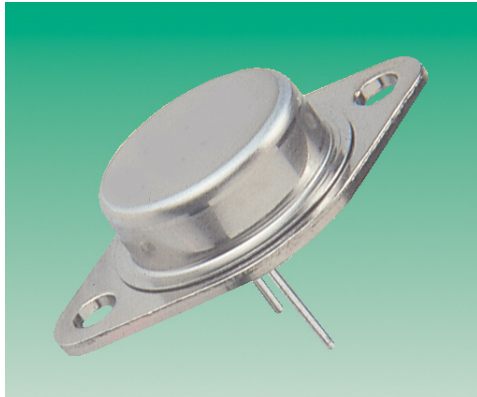


# 2N5880 & 2N5882



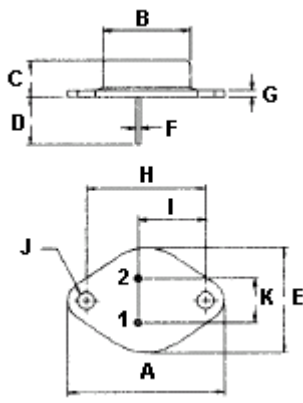
## Complementary Power Transistors



General-purpose power amplifier and switching applications.

### Features:

- Low Collector-Emitter Saturation Voltage  
 $V_{CE(sat)} = 1.0V$  (Maximum) at  $I_C = 7.0A$
- Excellent DC current Gain  
 $h_{FE} = 20 - 100$  at  $I_C = 6.0A$



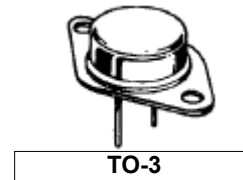
Pin 1. Base  
 2. Emitter  
 Collector(Case)

Dimensions	Minimum	Maximum
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

Dimensions : Millimetres

PNP	NPN
2N5880	2N5882

15 Ampere  
 Complementary  
 Silicon Power  
 Transistors  
 80 Volts  
 160 Watts



### Maximum Ratings

Characteristic	Symbol	Rating	Unit
Collector-Emitter Voltage	$V_{CEO}$	80	V
Collector-Base Voltage	$V_{CBO}$		
Emitter-Base Voltage	$V_{EBO}$	5.0	
Collector Current-Continuous -Peak	$I_C$ $I_{CM}$	15 30	A
Base Current	$I_B$	5.0	
Total Power Dissipation at $T_C = 25^\circ C$ Derate above $25^\circ C$	$P_D$	160 0.915	W W/ $^\circ C$
Operating and Storage Junction Temperature Range	$T_J, T_{STG}$	-65 to +200	$^\circ C$

### Thermal Characteristics

Characteristic	Symbol	Maximum	Unit
Thermal Resistance Junction to Case	$R_{\theta jc}$	1.1	$^\circ C/W$

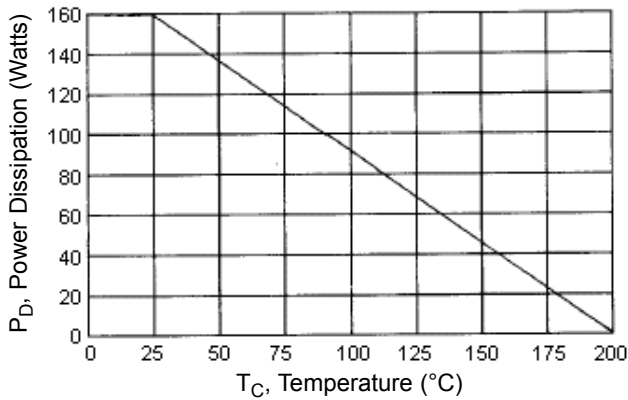


# 2N5880 & 2N5882



## Complementary Power Transistors

Figure-1 Power Derating



### Electrical Characteristics ( $T_C = 25^\circ\text{C}$ unless otherwise noted)

Characteristic	Symbol	Minimum	Maximum	Unit
<b>OFF Characteristics</b>				
Collector-Emitter Sustaining Voltage (1) ( $I_C = 200\text{mA}$ , $I_B = 0$ )	$V_{CE(sus)}$	80	-	V
Collector Cut off Current ( $V_{CE} = 40\text{V}$ , $I_B = 0$ )	$I_{CEO}$	-	1.0	mA
Collector Cut off Current ( $V_{CE} = 80\text{V}$ , $V_{BE(off)} = 1.5\text{V}$ ) ( $V_{CE} = 80\text{V}$ , $V_{BE(off)} = 1.5\text{V}$ , $T_C = 150^\circ\text{C}$ )	$I_{CEX}$	-	0.5 5.0	
Collector Cut off Current ( $V_{CB} = 80\text{V}$ , $I_E = 0$ )	$I_{CBO}$	-	0.5	
Emitter Cut off Current ( $V_{EB} = 5.0\text{V}$ , $I_C = 0$ )	$I_{EBO}$	-	1.0	
<b>ON Characteristics (1)</b>				
DC Current Gain ( $I_C = 2.0\text{A}$ , $V_{CE} = 4.0\text{V}$ ) ( $I_C = 6.0\text{A}$ , $V_{CE} = 4.0\text{V}$ ) ( $I_C = 15\text{A}$ , $V_{CE} = 4.0\text{V}$ )	$h_{FE}$	35 20 4.0	100	-
Collector-Emitter Saturation Voltage ( $I_C = 7.0\text{A}$ , $I_B = 0.7\text{A}$ ) ( $I_C = 15\text{A}$ , $I_B = 3.75\text{A}$ )	$V_{CE(sat)}$	-	1.0 4.0	V
Base-Emitter On Voltage ( $I_C = 6.0\text{A}$ , $V_{CE} = 4.0\text{V}$ )	$V_{BE(on)}$	-	1.5	
Base-Emitter Saturation Voltage ( $I_C = 15\text{A}$ , $I_B = 3.75\text{A}$ )	$V_{BE(sat)}$	-	2.5	
<b>Dynamic Characteristics</b>				
Current Gain-Bandwidth Product (2) ( $I_C = 1.0\text{A}$ , $V_{CE} = 10\text{V}$ , $f = 1.0\text{MHz}$ )	$f_T$	4.0	-	MHz
Small-Signal Current Gain ( $I_C = 2.0\text{A}$ , $V_{CE} = 4.0\text{V}$ , $f = 1.0\text{KHz}$ )	$h_{fe}$	20	-	-

(1) Pulse Test : Pulse Width  $\leq 300\mu\text{s}$ , Duty Cycle  $\leq 2.0\%$ .

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



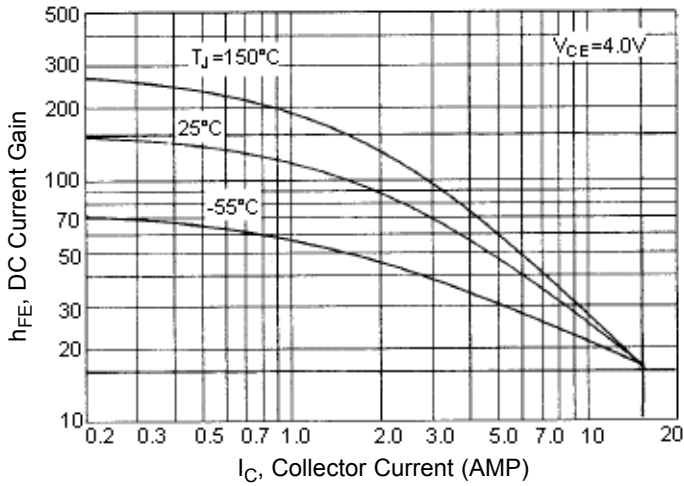
# 2N5880 & 2N5882

## Complementary Power Transistors



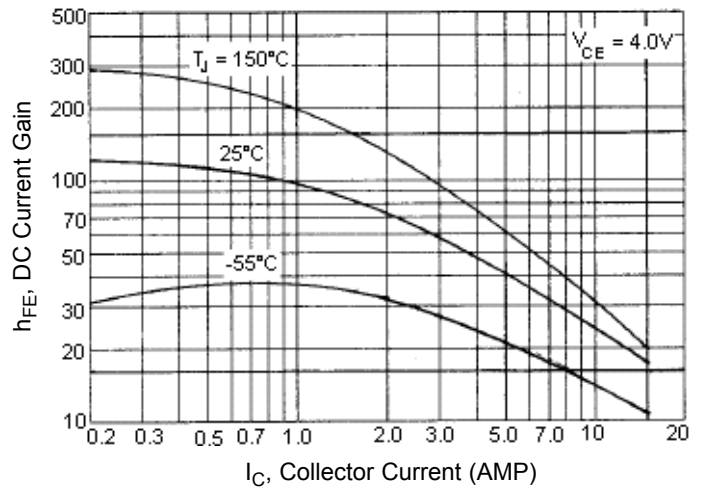
PNP 2N5880

DC Current Gain

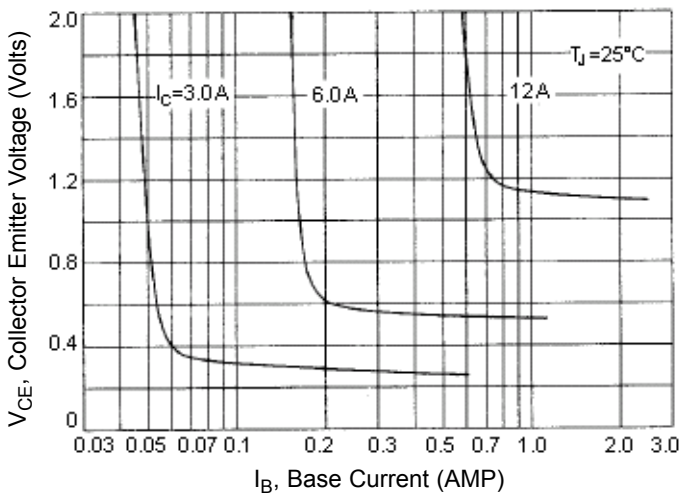


NPN 2N5882

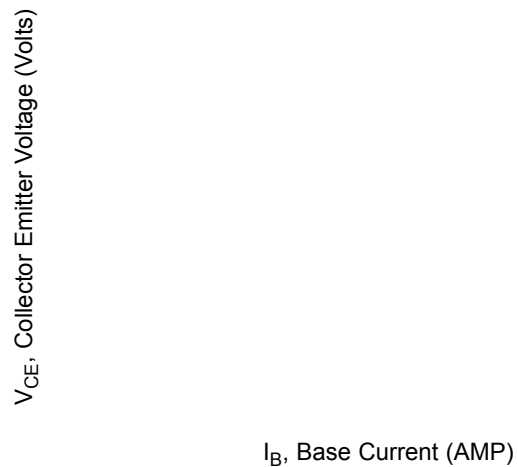
DC Current Gain



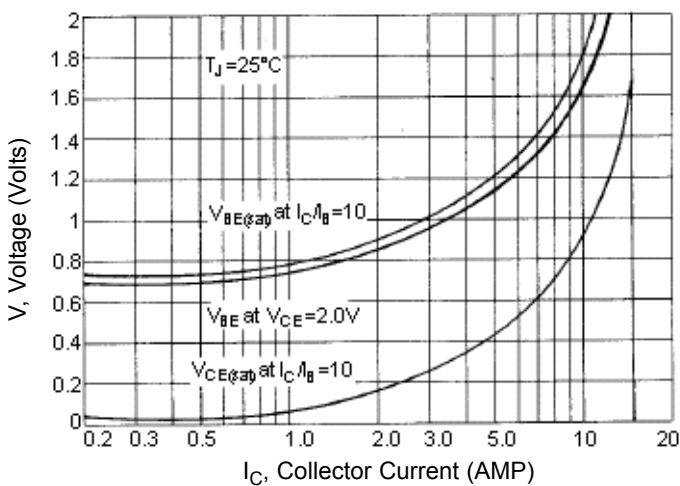
Collector Saturation Region



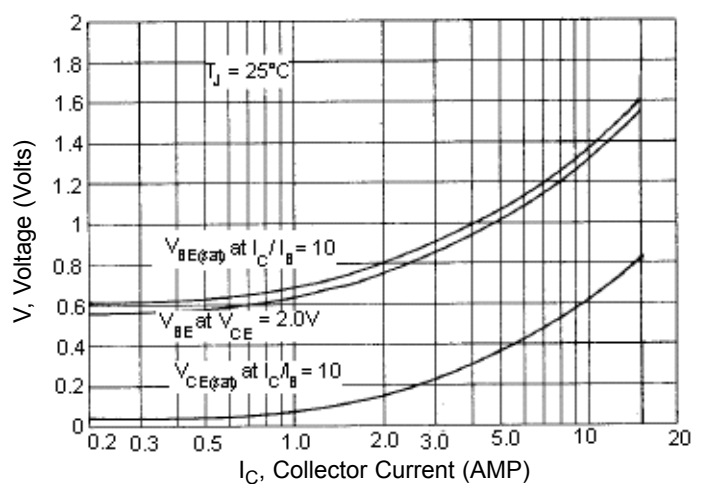
Collector Saturation Region



"ON" Voltages



"ON" Voltages

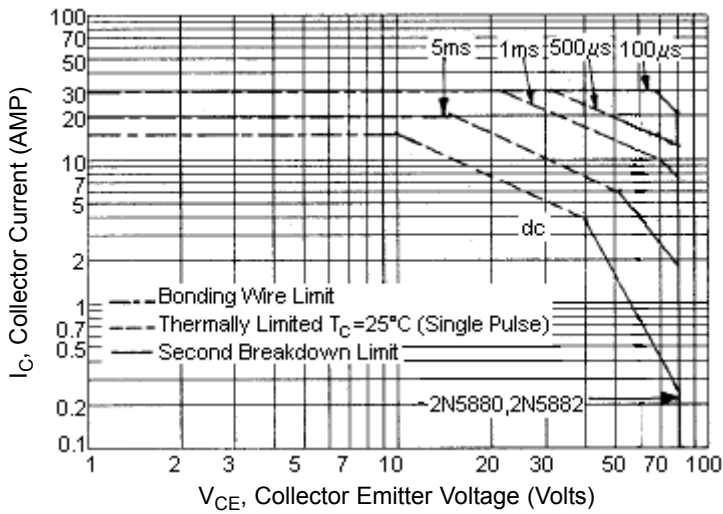


# 2N5880 & 2N5882



## Complementary Power Transistors

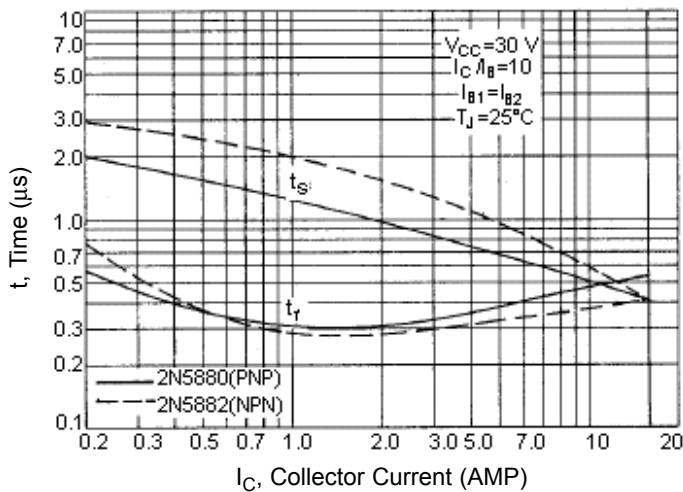
Active-Region Safe Operating Area (SOA)



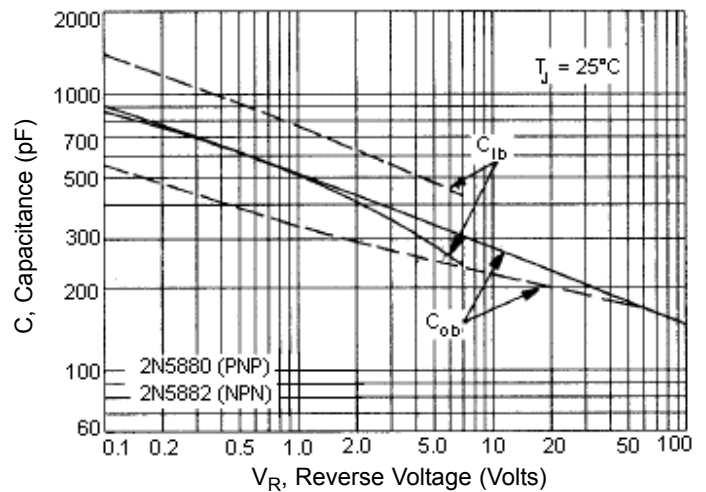
There are two limitations on the power handling ability of a transistor: average junction temperature and second breakdown safe operating area curves indicate  $I_C$ - $V_{CE}$  limits of the transistor that must be observed for reliable operation i.e., the transistor must not be subjected to greater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

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

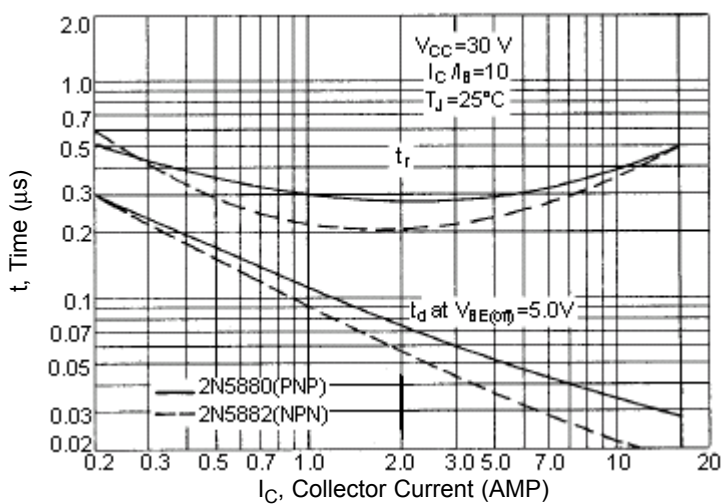
Turn-Off Time



Capacitances



Turn-On Time



# 2N5880 & 2N5882



## Complementary Power Transistors

### Specifications

$I_{C(av)}$ maximum (A)	$V_{CEO}$ maximum (V)	$h_{FE}$ minimum at $I_C = 6A$	$P_{tot}$ at 25°C (W)	Package	Type	Part Number
15	80	20	160	TO-3	NPN	2N5882
					PNP	2N5880

# 2N5880 & 2N5882



## Complementary Power Transistors

### Notes:

### International Sales Offices:



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