MOSPEC

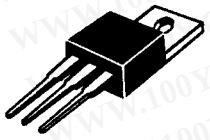
HIGH VOLTAGE NPN SILICON POWER TRANSISTORS

... designed for line operated audio output amplifier, and switching power supply drivers applications.

NPN
TIP47
TIP48
TIP49
TIP50

1.0 AMPER
POWER
TRANSISTORS
250 -400 VOLTS
40 WATTS

FEATURES:
* Collector-Emitter Sustaining Voltage -250-400V(Min)
* 1 A Rated Collector Current
* f_T= 10MHz(Min)@I_C= 200mA



TO-220

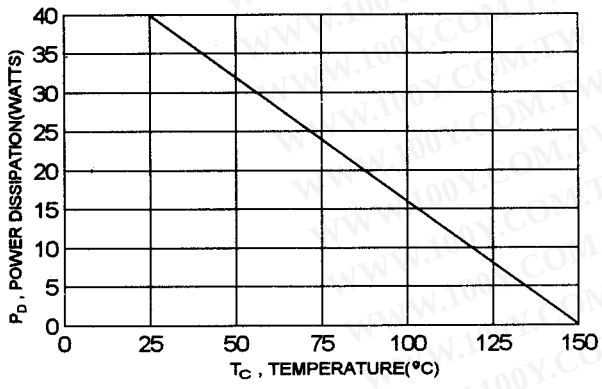
MAXIMUM RATINGS

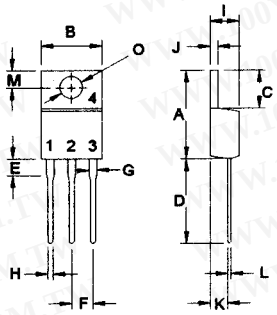
Characteristic	Symbol	TIP47	TIP48	TIP49	TIP50	Unit
Collector-Emitter Voltage	V_{CEO}	250	300	350	400	V
Collector-Base Voltage	V_{CBO}	350	400	450	500	V
Emitter-Base Voltage	V_{EBO}	5.0				V
Collector Current - Continuous - Peak	I_C	1.0 2.0				A
Base Current	I_B	0.6				A
Total Power Dissipation@T_C = 25°C Derate above 25°C	P_D	40 0.32				W W/°C
Operating and Storage Junction Temperature Range	T_J,T_{STG}	-65 to +150				°C

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance Junction to Case	Rθjc	3.125	°C/W

FIGURE -1 POWER DERATING





PIN 1.BASE
2.COLLECTOR
3.EMITTER
4.COLLECTOR(CASE)

DIM	MILLIMETERS	
	MIN	MAX
A	14.68	15.31
B	9.78	10.42
C	5.01	6.52
D	13.06	14.62
E	3.57	4.07
F	2.42	3.66
G	1.12	1.36
H	0.72	0.96
I	4.22	4.98
J	1.14	1.38
K	2.20	2.97
L	0.33	0.55
M	2.48	2.98
O	3.70	3.90

勝 特 力 材 料 886-3-5753170
胜特力电子(上海) 86-21-54151736
胜特力电子(深圳) 86-755-83298787
Http://www.100y.com.tw

ELECTRICAL CHARACTERISTICS (T_C = 25°C unless otherwise noted)

Characteristic		Symbol	Min	Max	Unit
OFF CHARACTERISTICS					
Collector-Emitter Sustaining Voltage(1) (I_C= 30 mA, I_B= 0)	TIP47 TIP48 TIP49 TIP50	$V_{CEO(sus)}$	250 300 350 400		V
Collector Cutoff Current (V_{CE}= 150 V, I_B= 0) (V_{CE}= 200 V, I_B= 0) (V_{CE}= 250 V, I_B= 0) (V_{CE}= 300 V, I_B= 0)	 TIP47 TIP48 TIP49 TIP50	I_{CEO}		 1.0 1.0 1.0 1.0	mA
Collector Cutoff Current (V_{CE}= 350 V, V_{BE}= 0) (V_{CE}= 400 V, V_{BE}= 0) (V_{CE}= 450 V, V_{BE}= 0) (V_{CE}= 500 V, V_{BE}= 0)	 TIP47 TIP48 TIP49 TIP50	I_{CES}		 1.0 1.0 1.0 1.0	mA
Emitter Cutoff Current (V_{EB}= 5.0 V, I_C= 0)		I_{EBO}		1.0	mA
ON CHARACTERISTICS (1)					
DC Current Gain (I_C =0.3 A, V_{CE} = 10 V) (I_C= 1.0 A, V_{CE} = 10 V)		hFE	 30 10	150	
Collector-Emitter Saturation Voltage (I_C = 1.0 A, I_B =200 mA)		$V_{CE(sat)}$		1.0	V
Base-Emitter On Voltage (I_C =1.0 A, V_{CE}= 10 V)		$V_{BE(on)}$		1.5	V
DYNAMIC CHARACTERISTICS					
Current Gain - Bandwidth Product (2) (I_C = 200 mA , V_{CE} = 10 V , f_{TEST} = 2.0 MHz)		f_T	10		MHz
Small Signal Current Gain (I_C = 200 mA , V_{CE} = 10 V , f = 1.0 kHz)		h_{fe}	25		

(1) Pulse Test: Pulse width ≦ 300 μs , Duty Cycle ≦ 2.0 %
(2) $f_T = |h_{fe}| \cdot f_{TEST}$

勝 特 力 材 料 886-3-5753170
胜特力电子(上海) 86-21-54151736
胜特力电子(深圳) 86-755-83298787
Http://www.100y.com.tw

FIG-2 DC CURRENT GAIN

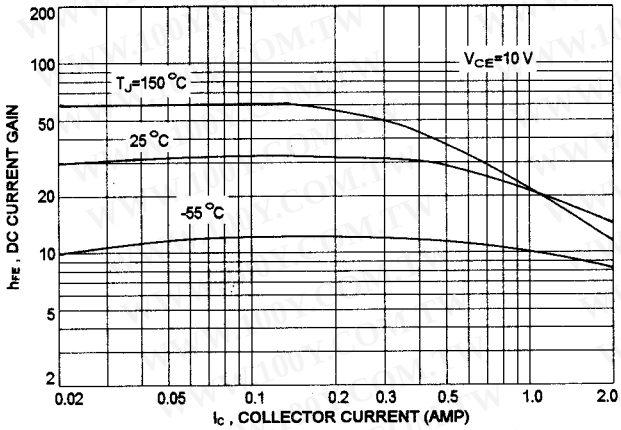


FIG-3 TURN-ON TIME

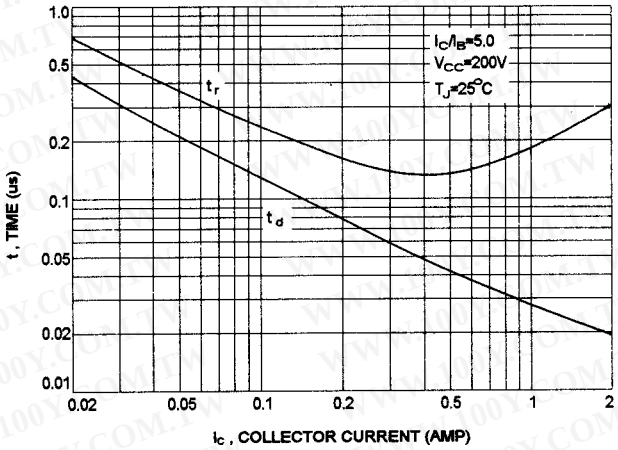


FIG-4 "ON" VOLTAGES

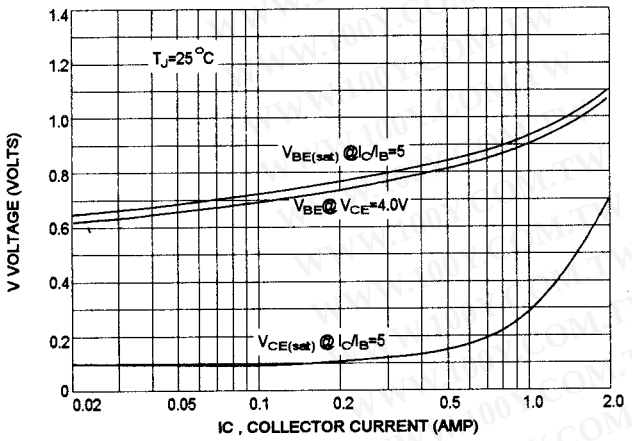


FIG-5 TURN-OFF TIME

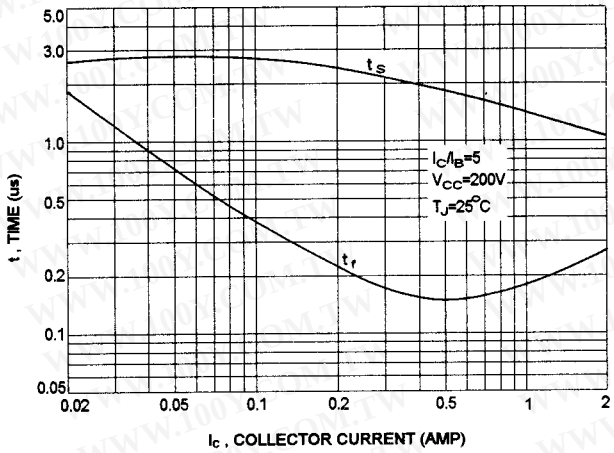
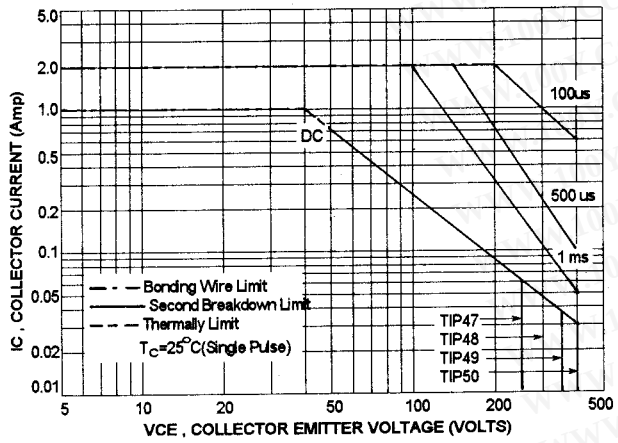


FIG-6 ACTIVE REGION SAFE OPERATING AREA



There are two limitation on the power handling ability of a transistor:average junction temperature and second breakdown safe operating area curves indicate I_C-V_{CE} limits of the transistor that must be observed for reliable operation i.e., the transistor must not be subjected to greater dissipation than curves indicate.

The data of FIG-6 curve is base on $T_{J(PK)}$=150 °C; T_C is variable depending on power level. second breakdown pulse limits are valid for duty cycles to 10% provided $T_{J(PK)}$ ≤150°C,At high case temperatures,thermal limitation will reduce the power that can be handled to values less than the limitations imposed by second breakdown.

勝 特 力 材 料 886-3-5753170
胜特力电子(上海) 86-21-54151736
胜特力电子(深圳) 86-755-83298787
Http://www.100y.com.tw