MOSPEC

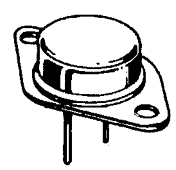
COMPLEMENTARY SILICON HIGH-POWER TRANSISTORS

General-Purpose Power Amplifier and Switching Applications

FEATURES:
* Low Collector-Emitter Saturation Voltage - $V_{CE(SAT)}$=1.0V(Max.)@I_C=15 A
* Execllent DC Current Gain - hFE = 20 ~ 100 @ I_C = 10 A

PNP	NPN
2N5883	2N5885
2N5884	2N5886

25 AMPERE
COMPLEMENTARY SILICON
POWER TRANSISTORS
60 - 80 Volts
200 Watts



TO-3

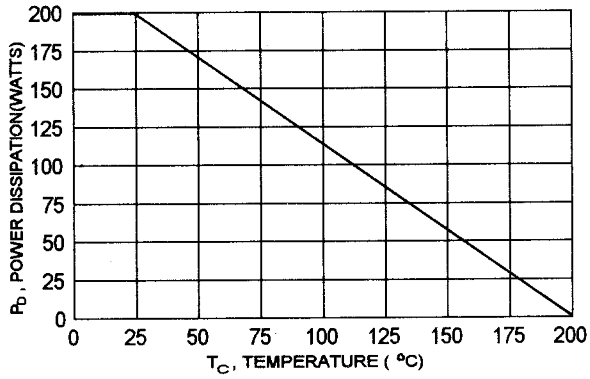
MAXIMUM RATINGS

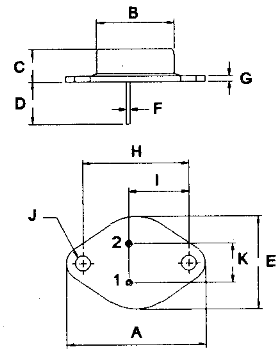
Characteristic	Symbol	2N5883 2N5885	2N5884 2N5886	Unit
Collector-Emitter Voltage	V_{CEO}	60	80	V
Collector-Base Voltage	V_{CBO}	60	80	V
Emitter-Base Voltage	V_{EBO}	5.0		V
Collector Current-Continuous -Peak	I_C I_{CM}	25 50		A
Base Current	I_B	7.5		A
Total Power Dissipation@T_C=25°C Derate above 25°C	P_D	200 1.15		W W/°C
Operating and Storage Junction Temperature Range	T_J,T_{STG}	- 65 to +200		°C

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance Junction to Case	Rθjc	0.875	°C/W

FIGURE -1 POWER DERATING





PIN 1.BASE
2.EMITTER
COLLECTOR(CASE)

DIM	MILLIMETERS	
	MIN	MAX
A	38.75	39.96
B	19.28	22.23
C	7.96	9.28
D	11.18	12.19
E	25.20	26.67
F	0.92	1.09
G	1.38	1.62
H	29.90	30.40
I	16.64	17.30
J	3.88	4.36
K	10.67	11.18

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

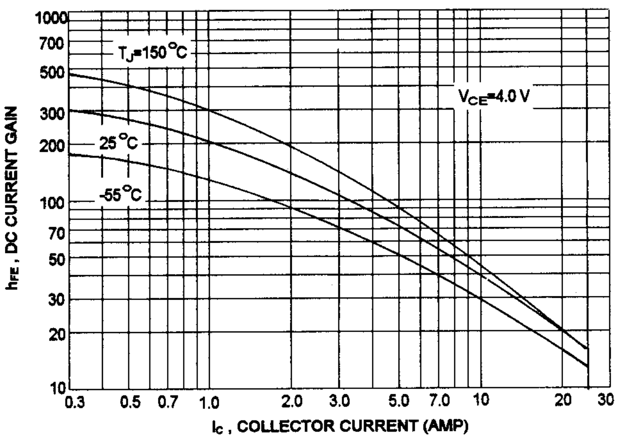
Characteristic		Symbol	Min	Max	Unit
OFF CHARACTERISTICS					
Collector - Emitter Sustaining Voltage (1) (I_C = 200 mA, I_B = 0)	 2N5883, 2N5885 2N5884, 2N5886	$V_{CEO(SUS)}$	 60 80		V
Collector Cutoff Current (V_{CE} = 30 V, I_B = 0) (V_{CE} = 40 V, I_B = 0)	 2N5883, 2N5885 2N5884, 2N5886	I_{CEO}		 2.0 2.0	mA
Collector Cutoff Current (V_{CE} = 60 V, $V_{BE(off)}$ = 1.5 V) (V_{CE} = 80 V, $V_{BE(off)}$ = 1.5 V) (V_{CE} = 60 V, $V_{BE(off)}$ = 1.5 V, T_C = 150°C) (V_{CE} = 80 V, $V_{BE(off)}$ = 1.5 V, T_C = 150°C)	 2N5883, 2N5885 2N5884, 2N5886 2N5883, 2N5885 2N5884, 2N5886	I_{CEX}		 1.0 1.0 10 10	mA
Collector Cutoff Current (V_{CB} = 60 V, I_E = 0) (V_{CB} = 80 V, I_E = 0)	 2N5883, 2N5885 2N5884, 2N5886	I_{CBO}		 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 = 3.0 A, V_{CE} = 4.0 V) (I_C = 10 A, V_{CE} = 4.0 V) (I_C = 25 A, V_{CE} = 4.0 V)		hFE	 35 20 4.0	 100 	
Collector-Emitter Saturation Voltage (I_C = 15 A, I_B = 1.5 A) (I_C = 25 A, I_B = 6.25A)		$V_{CE(sat)}$		 1.0 4.0	V
Base-Emitter On Voltage (I_C = 10 A, V_{CE} = 4.0 V)		$V_{BE(on)}$		1.5	V
Base-Emitter Saturation Voltage (I_C = 25 A, I_B = 6.25 A)		$V_{BE(sat)}$		2.5	V
DYNAMIC CHARACTERISTICS					
Current-Gain-Bandwidth Product (2) (I_C = 1.0 A, V_{CE} = 10 V, f = 1.0 MHz)		f_T	4.0		MHz
Small-Signal Current Gain (I_C = 3.0A, V_{CE} = 4.0 V, f = 1.0 KHZ)		h_{fe}	20		

(1) Pulse Test: Pulse width $\leqq$ 300 us , Duty Cycle $\leqq$ 2.0%

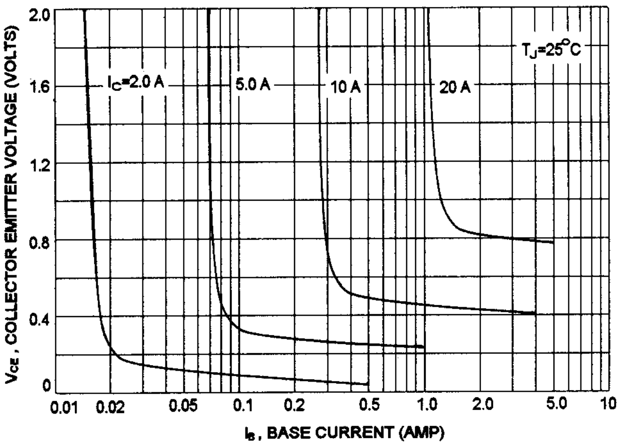
(2) $f_T = |h_{fe}| \circ f_{test}$

PNP 2N5883,2N5884

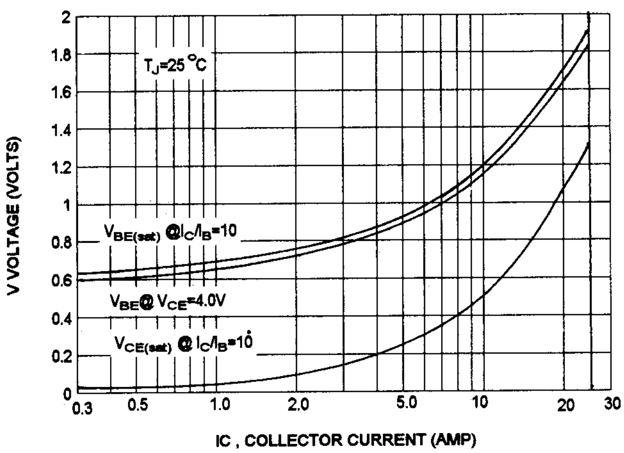
DC CURRENT GAIN



COLLECTOR SATURATION REGION

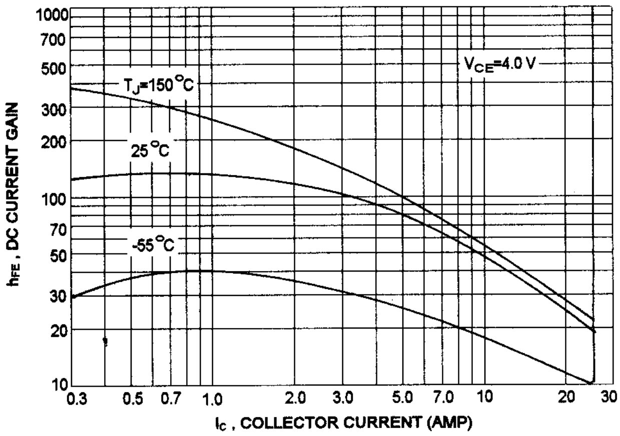


"ON" VOLTAGES

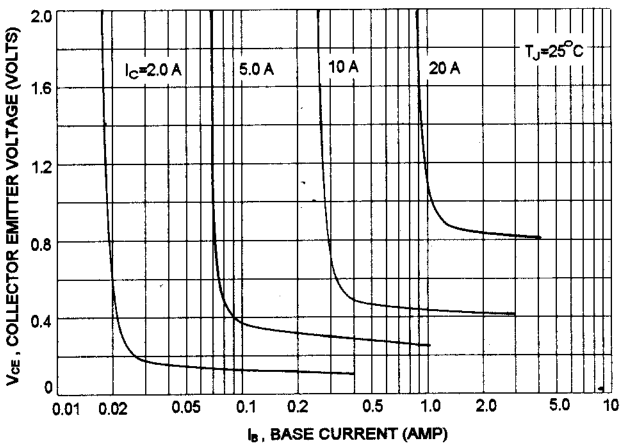


NPN 2N5885,2N5886

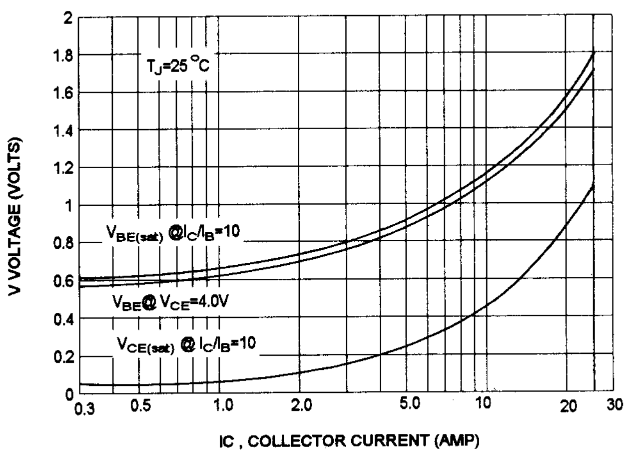
DC CURRENT GAIN



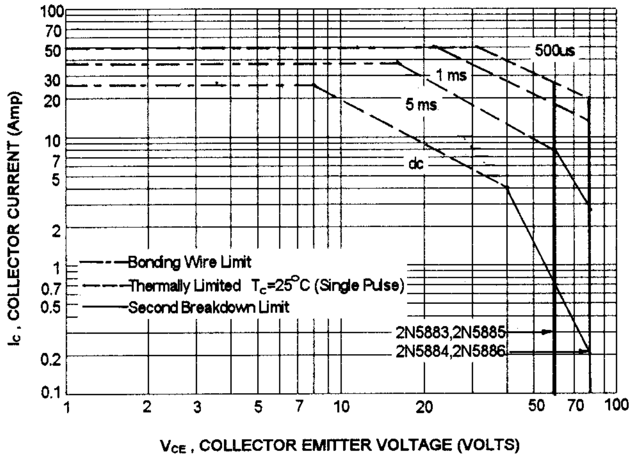
COLLECTOR SATURATION REGION



"ON" VOLTAGES



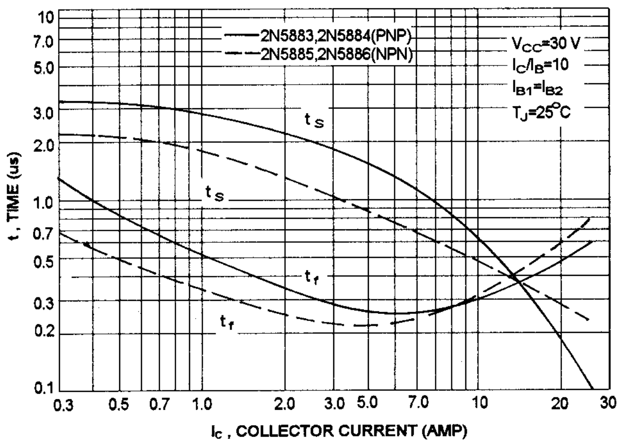
ACTIVE-REGION SAFE OPERATING AREA (SOA)



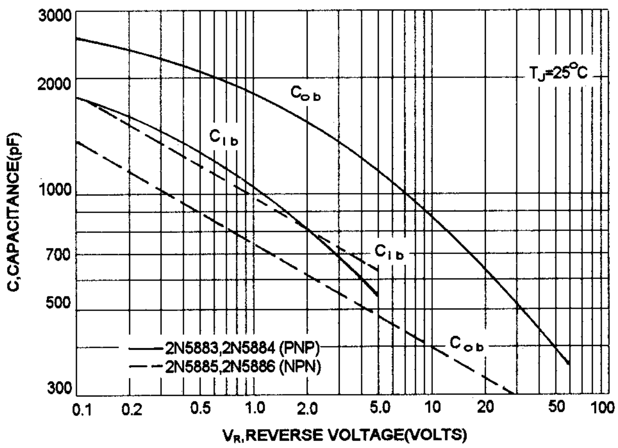
There are two limitation on the power handling ability of a transistor:average junction temperature and second breakdown safe operating area curves indicate I_C-V_{CE} limits of the transistor that must be observed for reliable operation i.e., the transistor must not be subjected to greater dissipation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

The data of SOA curve is base on $T_{J(PK)}$=200 °C;T_C is variable depending on conditions. second breakdown pulse limits are valid for duty cycles to 10% provided $T_{J(PK)} \leq 200$°C,At high case temperatures, thermal limita - tion will reduce the power that can be handled to values less than the limitations imposed by second breakdown.

TURN-OFF TIME



CAPACITANCES



TURN-ON TIME