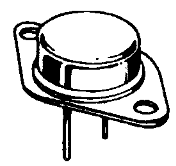
MOSPEC

COMPLEMENTARY SILICON HIGH-POWER TRANSISTORS

General-Purpose Power Amplifier and Switching Applications

PNP	NPN
2N5879	2N5881
2N5880	2N5882

15 AMPERE
COMPLEMENTARY SILICON
POWER TRANSISTORS
60 - 80 Volts
160 Watts



TO-3

FEATURES:

* Low Collector-Emitter Saturation Voltage -
  $V_{CE(SAT)}$=1.0V(Max.)@I_C=7.0A
* Execllent DC Current Gain -
  hFE = 20 ~ 100 @ I_C = 6.0 A

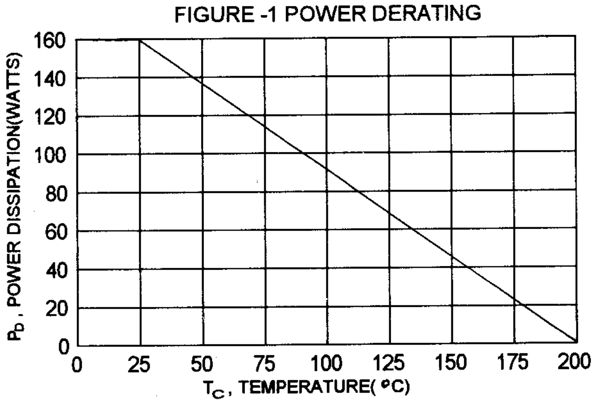
MAXIMUM RATINGS

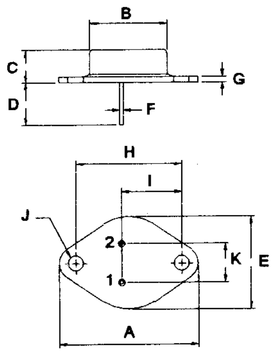
Characteristic	Symbol	2N5879 2N5881	2N5880 2N5882	Unit
Collector-Emitter Voltage	V_{CEO}	60	80	V
Collector-Base Voltage	V_{CBO}	60	80	V
Emitter-Base Voltage	V_{EBO}	5.0		V
Collector Current-Continuous -Peak	I_C I_{CM}	15 30		A
Base Current	I_B	5.0		A
Total Power Dissipation@T_C=25°C Derate above 25°C	P_D	160 0.915		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	1.1	°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)

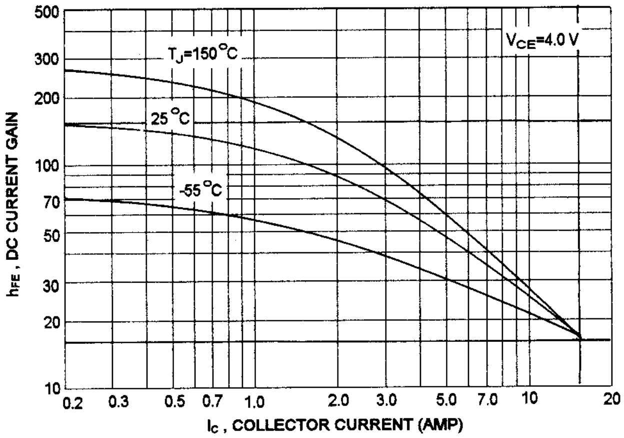
Characteristic		Symbol	Min	Max	Unit
OFF CHARACTERISTICS					
Collector - Emitter Sustaining Voltage (1) (I_C = 200 mA, I_B = 0)	 2N5879, 2N5881 2N5880, 2N5882	$V_{CEO(SUS)}$	 60 80		V
Collector Cutoff Current (V_{CE} = 30 V, I_B = 0) (V_{CE} = 40 V, I_B = 0)	 2N5879, 2N5881 2N5880, 2N5882	I_{CEO}		 1.0 1.0	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)	 2N5879, 2N5881 2N5880, 2N5882 2N5879, 2N5881 2N5880, 2N5882	I_{CEX}		 0.5 0.5 5.0 5.0	mA
Collector Cutoff Current (V_{CB} = 60 V, I_E = 0) (V_{CB} = 80 V, I_E = 0)	 2N5879, 2N5881 2N5880, 2N5882	I_{CBO}		 0.5 0.5	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 = 2.0 A, V_{CE} = 4.0 V) (I_C = 6.0 A, V_{CE} = 4.0 V) (I_C = 15 A, V_{CE} = 4.0 V)		hFE	 35 20 4.0	 100	
Collector-Emitter Saturation Voltage (I_C = 7.0 A, I_B = 0.7 A) (I_C = 15 A, I_B = 3.75A)		$V_{CE(sat)}$		 1.0 4.0	V
Base-Emitter On Voltage (I_C = 6.0 A, V_{CE} = 4.0 V)		$V_{BE(on)}$		 1.5	V
Base-Emitter Saturation Voltage (I_C = 15 A, I_B = 3.75 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 = 2.0 A, 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) $f_T = |h_{fe}| \circ f_{test}$

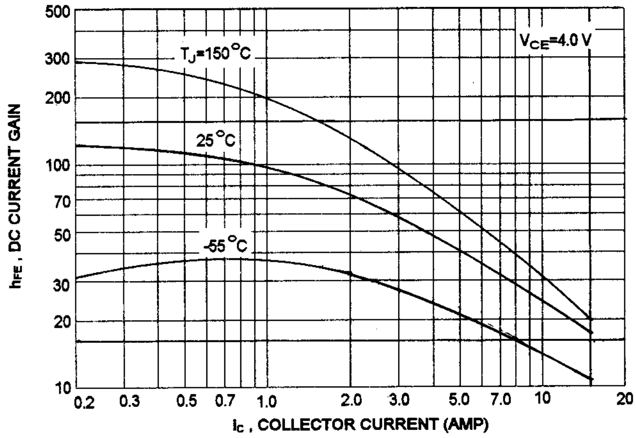
PNP 2N5879,2N5880

DC CURRENT GAIN

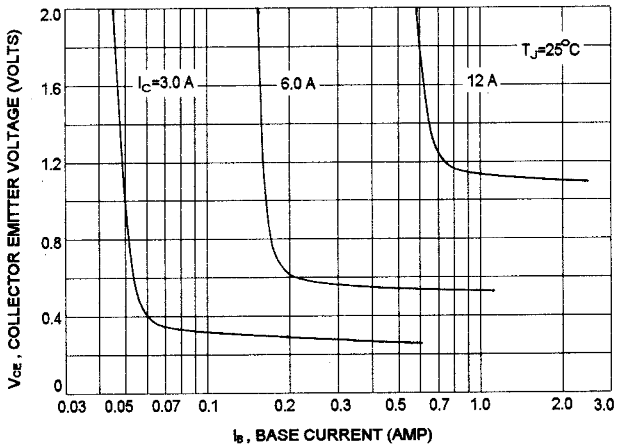


NPN 2N5881,2N5882

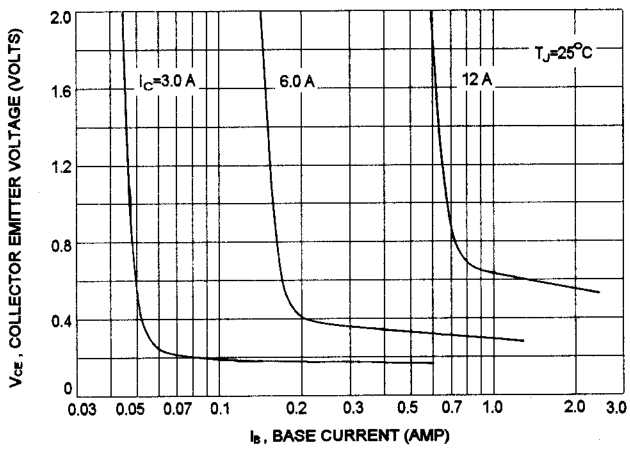
DC CURRENT GAIN



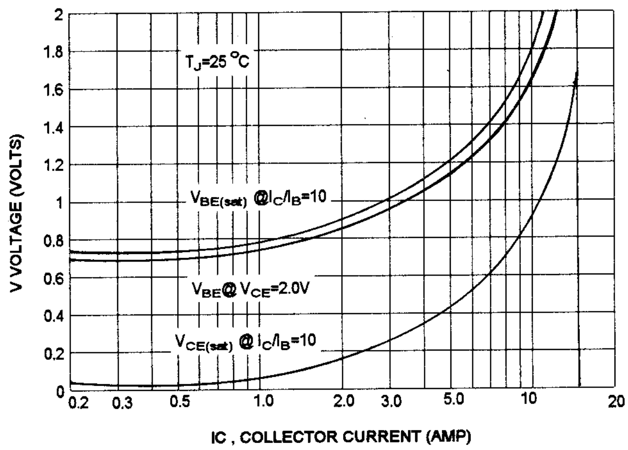
COLLECTOR SATURATION REGION



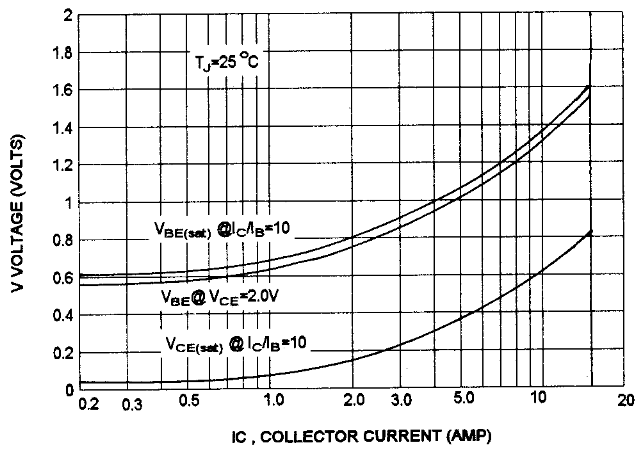
COLLECTOR SATURATION REGION



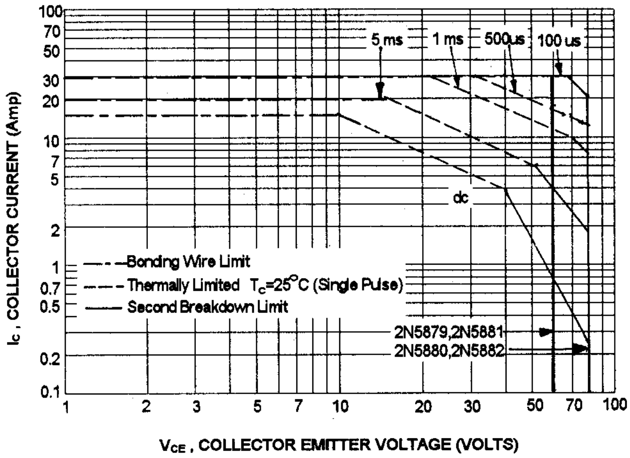
"ON" VOLTAGES



"ON" VOLTAGES



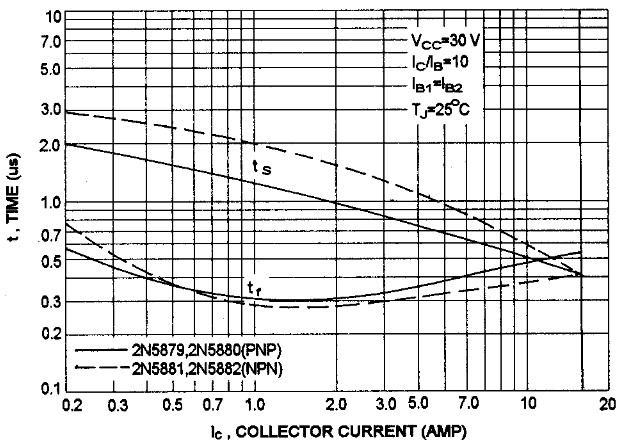
ACTIVE-REGION SAFE OPERATING AREA (SOA)



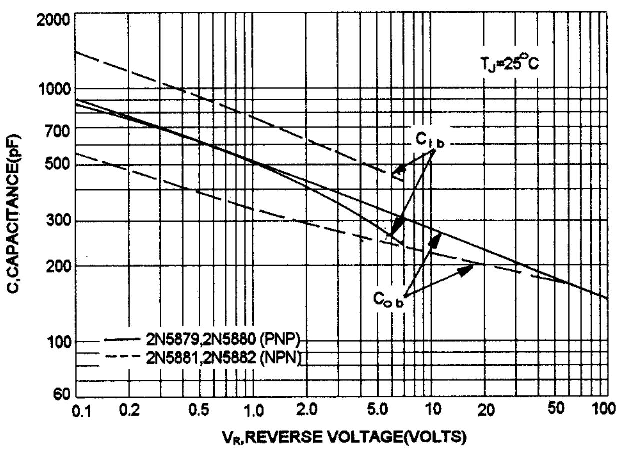
There are two limitation on the power handling ability of a transistor:average junction temperature and second breakdown safe operating area curves indicate I_C-V_{CE} limits of the transistor that must be observed for reliable operation i.e., the transistor must not be subjected to greater dissipation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