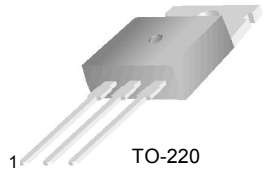
FAIRCHILD SEMICONDUCTOR®

November 2008

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°C unless otherwise noted

Symbol	Parameter		Ratings	Units
V_{CBO}	Collector-Base Voltage	: TIP47	350	V
		: TIP48	400	V
		: TIP49	450	V
		: TIP50	500	V
V_{CEO}	Collector-Emitter Voltage	: TIP47	250	V
		: TIP48	300	V
		: TIP49	350	V
		: TIP50	400	V
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°C)		40	W
	Collector Dissipation (T_a=25°C)		2	W
T_J	Junction Temperature		150	°C
T_{STG}	Storage Temperature		- 65 ~ 150	°C

* These ratings are limiting values above which the serviceability of any semiconductor device may be impaired.

Electrical Characteristics* T_a=25°C unless otherwise noted

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

* Pulse Test: Pulse Width≤300μs, Duty Cycle≤2%

Typical Characteristics

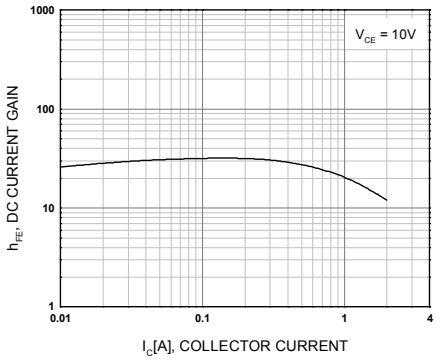


Figure 1. DC current Gain

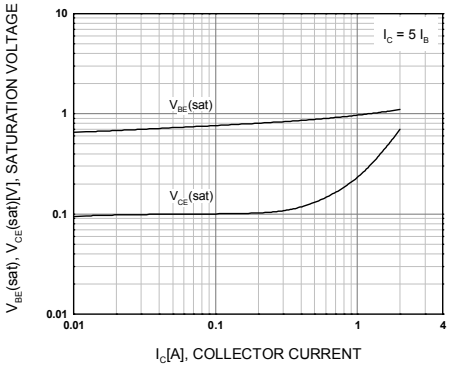


Figure 2. Collector-Emitter Saturation Voltage
Base-Emitter Saturation Voltage

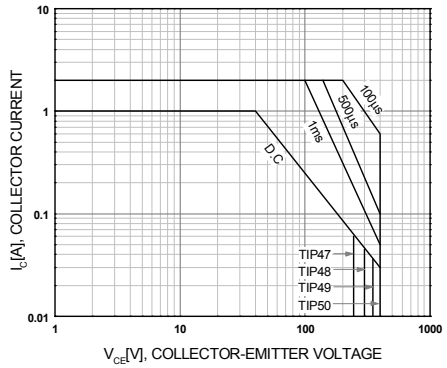


Figure 3. Safe Operating Area

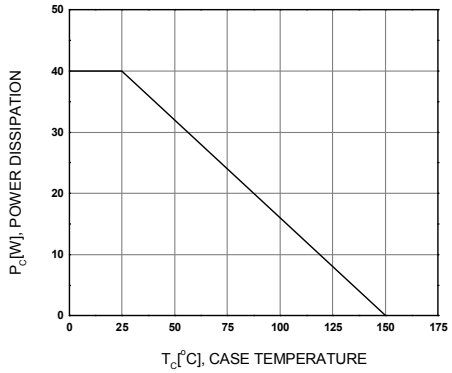
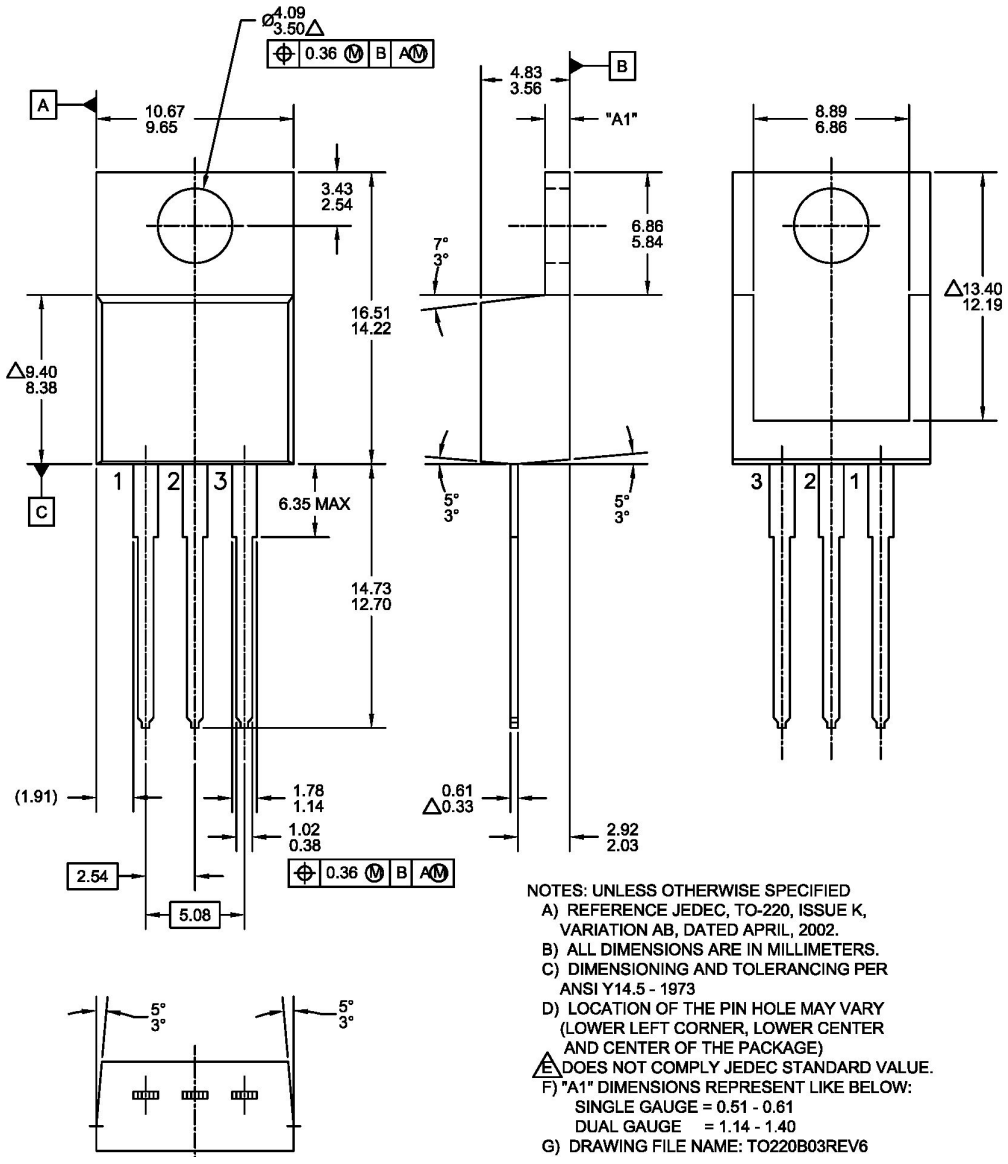


Figure 4. Power Derating

Mechanical Dimensions

TO220



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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Rev. I31