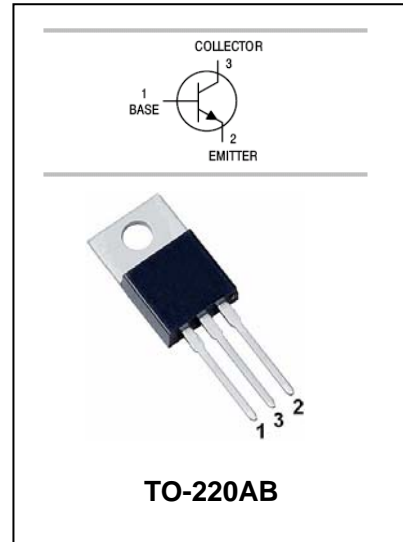


## Epitaxial Planar NPN Transistor

## TIP31/31A/31B/31C

### FEATURES

- Complementary to TIP32/32A/32B/32C.



### MAXIMUM RATING operating temperature range applies unless otherwise specified

Symbol	Parameter		Value	Unit
$V_{CBO}$	Collector-Base Voltage	TIP31	40	V
		TIP31A	60	
		TIP31B	80	
		TIP31C	100	
$V_{CEO}$	Collector-Emitter Voltage	TIP31	40	V
		TIP31A	60	
		TIP31B	80	
		TIP31C	100	
$V_{EBO}$	Emitter-Base Voltage		5	V
$I_C$	Collector Current	DC	3	A
		Pulse	5	
$I_B$	Base Current		1	A
$P_C$	Collector Dissipation	$T_a=25^\circ\text{C}$	2	W
$T_j, T_{stg}$	Junction and Storage Temperature		-65 to +150	$^\circ\text{C}$

# Epitaxial Planar NPN Transistor

# TIP31/31A/31B/31C

**ELECTRICAL CHARACTERISTICS** Ratings at 25°C ambient temperature unless otherwise specified.

Parameter	Symbol	Test conditions	MIN	TYP	MAX	UNIT
Collector-emitter Sustaining Voltage TIP31 TIP31A TIP31B TIP31C	$V_{CEO(SUS)}$	$I_C=30mA, I_B=0$	40 60 80 100			V
Collector Cut-off Current TIP31/31A TIP31B/31C	$I_{CEO}$	$V_{CE}=30V, I_B=0$ $V_{CE}=60V, I_B=0$			0.3 0.3	mA
Collector Cut-off Current TIP31 TIP31A TIP31B TIP31C	$I_{CES}$	$V_{CE}=40V, V_{EB}=0$ $V_{CE}=60V, V_{EB}=0$ $V_{CE}=80V, V_{EB}=0$ $V_{CE}=100V, V_{EB}=0$			200 200 200 200	$\mu A$
Emitter Cut-off Current	$I_{EBO}$	$V_{EB}=5V, I_C=0$			1	mA
DC Current Gain	$h_{FE}$	$V_{CE}=4V, I_C=1A$ $V_{CE}=4V, I_C=3A$	25 10		50	
Collector-emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=3A, I_B=375mA$			1.2	V
Base-emitter Saturation Voltage	$V_{BE(sat)}$	$V_{CE}=4V, I_C=3A$			1.8	V
Transition Frequency	$f_T$	$V_{CE}=10V, I_C=0.5A$	3			MHz

**TYPICAL CHARACTERISTICS @ Ta=25°C** unless otherwise specified

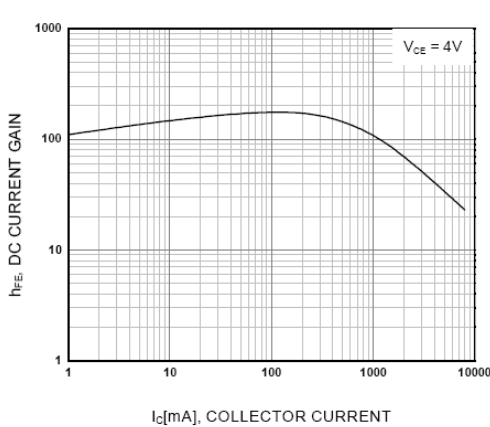


Figure 1. DC current Gain

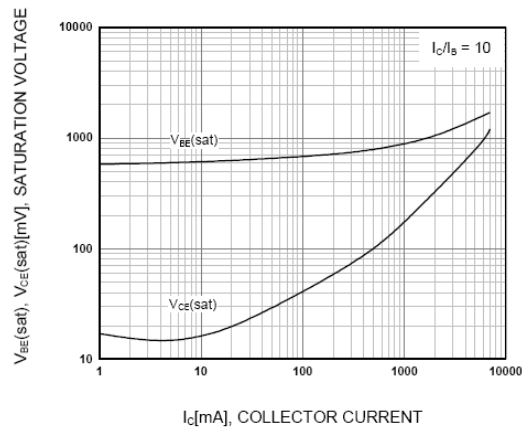


Figure 2. Base-Emitter Saturation Voltage  
Collector-Emitter Saturation Voltage

# Epitaxial Planar NPN Transistor

# TIP31/31A/31B/31C

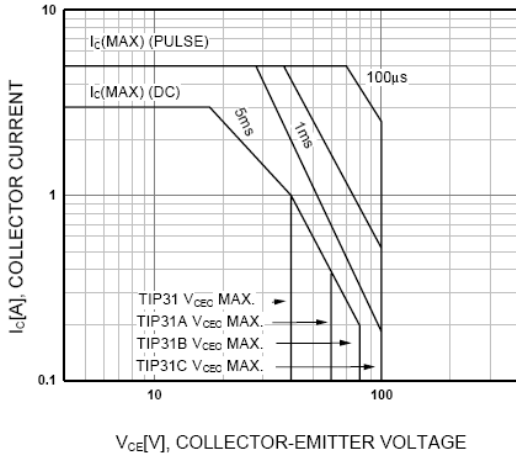


Figure 3. Safe Operating Area

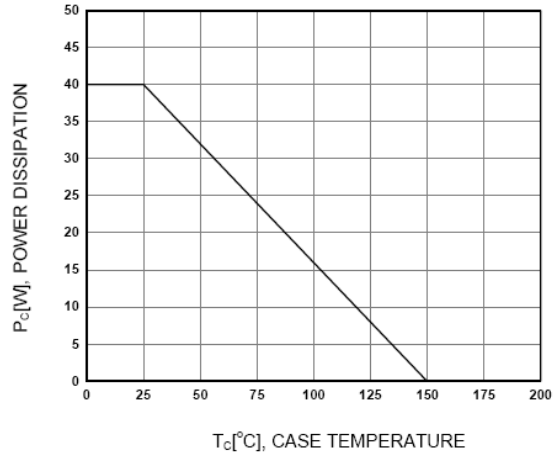


Figure 4. Power Derating

## PACKAGE OUTLINE

Plastic surface mounted package

TO-220AB

