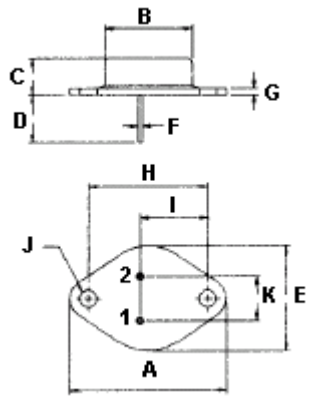
2N5884 & 2N5886

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 = 15A.
- Excellent DC current Gain
  h_{FE} = 20 ~ 100 at I_C = 10A.



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
2N5884	2N5886

25 Ampere
Complementary Silicon
Power Transistors
80 Volts
200 Watts

TO-3

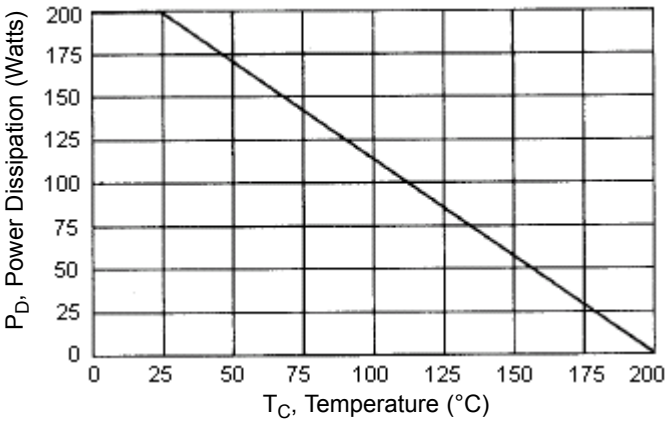
Maximum Ratings

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}	25 50	A
Base Current	I_B	7.5	
Total Power Dissipation at 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	Maximum	Unit
Thermal Resistance Junction to Case	Rθjc	0.875	°C/W

Figure - 1 Power Derating



Electrical Characteristics (T_c = 25°C unless otherwise noted)

Characteristic	Symbol	Minimum	Maximum	Unit
OFF Characteristics				
Collector-Emitter Sustaining Voltage (1) (I_C = 200mA, I_B = 0)	$V_{CEO(sus)}$	80	-	V
Collector Cut off Current (V_{CE} = 40V, I_B = 0)	I_{CEO}	-	2.0	mA
Collector Cut off Current (V_{CE} = 80V, $V_{BE(off)}$ = 1.5V) (V_{CE} = 80V, $V_{BE(off)}$ = 1.5V, T_C = 150°C)	I_{CEX}	-	1.0 10	
Collector Cut off Current (V_{CB} = 80V, I_E = 0)	I_{CBO}	-	1.0	
Emitter Cut off Current (V_{EB} = 5.0V, I_C = 0)	I_{EBO}	-		
ON Characteristics (1)				
DC Current Gain (I_C = 3.0A, V_{CE} = 4.0V) (I_C = 10A, V_{CE} = 4.0V) (I_C = 25A, V_{CE} = 4.0V)	h_{FE}	35 20 4.0	100	-
Collector-Emitter Saturation Voltage (I_C = 15A, I_B = 1.5A) (I_C = 25A, I_B = 6.25A)	$V_{CE(sat)}$	-	1.0 4.0	V
Base-Emitter On Voltage (I_C = 10A, V_{CE} = 4.0V)	$V_{BE(on)}$	-	1.5	
Base-Emitter Saturation Voltage (I_C = 25A, I_B = 6.25A)	$V_{BE(sat)}$	-	2.5	

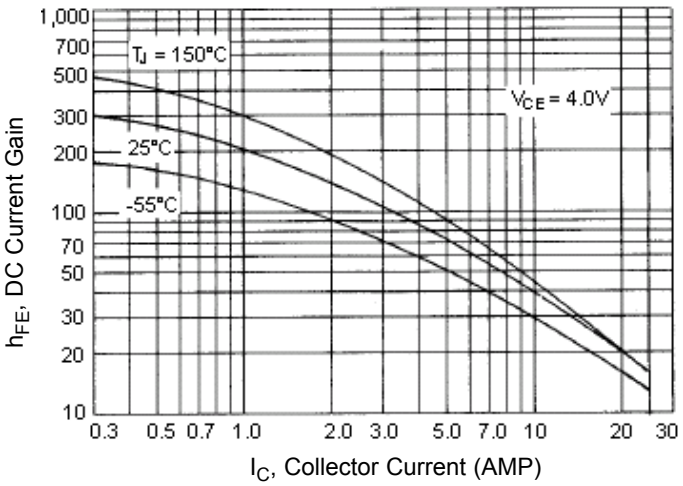
Characteristic	Symbol	Minimum	Maximum	Unit
Dynamic Characteristics				
Current Gain-Bandwidth Product (2) (I_C = 1.0A, V_{CE} = 10V, f = 1.0MHz)	f_T	4.0	-	MHz
Small-Signal Current Gain (I_c = 3.0A, V_{CE} = 4.0V, f = 1.0KHz)	h_{fe}	20	-	

(1) Pulse Test: Pulse Width = 300µs, Duty Cycle ≤2.0%.

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

2N5884

DC Current Gain



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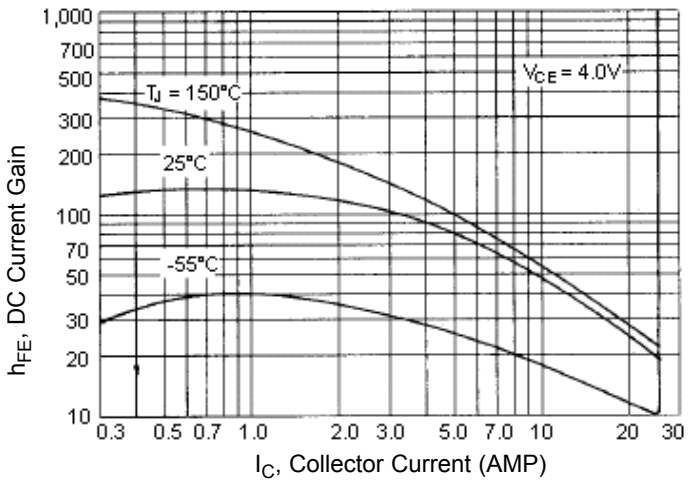
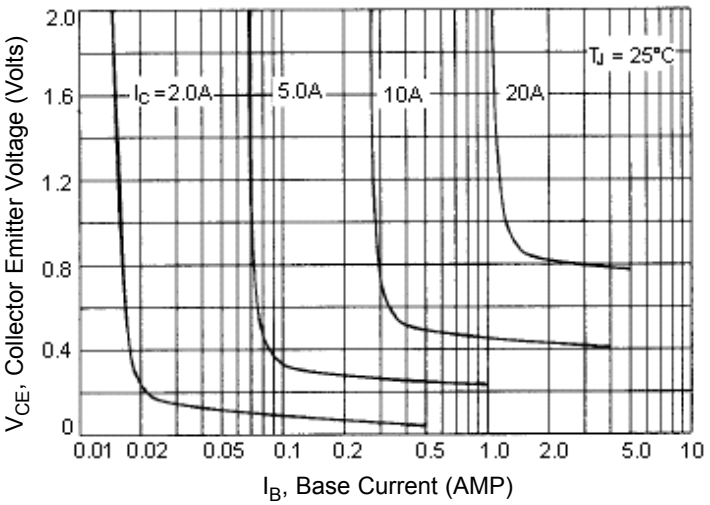
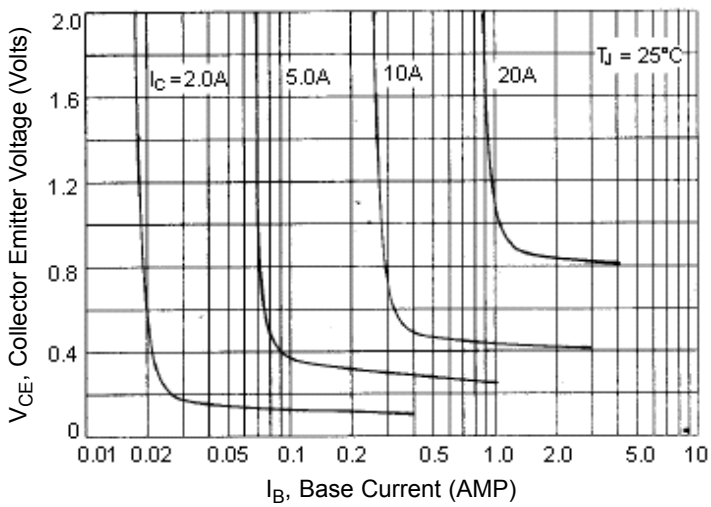
DC Current Gain



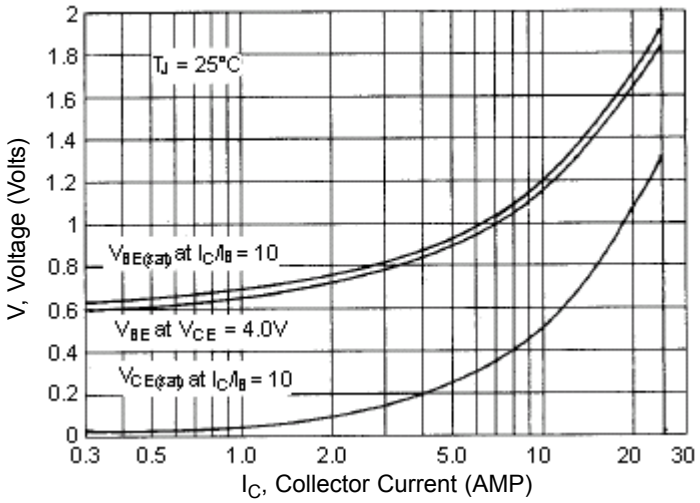
Collector Saturation Region



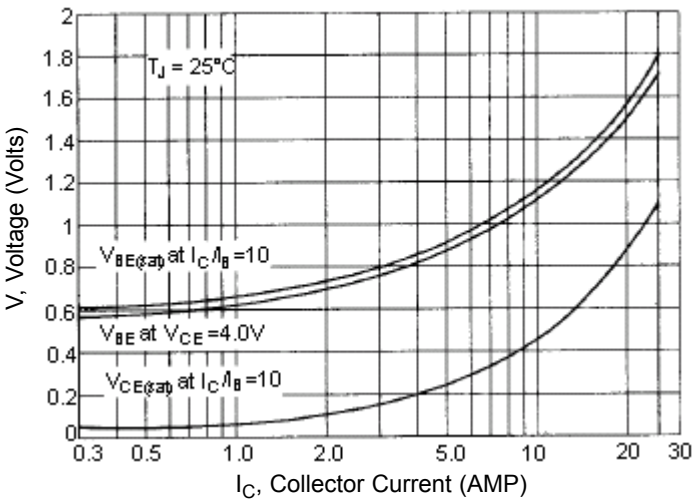
Collector Saturation Region



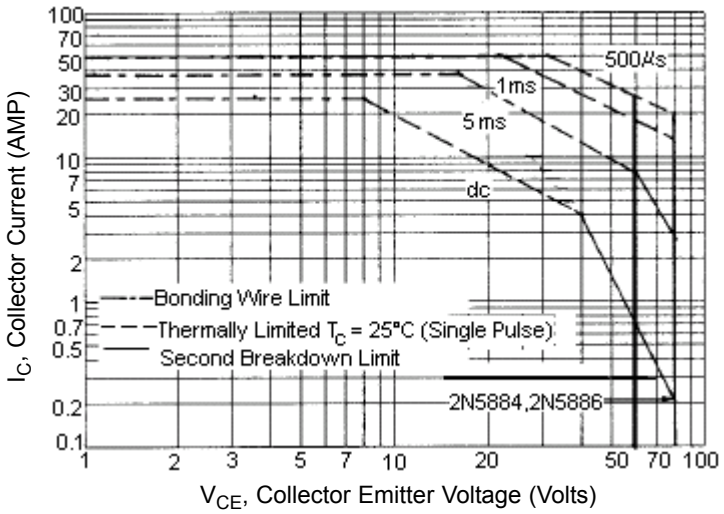
2N5884
"ON" Voltages



2N5886
"ON" Voltages



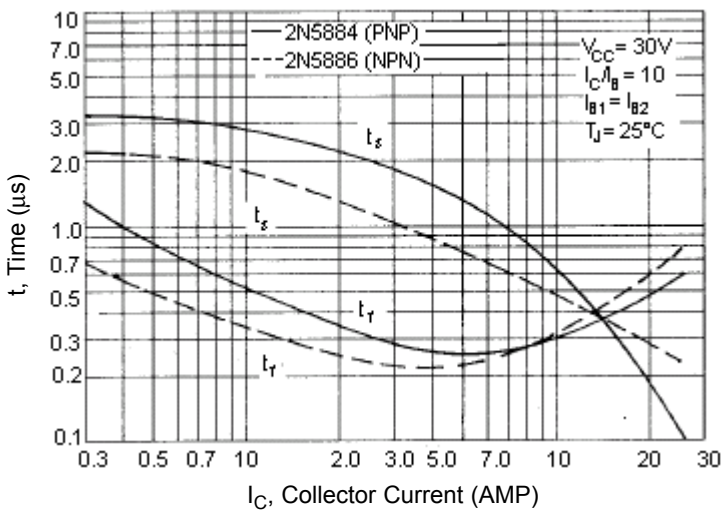
Active-Region Safe Operating Area (SOA)



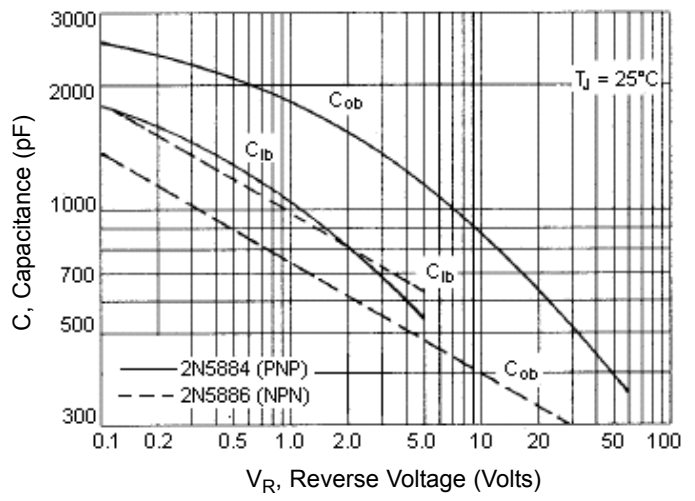
There are two limitations on the power handling ability of a transistor: average junction temperature and second breakdown safe operating area curves indicate I_C-V_{CE} limits of the transistor that must be observed for reliable operation i.e., the transistor must not be subjected to greater dissipation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

The data of SOA curve is based on $T_{J(PK)}$ = 200°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.

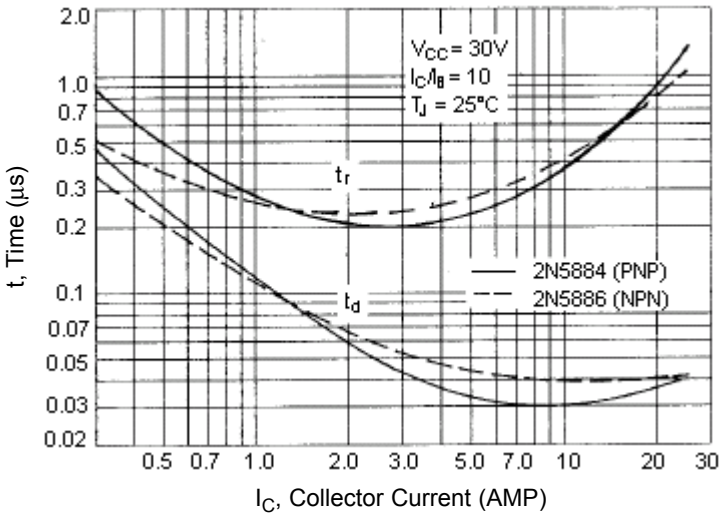
Turn-Off Time



Capacitances



Turn-On Time



Specifications

$I_{C(av)}$ maximum (A)	V_{CEO} maximum (V)	h_{FE} minimum at I_C = 10A	P_{tot} at 25°C (W)	Package	Type	Part Number
25	80	20	200	TO-3	NPN	2N5886
					PNP	2N5884

Notes:

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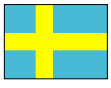

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