Silicon NPN Power Transistors TIP47/48/49/50

DESCRIPTION

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

APPLICATIONS

·High voltage and switching applications

PINNING

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

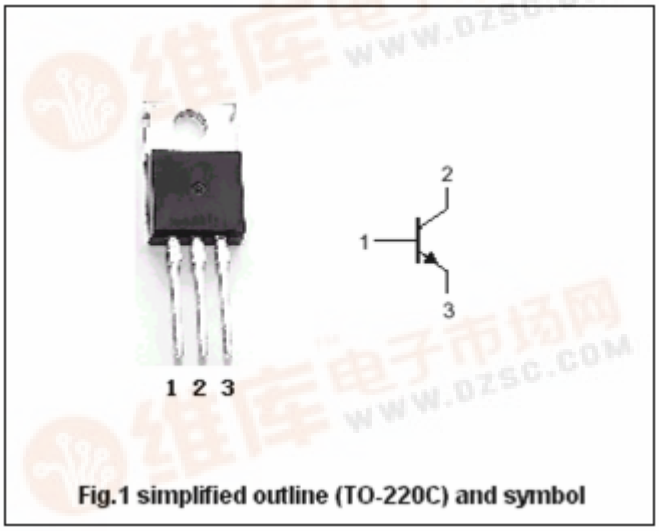

Fig.1 simplified outline (TO-220C) and symbol

ABSOLUTE MAXIMUM RATINGS(T_C=25□)

SYMBOL	PARAMETER		CONDITIONS	VALUE	UNIT
V_{CBO}	Collector-base voltage	TIP47	Open emitter	350	V
		TIP48		400	
		TIP49		450	
		TIP50		500	
V_{CEO}	Collector-emitter voltage	TIP47	Open base	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□	40	W
			T_a=25□	2	
T_j	Junction temperature			150	□
T_{stg}	Storage temperature			-65~150	□

CHARACTERISTICS

Tj=25□ unless otherwise specified

SYMBOL	PARAMETER		CONDITIONS	MIN	TYP.	MAX	UNIT
$V_{CEO(SUS)}$	Collector-emitter sustaining voltage	TIP47	I_C=30mA; I_B=0	250			V
		TIP48		300			
		TIP49		350			
		TIP50		400			
$V_{CE(sat)}$	Collector-emitter saturation voltage		I_C=1A ;I_B=0.2A			1.0	V
V_{BE}	Base-emitter on voltage		I_C=1A ; V_{CE}=10V			1.5	V
I_{CEX}	Collector cut-off current	TIP47	V_{CE}=350V; V_{BE}=0			1	mA
		TIP48	V_{CE}=400V; V_{BE}=0				
		TIP49	V_{CE}=450V; V_{BE}=0				
		TIP50	V_{CE}=500V; V_{BE}=0				
I_{CEO}	Collector cut-off current	TIP47	V_{CE}=150V; I_B=0			1	mA
		TIP48	V_{CE}=200V; I_B=0				
		TIP49	V_{CE}=250V; I_B=0				
		TIP50	V_{CE}=300V; I_B=0				
I_{EBO}	Emitter cut-off current		V_{EB}=5V; I_C=0			1	mA
h_{FE-1}	DC current gain		I_C=0.3A ; V_{CE}=10V	30		150	
h_{FE-2}	DC current gain		I_C=1A ; V_{CE}=10V	10			
f_T	Transition frequency		I_C=0.2A ; V_{CE}=10V	10			MHz

Switching times

t_{on}	Turn-on time	V_{CC}=400V; $5I_{B1}$ = -2.5I_{B2} = I_C = 6A R_L = 66.7Ω			0.5	μs
t_{stg}	Storage time				3.0	
t_f	Fall time				0.3	

PACKAGE OUTLINE

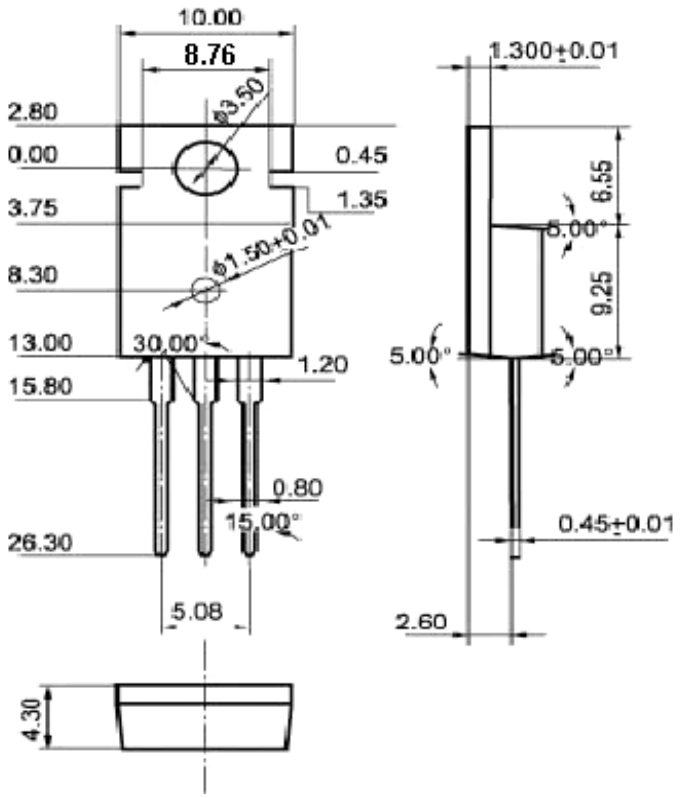

Fig.2 Outline dimensions (unindicated tolerance:±0.10 mm)

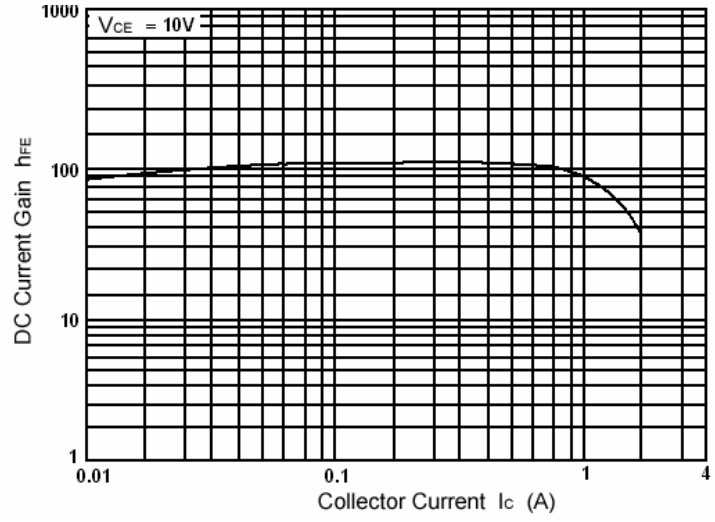

Fig.3 DC current Gain

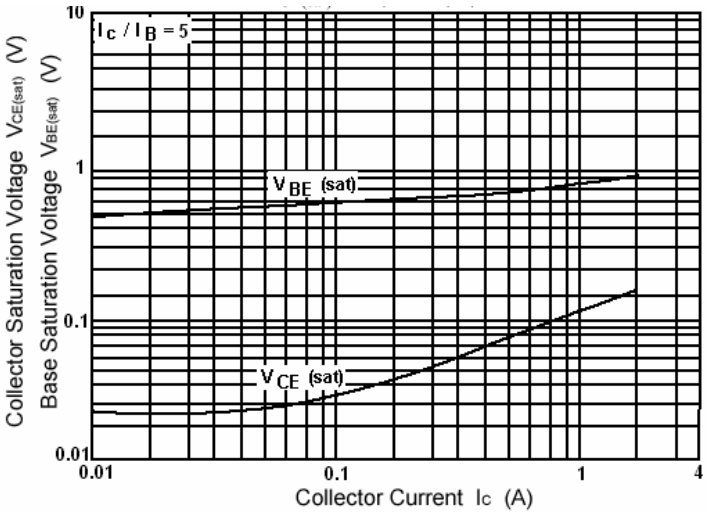

Fig.4 Base-Emitter Saturation Voltage
Collector-Emitter Saturation Voltage

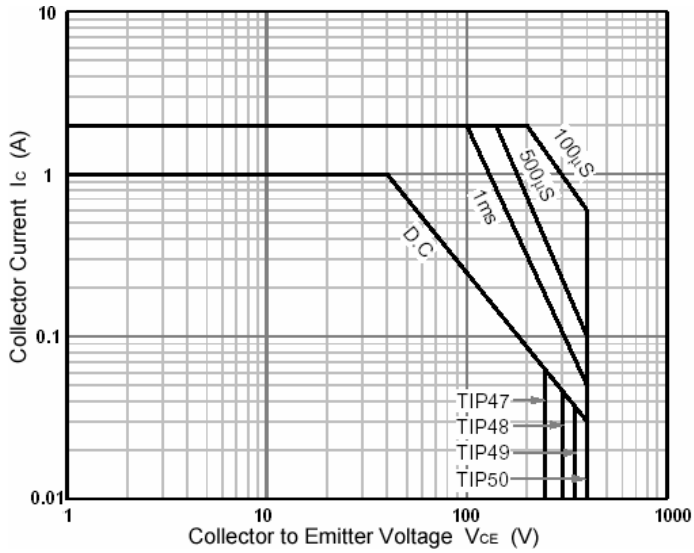

Fig.5 Safe Operating Area