CEO}$	Collector Cut-off Current : TIP29/29A : TIP29B/29C	$V_{CE} = 30\text{V}, I_B = 0$ $V_{CE} = 60\text{V}, I_B = 0$		0.3 0.3	mA mA
$I_{CES}$	Collector Cut-off Current : TIP29 : TIP29A : TIP29B : TIP29C	$V_{CE} = 40\text{V}, V_{EB} = 0$ $V_{CE} = 60\text{V}, V_{EB} = 0$ $V_{CE} = 80\text{V}, V_{EB} = 0$ $V_{CE} = 100\text{V}, V_{EB} = 0$		200 200 200 200	$\mu\text{A}$ $\mu\text{A}$ $\mu\text{A}$ $\mu\text{A}$
$I_{EBO}$	Emitter Cut-off Current	$V_{EB} = 5\text{V}, I_C = 0$		1.0	mA
$h_{FE}$	*DC Current Gain	$V_{CE} = 4\text{V}, I_C = 0.2\text{A}$ $V_{CE} = 4\text{V}, I_C = 1\text{A}$	40 15	75	
$V_{CE(sat)}$	*Collector-Emitter Saturation Voltage	$I_C = 1\text{A}, I_B = 125\text{mA}$		0.7	V
$V_{BE(sat)}$	*Base-Emitter Saturation Voltage	$V_{CE} = 4\text{V}, I_C = 1\text{A}$		1.3	V
$f_T$	Current Gain Bandwidth Product	$V_{CE} = 10\text{V}, I_C = 200\text{mA}$	3.0		MHz

\* Pulse Test:  $PW \leq 300\text{ms}$ , Duty Cycle  $\leq 2\%$

# Typical Characteristics

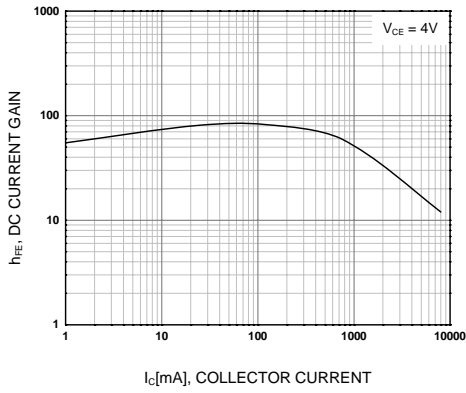


Figure 1. DC current Gain

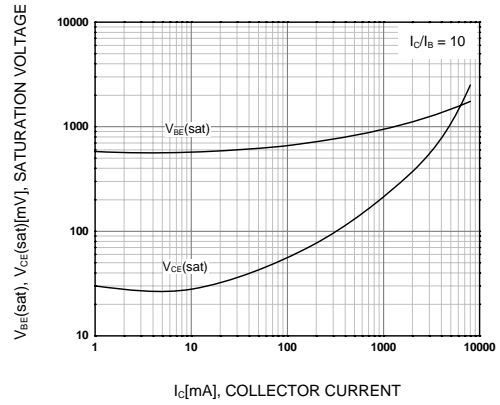


Figure 2. Base-Emitter Saturation Voltage  
Collector-Emitter Saturation Voltage

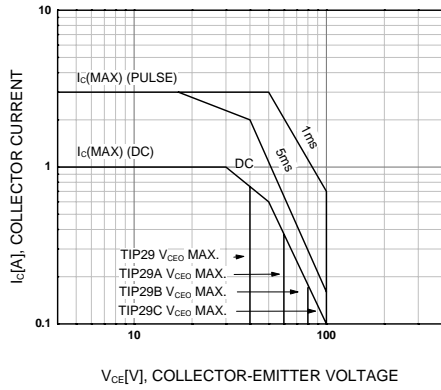


Figure 3. Safe Operating Area

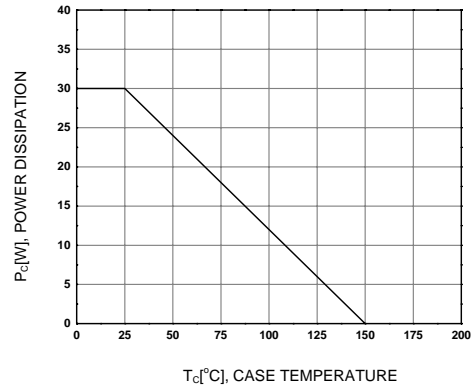
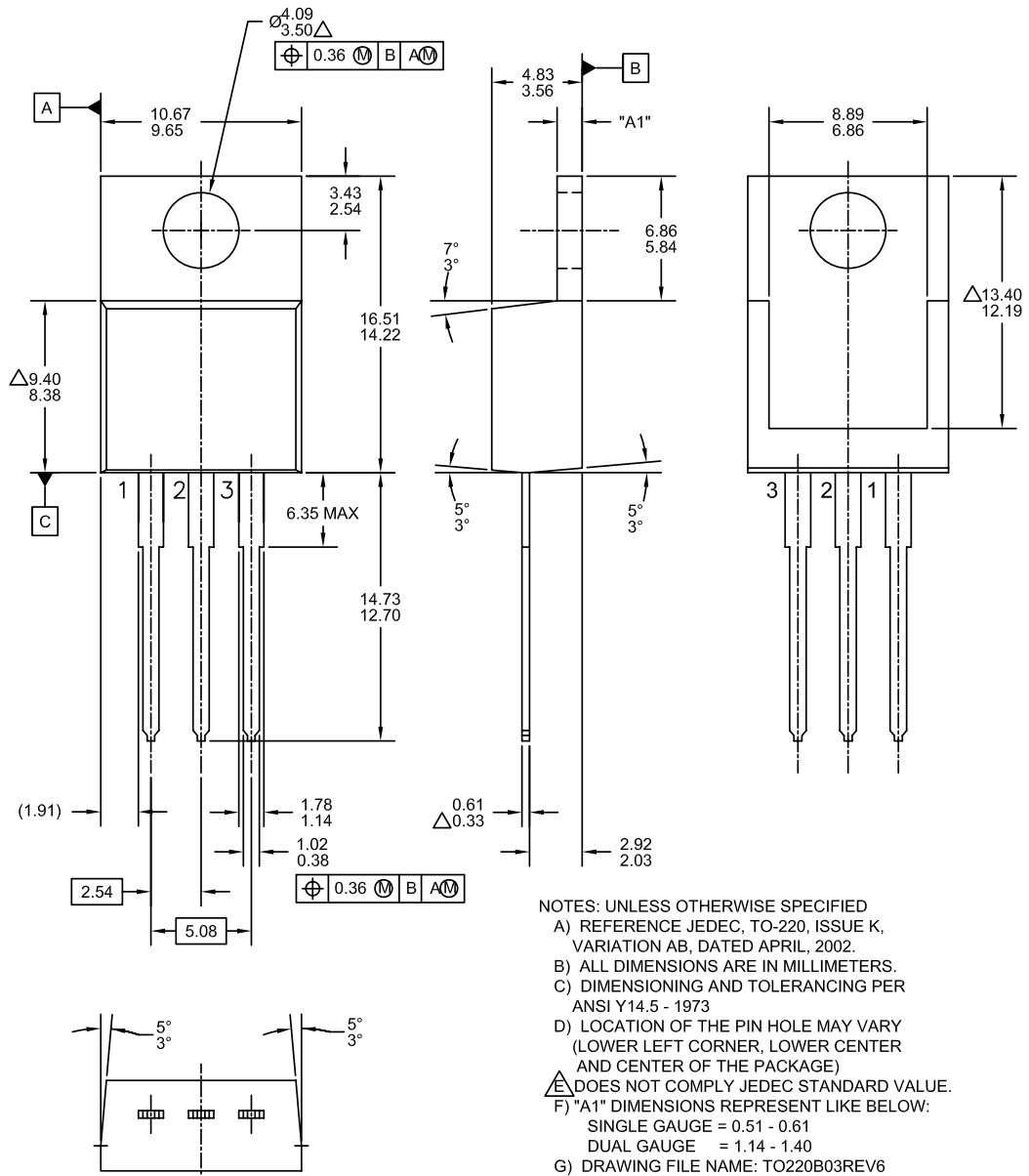


Figure 4. Power Derating

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)  
 E) 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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| FAST®   | Motion-SPM™                         | SuperSOT™.6   | VisualMax™  |
| FastvCore™  | OPTOLOGIC®                          | SuperSOT™.8   |   |
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