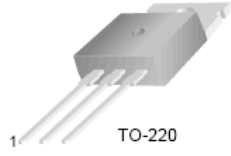
FAIRCHILD SEMICONDUCTOR®

July 2008

TIP31/TIP31A/TIP31B/TIP31C
NPN Epitaxial Silicon Transistor

Features
- Complementary to TIP32/TIP32A/TIP32B/TIP32C



1. Base 2. Collector 3. Emitter

Absolute Maximum Ratings T_C=25°C unless otherwise noted

Symbol	Parameter	Value	Units
V_{CBO}	Collector-Base Voltage : TIP31 : TIP31A : TIP31B : TIP31C	40 60 80 100	V V V V
V_{CEO}	Collector-Emitter Voltage : TIP31 : TIP31A : TIP31B : TIP31C	40 60 80 100	V V V V
V_{EBO}	Emitter-Base Voltage	5	V
I_C	Collector Current (DC)	3	A
I_{CP}	Collector Current (Pulse)	5	A
I_B	Base Current	1	A
P_C	Collector Dissipation (T_C=25°C)	40	W
	Collector Dissipation (T_a=25°C)	2	W
T_J	Junction Temperature	150	°C
T_{STG}	Storage Temperature	- 65 ~ 150	°C

Electrical Characteristics T_C=25°C unless otherwise noted

Symbol	Parameter	Test Condition	Min.	Max.	Units
V_{CEO}(sus)	* Collector-Emitter Sustaining Voltage : TIP31 : TIP31A : TIP31B : TIP31C	I_C = 30mA, I_B = 0	 40 60 80 100		 V V V V
I_{CEO}	Collector Cut-off Current : TIP31/31A : TIP31B/31C	 V_{CE} = 30V, I_B = 0 V_{CE} = 60V, I_B = 0		 0.3 0.3	 mA mA
I_{CES}	Collector Cut-off Current : TIP31 : TIP31A : TIP31B : TIP31C	 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	 μA μA μA μA
I_{EBO}	Emitter Cut-off Current	V_{EB} = 5V, I_C = 0		1	mA
h_{FE}	* DC Current Gain	V_{CE} = 4V, I_C = 1A V_{CE} = 4V, I_C = 3A	25 10	 50	
V_{CE}(sat)	* Collector-Emitter Saturation Voltage	I_C = 3A, I_B = 375mA		1.2	V
V_{BE}(sat)	* Base-Emitter Saturation Voltage	V_{CE} = 4V, I_C = 3A		1.8	V
f_T	Current Gain Bandwidth Product	V_{CE} = 10V, I_C = 500mA, f = 1MHz	3.0		MHz

* Pulse Test: PW≤300ms, Duty Cycle≤2%

Typical Characteristics

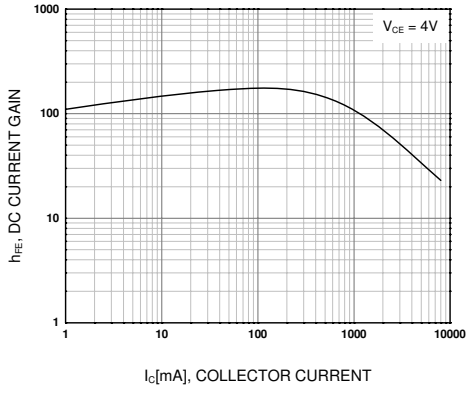


Figure 1. DC current Gain

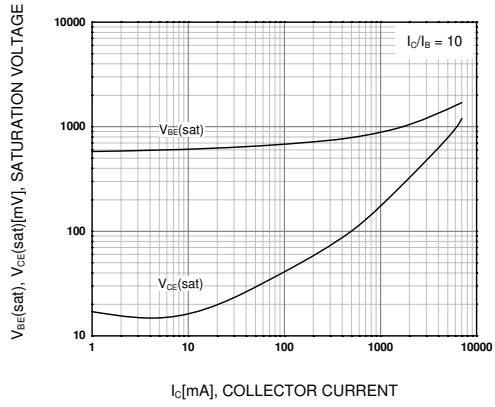


Figure 2. Base-Emitter Saturation Voltage Collector-Emitter Saturation Voltage

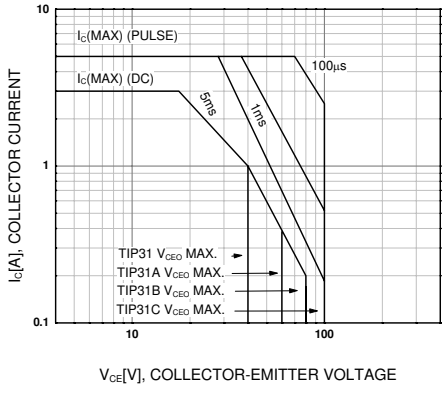


Figure 3. Safe Operating Area

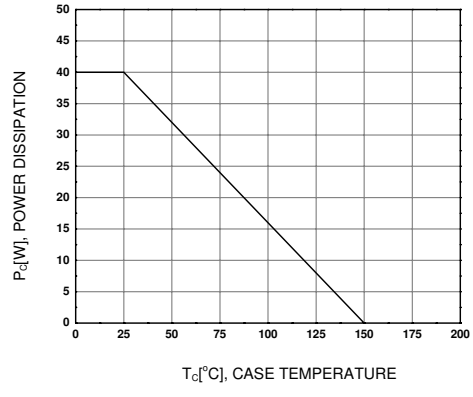
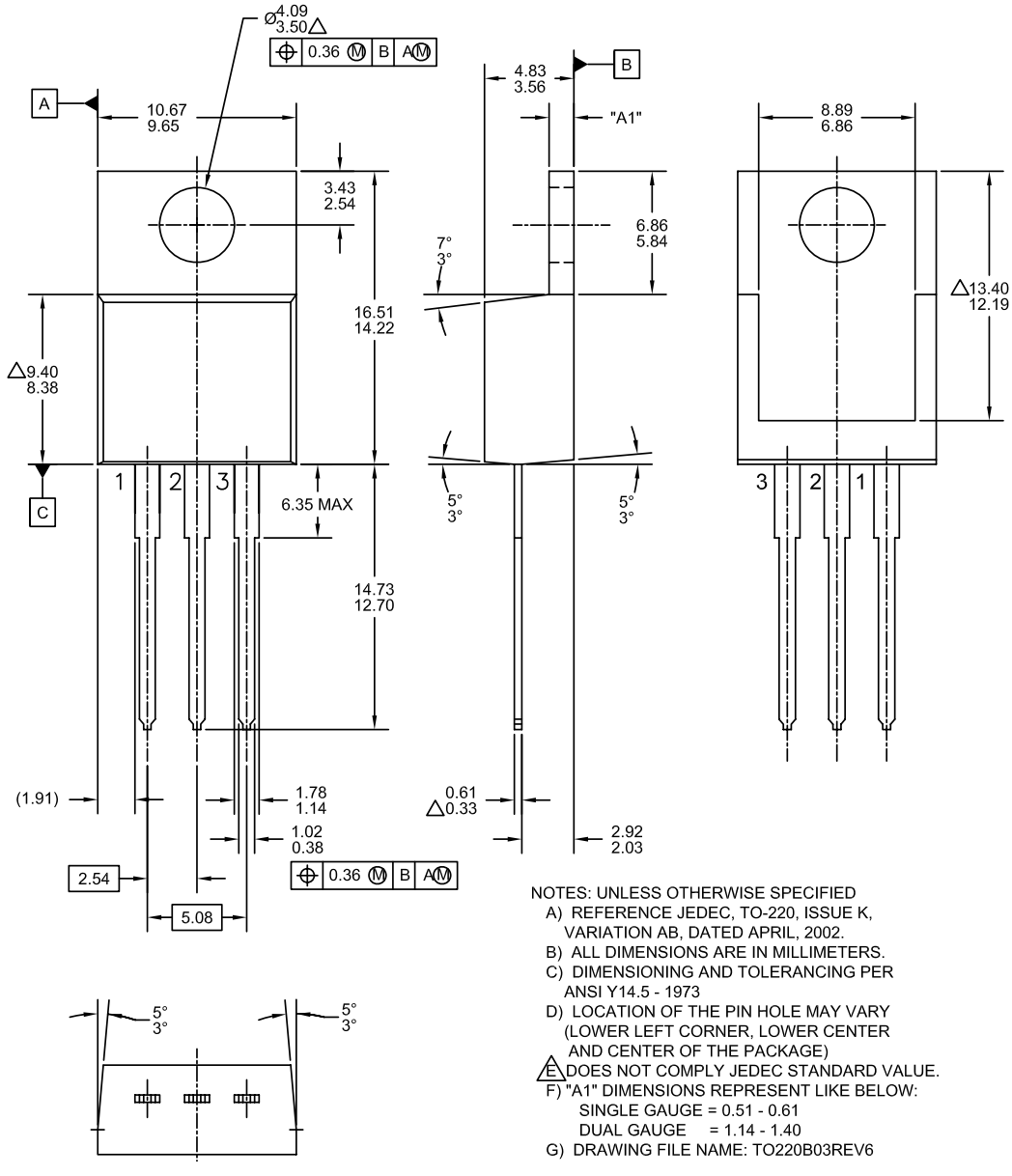


Figure 4. Power Derating

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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