

## Silicon NPN Power Transistors

## TIP47/48/49/50

## DESCRIPTION

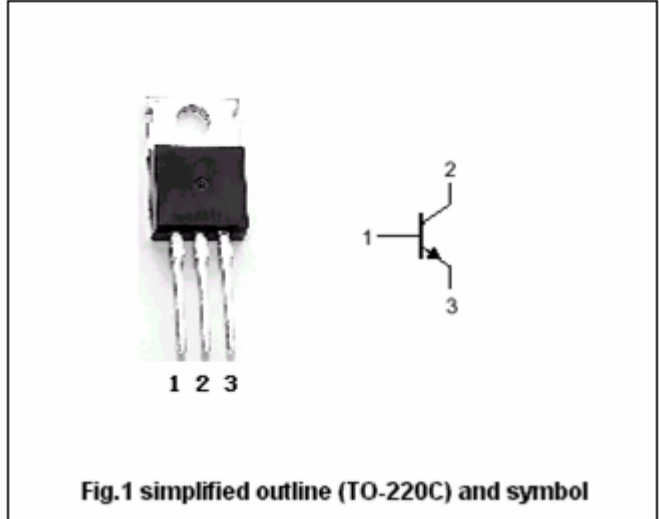
- With TO-220C package
- High sustaining voltage  
:  $V_{CEO(sus)} = 250\sim 400V$
- 1A rated collector current

## APPLICATIONS

- High voltage and switching applications

## PINNING

PIN	DESCRIPTION
1	Base
2	Collector;connected to mounting base
3	Emitter

ABSOLUTE MAXIMUM RATINGS( $T_C=25^\circ C$ )

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$V_{CBO}$	Collector-base voltage	TIP47	350	V
		TIP48	400	
		TIP49	450	
		TIP50	500	
$V_{CEO}$	Collector-emitter voltage	TIP47	250	V
		TIP48	300	
		TIP49	350	
		TIP50	400	
$V_{EBO}$	Emitter-base voltage	Open collector	5	V
$I_C$	Collector current (DC)		1	A
$I_{CM}$	Collector current-Pulse		2	A
$I_B$	Base current		0.6	A
$P_C$	Collector power dissipation	$T_C=25^\circ C$	40	W
		$T_a=25^\circ C$	2	
$T_j$	Junction temperature		150	$^\circ C$
$T_{stg}$	Storage temperature		-65~150	$^\circ C$

## Silicon NPN Power Transistors

## TIP47/48/49/50

## CHARACTERISTICS

T<sub>j</sub>=25 °C unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP.	MAX	UNIT
V <sub>CEO(SUS)</sub>	Collector-emitter sustaining voltage	TIP47	I <sub>C</sub> =30mA; I <sub>B</sub> =0			V
		TIP48				
		TIP49				
		TIP50				
V <sub>CE(sat)</sub>	Collector-emitter saturation voltage	I <sub>C</sub> =1A; I <sub>B</sub> =0.2A			1.0	V
V <sub>BE</sub>	Base-emitter on voltage	I <sub>C</sub> =1A; V <sub>CE</sub> =10V			1.5	V
I <sub>CEX</sub>	Collector cut-off current	TIP47	V <sub>CE</sub> =350V; V <sub>BE</sub> =0			1
		TIP48				
		TIP49				
		TIP50				
I <sub>CEO</sub>	Collector cut-off current	TIP47	V <sub>CE</sub> =150V; I <sub>B</sub> =0			1
		TIP48				
		TIP49				
		TIP50				
I <sub>EBO</sub>	Emitter cut-off current	V <sub>EB</sub> =5V; I <sub>C</sub> =0			1	mA
h <sub>FE-1</sub>	DC current gain	I <sub>C</sub> =0.3A; V <sub>CE</sub> =10V	30		150	
h <sub>FE-2</sub>	DC current gain	I <sub>C</sub> =1A; V <sub>CE</sub> =10V	10			
f <sub>T</sub>	Transition frequency	I <sub>C</sub> =0.2A; V <sub>CE</sub> =10V	10			MHz

## Switching times

t <sub>on</sub>	Turn-on time	V <sub>CC</sub> =400V; 5I <sub>B1</sub> = -2.5I <sub>B2</sub> = I <sub>C</sub> = 6A R <sub>L</sub> = 66.7Ω			0.5	μs
t <sub>stg</sub>	Storage time				3.0	
t <sub>f</sub>	Fall time				0.3	

Silicon NPN Power Transistors

TIP47/48/49/50

PACKAGE OUTLINE

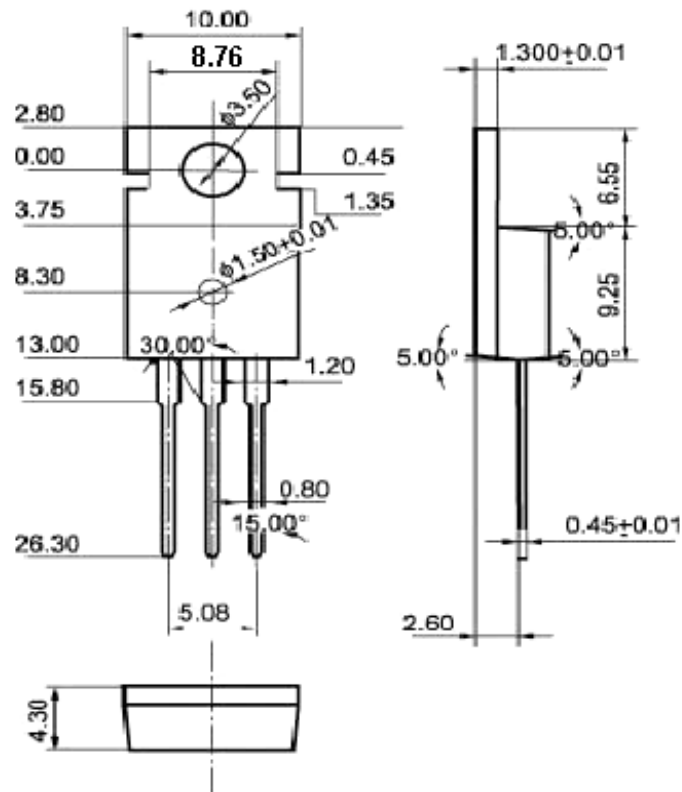


Fig.2 Outline dimensions (unindicated tolerance:  $\pm 0.10$  mm)

Silicon NPN Power Transistors

TIP47/48/49/50

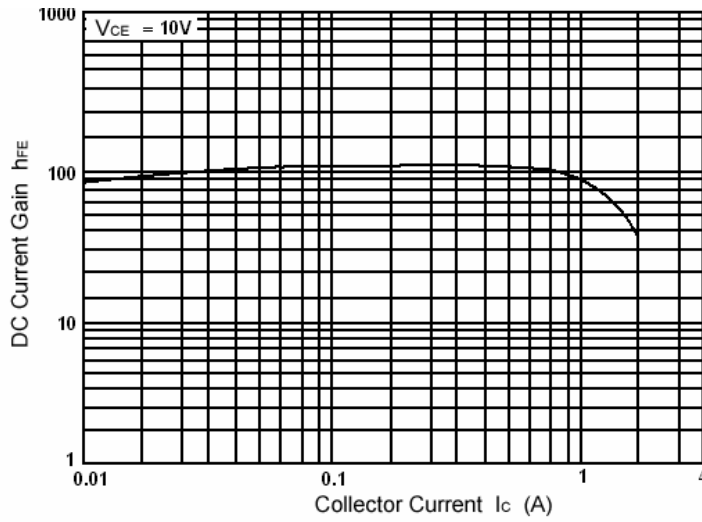


Fig.3 DC current Gain

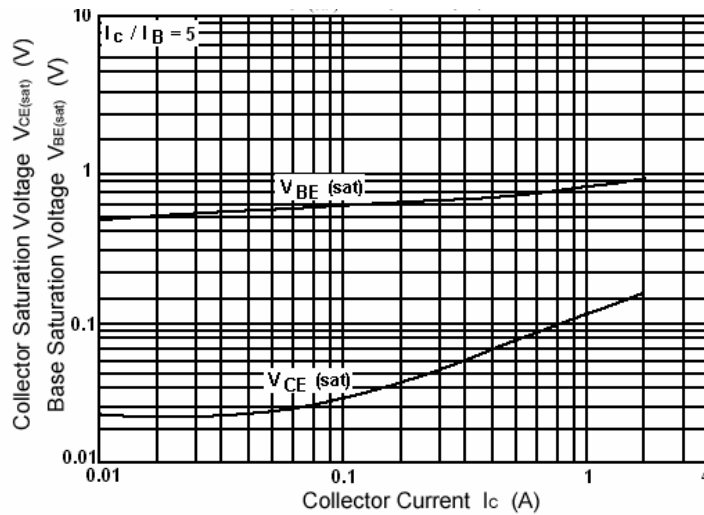


Fig.4 Base-Emitter Saturation Voltage  
Collector-Emitter Saturation Voltage

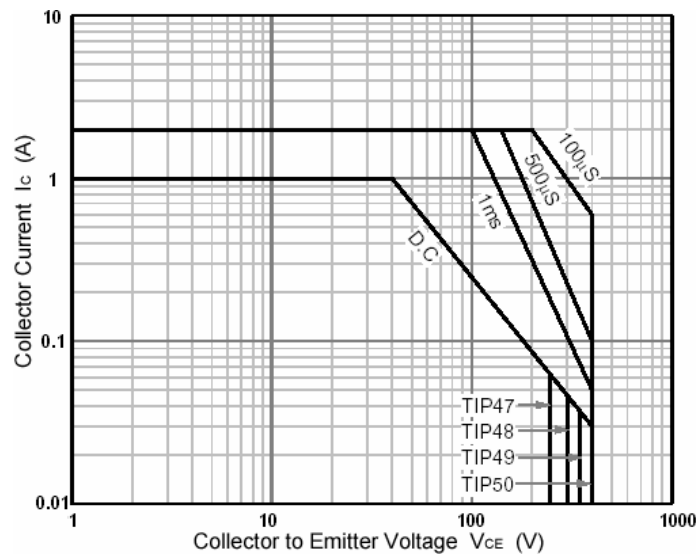


Fig.5 Safe Operating Area