

**DESCRIPTION** The 2SC2901 is designed for general purpose amplifier and high speed switching applications.

- FEATURES**
- High Frequency Current Gain.
  - High Speed Switching.
  - Small Output Capacitance.

### ABSOLUTE MAXIMUM RATINGS

#### Maximum Temperatures

Storage Temperature . . . . . -55 to +150 °C

Junction Temperature . . . . . 150 °C Maximum

#### Maximum Power Dissipation (Ta = 25 °C)

Total Power Dissipation . . . . . 600 mW

#### Maximum Voltages and Currents (Ta = 25 °C)

V<sub>CBO</sub> Collector to Base Voltage . . . . . 40 V

V<sub>CES</sub> Collector to Emitter Voltage . . . . . 40 V

V<sub>CEO</sub> Collector to Emitter Voltage . . . . . 15 V

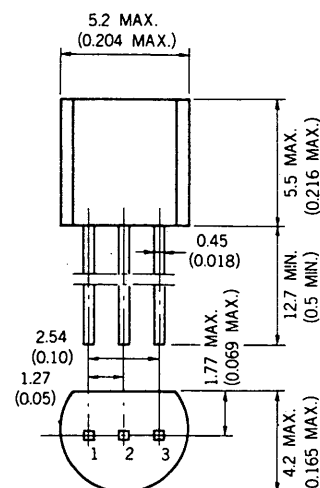
V<sub>EBO</sub> Emitter to Base Voltage . . . . . 5.0 V

I<sub>C</sub> Collector Current . . . . . 200 mA

I<sub>C</sub> Collector Current (10 μs pulse) . . . . 500 mA

### PACKAGE DIMENSIONS

in millimeters (inches)



1. EMITTER EIAJ : SC-43B  
2. BASE JEDEC : TO-92  
3. COLLECTOR IEC : PA33

### ELECTRICAL CHARACTERISTICS (Ta = 25 °C)

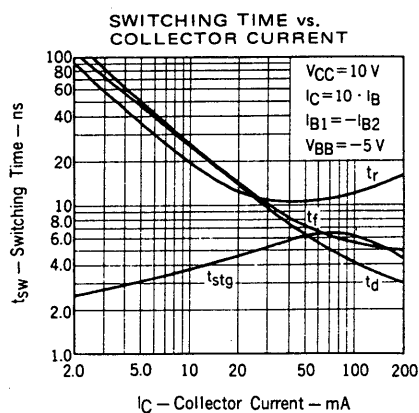
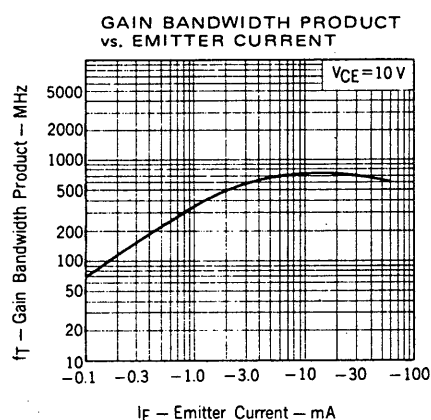
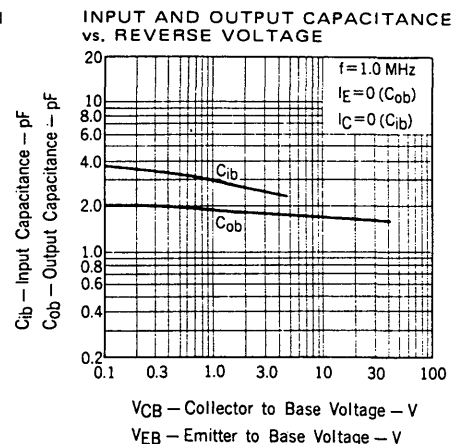
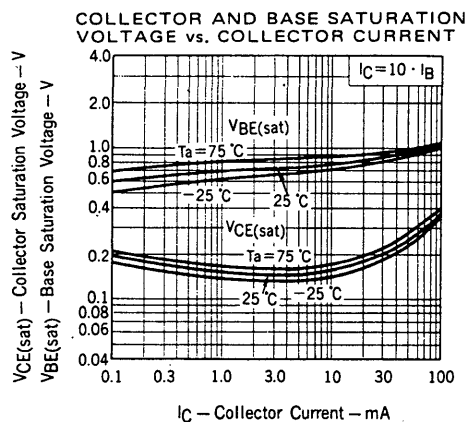
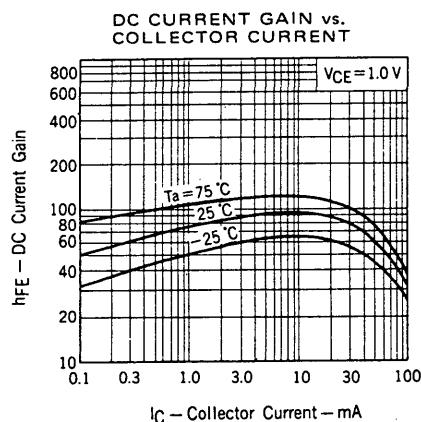
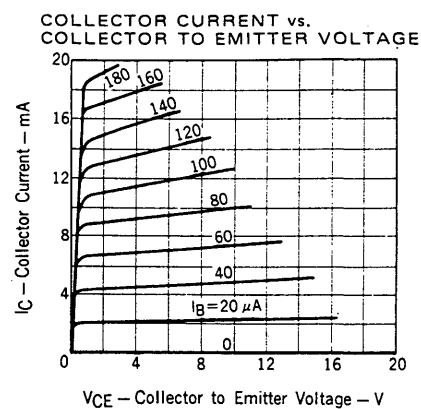
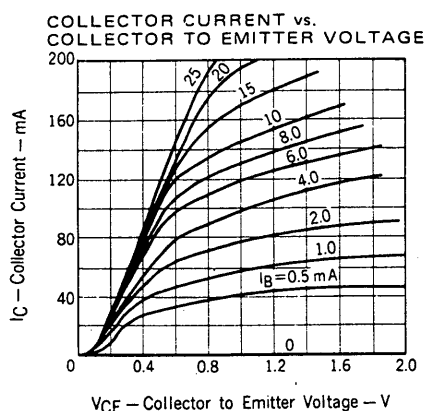
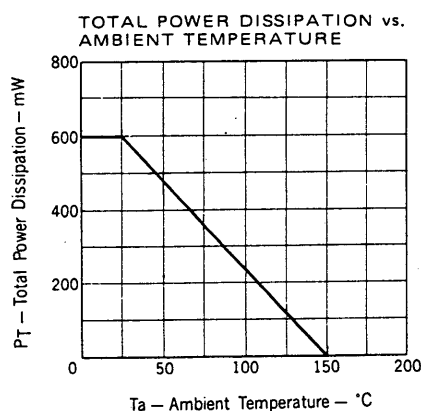
SYMBOL	CHARACTERISTIC	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
t <sub>on</sub>	Turn-on Time		8.0	12	ns	V <sub>CC</sub> = 3.0 V, I <sub>C</sub> = 10 mA, I <sub>B1</sub> = 3.0 mA, V <sub>BE</sub> = -1.5 V
t <sub>off</sub>	Turn-off Time		12	18	ns	V <sub>CC</sub> = 3.0 V, I <sub>C</sub> = 10 mA, I <sub>B1</sub> = 3.0 mA, I <sub>B2</sub> = -1.5 mA
t <sub>stg</sub>	Storage Time		6.0	13	ns	I <sub>C</sub> = 10 mA, I <sub>B1</sub> = -I <sub>B2</sub> = 10 mA
f <sub>T</sub>	Gain Bandwidth Product	500	750		MHz	V <sub>CE</sub> = 10 V, I <sub>E</sub> = -10 mA, f = 100 MHz
C <sub>ob</sub>	Output Capacitance		1.8	4.0	pF	V <sub>CB</sub> = 5.0 V, I <sub>E</sub> = 0, f = 1 MHz
h <sub>FE</sub> *	DC Current Gain	40	90	200	—	V <sub>CE</sub> = 1.0 V, I <sub>C</sub> = 10 mA
V <sub>CE(sat)</sub> *	Collector Saturation Voltage		0.15	0.25	V	I <sub>C</sub> = 10 mA, I <sub>B</sub> = 1.0 mA
V <sub>BE(sat)</sub> *	Base Saturation Voltage		0.80	0.85	V	I <sub>C</sub> = 10 mA, I <sub>B</sub> = 1.0 mA
I <sub>CBO</sub>	Collector Cutoff Current			0.1	μA	V <sub>CB</sub> = 20 V, I <sub>E</sub> = 0
I <sub>EBO</sub>	Emitter Cutoff Current			0.1	μA	V <sub>EB</sub> = 3.0 V, I <sub>C</sub> = 0

\*Pulsed PW ≤ 350 μs, duty cycle ≤ 2%.

### Classification of h<sub>FE</sub>

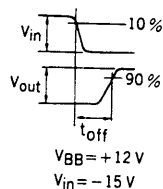
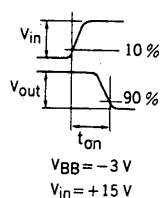
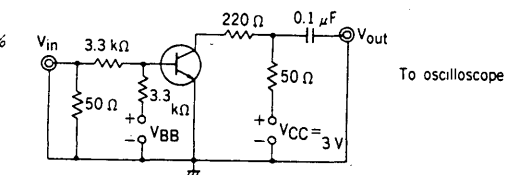
Rank	L	K
Range	40 - 120	100 - 200

Test Conditions : V<sub>CE</sub> = 1.0 V, I<sub>C</sub> = 10 mA

TYPICAL CHARACTERISTICS ( $T_a=25^\circ\text{C}$ )

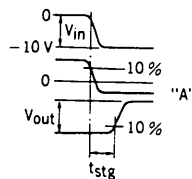
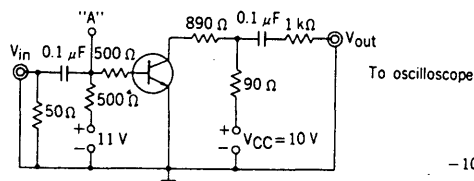
# SWITCHING TIME TEST CIRCUIT

PW=300 ns  
Duty cycle=2 %



$t_{on}$ ,  $t_{off}$  SWITCHING

PW=300 ns  
Duty cycle=2 %



$t_{stg}$  SWITCHING

Voltage waveforms