



**THE DATASHEET OF**  
**2N5583**



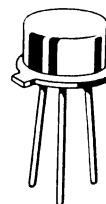


### PNP SILICON ANNULAR TRANSISTOR

... designed for applications in high frequency amplifiers and non-saturated switching circuits. Large signal capabilities, low-noise and high gain-bandwidth product characteristics of the 2N5583 provide excellent performance in a variety of small signal and linear amplifier applications. Ideal for C A T V circuits.

- High Current-Gain-Bandwidth Product –  
 $f_T = 1300$  (Min) @  $I_C = 100$  mA dc

### PNP SILICON AMPLIFIER TRANSISTOR

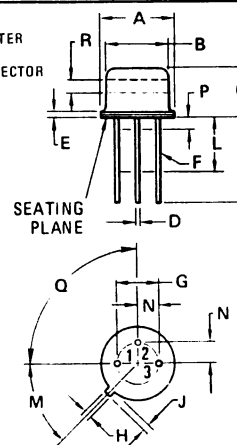


#### MAXIMUM RATINGS

Rating	Symbol	Value	Unit
* Collector-Emitter Voltage	$V_{CEO}$	30	Vdc
* Collector-Base Voltage	$V_{CB}$	30	Vdc
* Emitter-Base Voltage	$V_{EB}$	3.0	Vdc
* Collector Current – Continuous	$I_C$	500	mA dc
Total Device Dissipation @ $T_A = 25^\circ\text{C}$	$P_D$	1.0	Watt
Derate above $25^\circ\text{C}$		5.71	mW/ $^\circ\text{C}$
* Total Device Dissipation @ $T_C = 25^\circ\text{C}$	$P_D$	5.0	Watts
Derate above $25^\circ\text{C}$		28.6	mW/ $^\circ\text{C}$
* Operating and Storage Junction Temperature Range	$T_J, T_{stg}$	-65 to +200	$^\circ\text{C}$

\* Indicates JEDEC Registered Data.

STYLE 1:  
PIN 1. EMITTER  
2. BASE  
3. COLLECTOR



DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	8.89	9.40	0.350	0.370
B	8.00	8.51	0.315	0.335
C	6.10	6.60	0.240	0.260
D	0.406	0.533	0.016	0.021
E	0.229	3.18	0.009	0.125
F	0.406	0.483	0.016	0.019
G	4.83	5.33	0.190	0.210
H	0.711	0.864	0.028	0.034
J	0.737	1.02	0.029	0.040
K	12.70	–	0.500	–
L	6.35	–	0.250	–
M	45° NOM	–	45° NOM	–
P	–	1.27	–	0.050
Q	90° NOM	–	90° NOM	–
R	2.54	–	0.100	–

All JEDEC dimensions and notes apply.

ELECTRICAL CHARACTERISTICS (T<sub>A</sub> = 25°C unless otherwise noted)

Characteristic	Figure No.	Symbol	Min	Max	Unit
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OFF CHARACTERISTICS

Collector-Emitter Breakdown Voltage (1)	–	BV <sub>CEO</sub>	30	–	V <sub>dc</sub>
Collector-Base Breakdown Voltage (I <sub>C</sub> = 10 μAdc, I <sub>E</sub> = 0)	–	BV <sub>CB0</sub>	30	–	V <sub>dc</sub>
Emitter-Base Breakdown Voltage (I <sub>E</sub> = 100 μAdc, I <sub>C</sub> = 0)	–	BV <sub>EB0</sub>	3.0	–	V <sub>dc</sub>
Collector Cutoff Current (V <sub>CB</sub> = 20 Vdc, I <sub>E</sub> = 0)	4	I <sub>CBO</sub>	–	50	nAdc
Emitter Cutoff Current (V <sub>EB</sub> = 2.0 Vdc, I <sub>C</sub> = 0)	–	I <sub>EBO</sub>	–	0.5	μAdc

ON CHARACTERISTICS (1)

DC Current Gain (I <sub>C</sub> = 40 mAdc, V <sub>CE</sub> = 2.0 Vdc)	1	h <sub>FE</sub>	20	–	–
(I <sub>C</sub> = 100 mAdc, V <sub>CE</sub> = 2.0 Vdc)			25	–	
(I <sub>C</sub> = 300 mAdc, V <sub>CE</sub> = 5.0 Vdc)			15	–	
Collector-Emitter Saturation Voltage (I <sub>C</sub> = 100 mAdc, I <sub>B</sub> = 10 mAdc)	2,3	V <sub>CE(sat)</sub>	–	0.8	V <sub>dc</sub>
Base-Emitter On Voltage (I <sub>C</sub> = 100 mAdc, V <sub>CE</sub> = 2.0 Vdc)	3	V <sub>BE(on)</sub>	–	1.8	V <sub>dc</sub>

SMALL-SIGNAL CHARACTERISTICS

*Current-Gain-Bandwidth Product (I <sub>C</sub> = 40 mAdc, V <sub>CE</sub> = 10 Vdc, f = 100 MHz)	7	f <sub>T</sub>	1000	–	MHz
(I <sub>C</sub> = 100 mAdc, V <sub>CE</sub> = 10 Vdc, f = 100 MHz)			1300	–	
*Collector-Base Capacitance (V <sub>CB</sub> = 15 Vdc, I <sub>E</sub> = 0, f = 100 KHz)	5	C <sub>cb</sub>	–	5.0	pf
*Emitter-Base Capacitance (V <sub>EB</sub> = 0.5 Vdc, I <sub>C</sub> = 0, f = 100 KHz)	5	C <sub>eb</sub>	–	35	pf

\* Indicates JEDEC Registered Data.  
 (1) Pulse Test: Pulse Width ≤ 300 μs, Duty Cycle = 2.0%.

FIGURE 1 – DC CURRENT GAIN

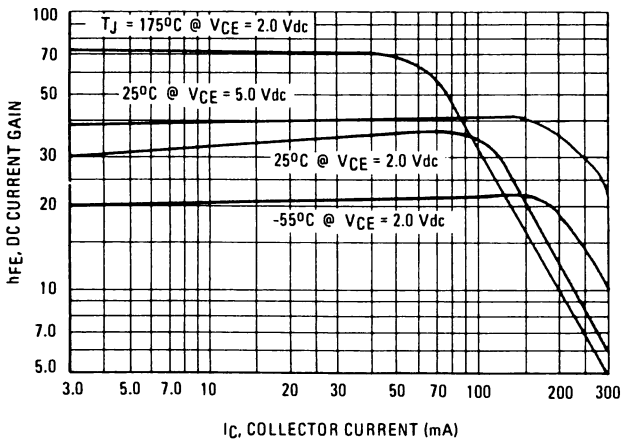


FIGURE 2 – COLLECTOR SATURATION REGION

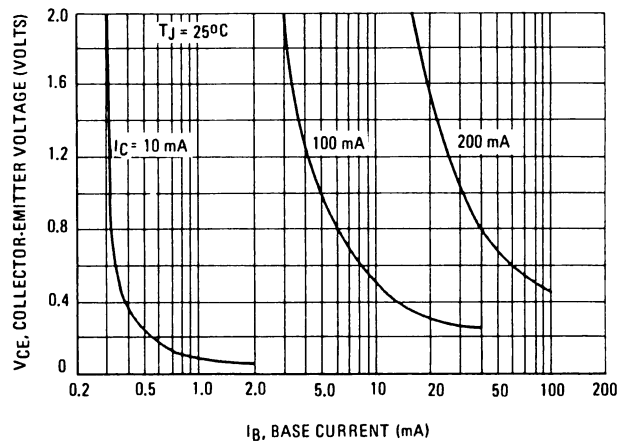


FIGURE 3 – "ON" VOLTAGES

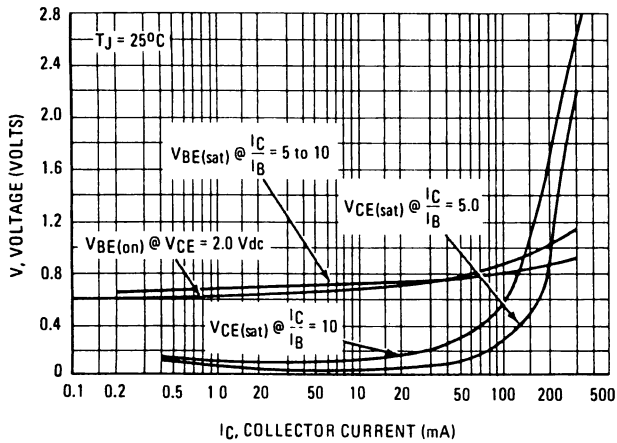


FIGURE 4 – COLLECTOR CURRENT versus BASE VOLTAGE

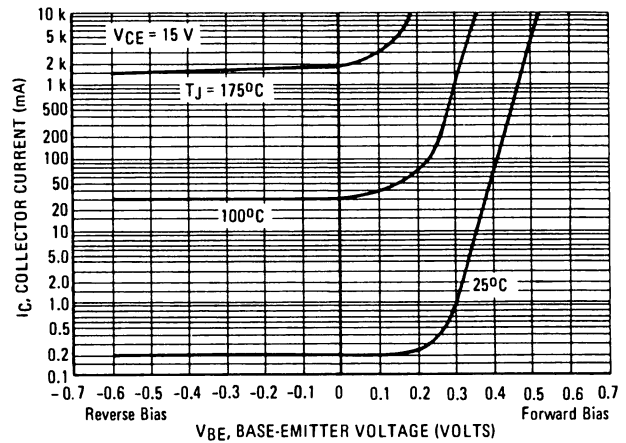


FIGURE 5 – CAPACITANCES

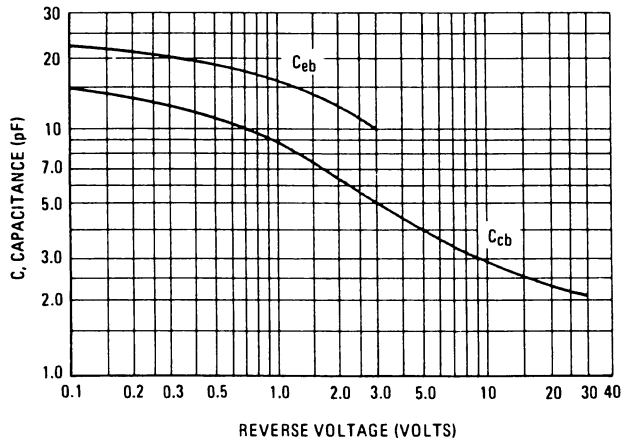


FIGURE 6 – TEMPERATURE COEFFICIENTS

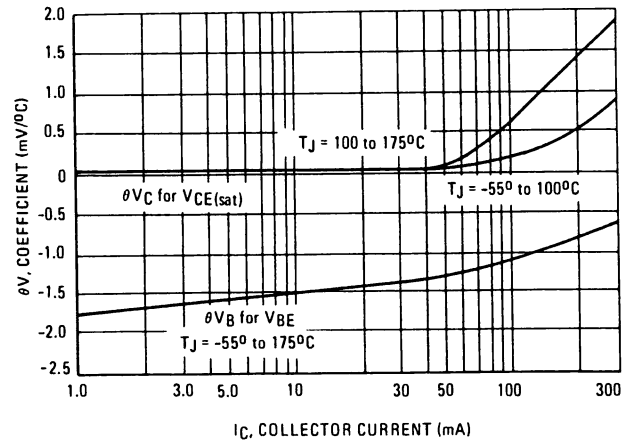


FIGURE 7 – CURRENT-GAIN-BANDWIDTH PRODUCT

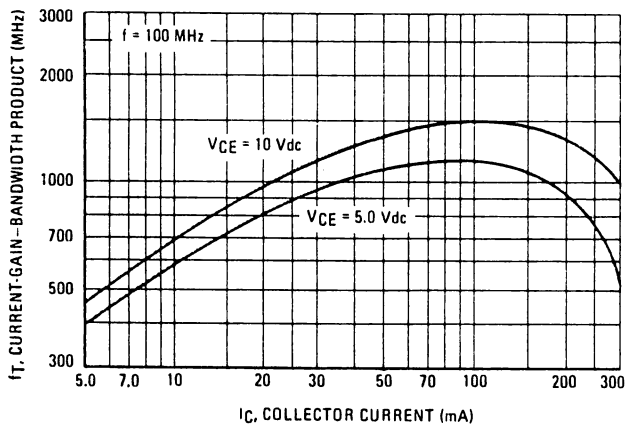


FIGURE 8 – COLLECTOR-BASE TIME CONSTANT

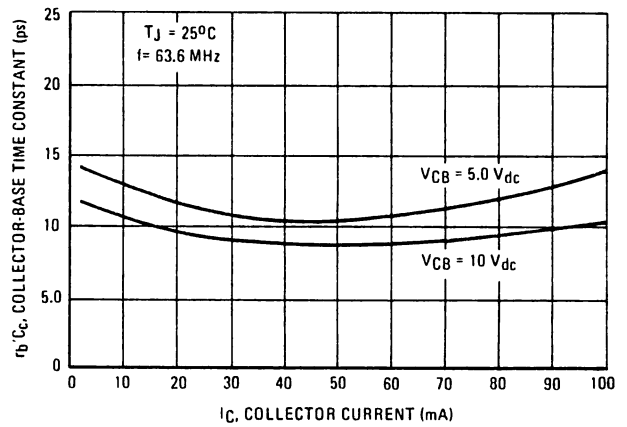


FIGURE 9 – SWITCHING TIME

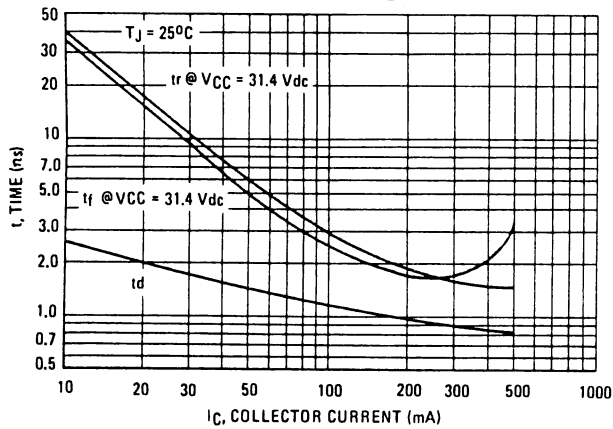
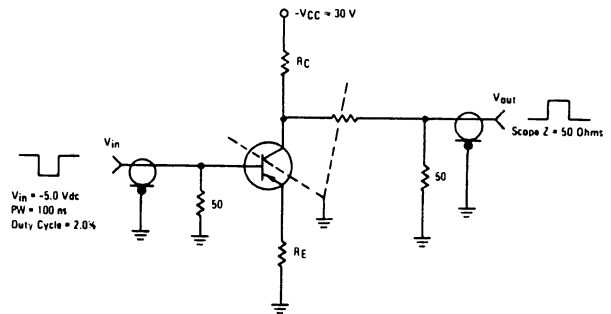




FIGURE 10 – SWITCHING TIME TEST CIRCUIT









$I_C$ mA	$R_C$ Ohms	$R_E$ Ohms	$V_{CC}$ Volts
50	526	80	34.4
150	160	26.6	31.4
300	78	13.3	30.6
500	46.5	8.0	30.3

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