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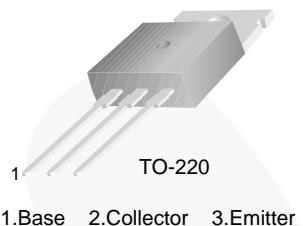
November 2014



# TIP29 / TIP29A / TIP29C NPN Epitaxial Silicon Transistor

## Features

- Medium Power Linear Switching Applications
- Complementary to TIP30 Series



## Ordering Information

Part Number	Top Mark	Package	Packing Method
TIP29	TIP29	TO-220 3L (Single Gauge)	Bulk
TIP29A	TIP29A	TO-220 3L (Single Gauge)	Bulk
TIP29C	TIP29C	TO-220 3L (Single Gauge)	Bulk
TIP29CTU	TIP29C	TO-220 3L (Single Gauge)	Rail

## Absolute Maximum Ratings

Stresses exceeding the absolute maximum ratings may damage the device. The device may not function or be operable above the recommended operating conditions and stressing the parts to these levels is not recommended. In addition, extended exposure to stresses above the recommended operating conditions may affect device reliability. The absolute maximum ratings are stress ratings only. Values are at  $T_C = 25^\circ\text{C}$  unless otherwise noted.

Symbol	Parameter	Value	Unit
$V_{CBO}$	Collector-Base Voltage	TIP29	40
		TIP29A	60
		TIP29C	100
$V_{CEO}$	Collector-Emitter Voltage	TIP29	40
		TIP29A	60
		TIP29C	100
$V_{EBO}$	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
$T_J$	Junction Temperature	150	$^\circ\text{C}$
$T_{STG}$	Storage Temperature Range	-65 to 150	$^\circ\text{C}$

## Thermal Characteristics

Values are at  $T_C = 25^\circ\text{C}$  unless otherwise noted.

Symbol	Parameter	Value	Unit
$P_C$	Collector Dissipation ( $T_A = 25^\circ\text{C}$ )	2	W
	Collector Dissipation ( $T_C = 25^\circ\text{C}$ )	30	

## Electrical Characteristics

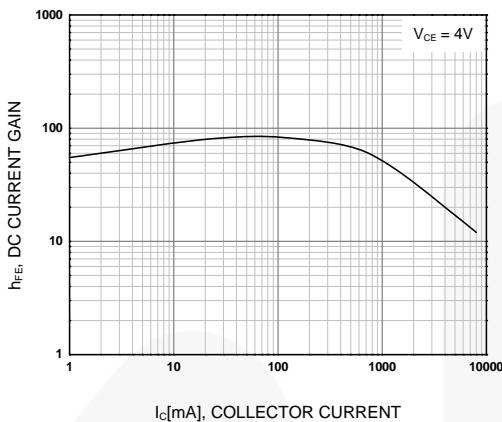
Values are at  $T_C = 25^\circ\text{C}$  unless otherwise noted.

Symbol	Parameter	Conditions	Min.	Max.	Unit
$V_{CEO(\text{sus})}$	Collector-Emitter Sustaining Voltage <sup>(1)</sup>	$I_C = 30 \text{ mA}, I_B = 0$	40		V
			60		
			100		
$I_{CEO}$	Collector Cut-Off Current	$TIP29 / TIP29A$		0.3	mA
		$TIP29C$		0.3	
$I_{CES}$	Collector Cut-Off Current	$TIP29$	$V_{CE} = 40 \text{ V}, V_{EB} = 0$	200	$\mu\text{A}$
		$TIP29A$	$V_{CE} = 60 \text{ V}, V_{EB} = 0$	200	
		$TIP29C$	$V_{CE} = 100 \text{ V}, V_{EB} = 0$	200	
$I_{EBO}$	Emitter Cut-Off Current	$V_{EB} = 5 \text{ V}, I_C = 0$		1.0	mA
$h_{FE}$	DC Current Gain <sup>(1)</sup>	$V_{CE} = 4 \text{ V}, I_C = 0.2 \text{ A}$	40		
		$V_{CE} = 4 \text{ V}, I_C = 1 \text{ A}$	15	75	
$V_{CE(\text{sat})}$	Collector-Emitter Saturation Voltage <sup>(1)</sup>	$I_C = 1 \text{ A}, I_B = 125 \text{ mA}$		0.7	V
$V_{BE(\text{on})}$	Base-Emitter On Voltage <sup>(1)</sup>	$V_{CE} = 4 \text{ V}, I_C = 1 \text{ A}$		1.3	V
$f_T$	Current Gain Bandwidth Product	$V_{CE} = 10 \text{ V}, I_C = 200 \text{ mA}$	3.0		MHz

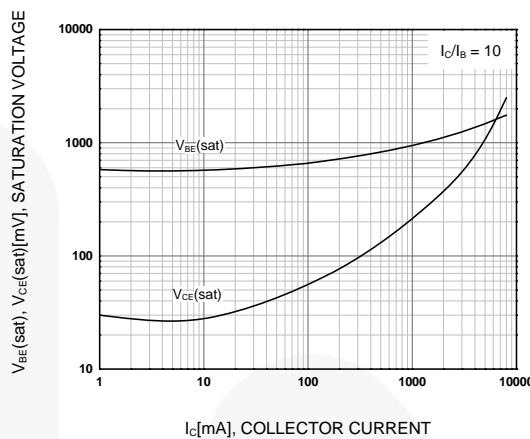
### Note:

1. Pulse test:  $pw \leq 300 \mu\text{s}$ , duty cycle  $\leq 2\%$ .

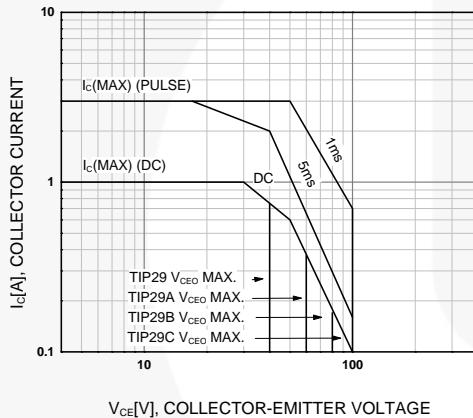
## Typical Performance Characteristics



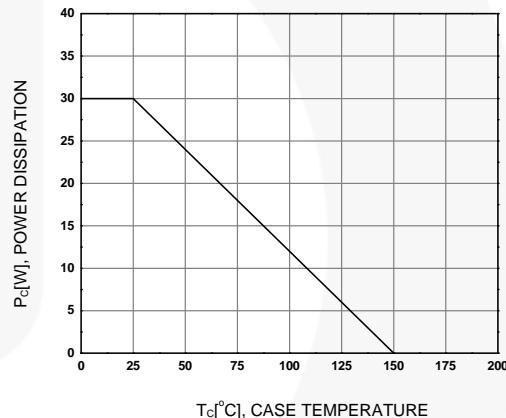
**Figure 1. DC Current Gain**



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



**Figure 3. Safe Operating Area**



**Figure 4. Power Derating**

## Physical Dimensions

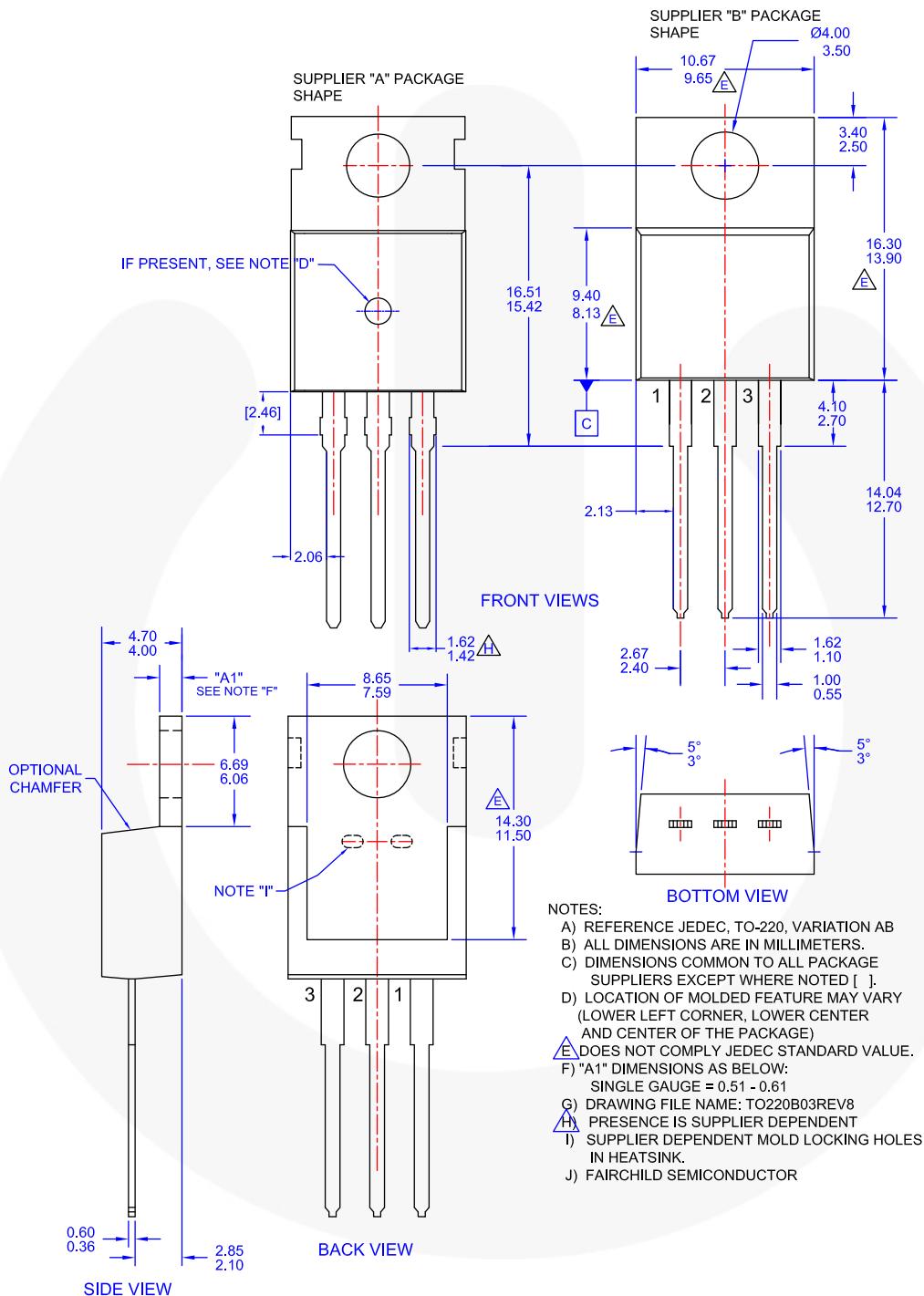


Figure 5. TO-220, MOLDED, 3LEAD, JEDEC VARIATION AB



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