NEC

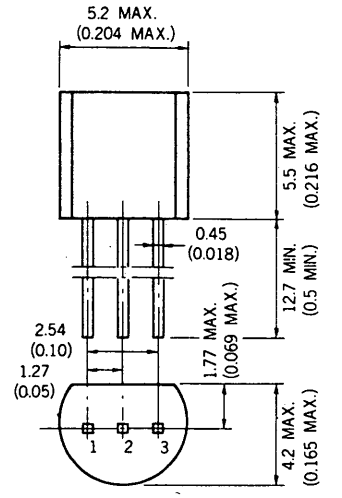
NPN SILICON TRANSISTOR
2SC2901

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.

PACKAGE DIMENSIONS
in millimeters (inches)



1. EMITTER
2. BASE
3. COLLECTOR

EIAJ : SC-43B
JEDEC : TO-92
IEC : PA33

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_{CBO}	Collector to Base Voltage	40 V
V_{CES}	Collector to Emitter Voltage	40 V
V_{CEO}	Collector to Emitter Voltage	15 V
V_{EBO}	Emitter to Base Voltage	5.0 V
I_C	Collector Current	200 mA
I_C	Collector Current (10 μs pulse)	500 mA

ELECTRICAL CHARACTERISTICS (Ta = 25 °C)

SYMBOL	CHARACTERISTIC	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
t_{on}	Turn-on Time		8.0	12	ns	V_{CC} = 3.0 V, I_C = 10 mA, I_{B1} = 3.0 mA, V_{BE} = −1.5 V
t_{off}	Turn-off Time		12	18	ns	V_{CC} = 3.0 V, I_C = 10 mA, I_{B1} = 3.0 mA, I_{B2} = −1.5 mA
t_{stg}	Storage Time		6.0	13	ns	I_C = 10 mA, I_{B1} = −I_{B2} = 10 mA
f_T	Gain Bandwidth Product	500	750		MHz	V_{CE} = 10 V, I_E = −10 mA, f = 100 MHz
C_{ob}	Output Capacitance		1.8	4.0	pF	V_{CB} = 5.0 V, I_E = 0, f = 1 MHz
h_{FE}*	DC Current Gain	40	90	200	−	V_{CE} = 1.0 V, I_C = 10 mA
$V_{CE(sat)}$*	Collector Saturation Voltage		0.15	0.25	V	I_C = 10 mA, I_B = 1.0 mA
$V_{BE(sat)}$*	Base Saturation Voltage		0.80	0.85	V	I_C = 10 mA, I_B = 1.0 mA
I_{CBO}	Collector Cutoff Current			0.1	μA	V_{CB} = 20 V, I_E = 0
I_{EBO}	Emitter Cutoff Current			0.1	μA	V_{EB} = 3.0 V, I_C = 0

*Pulsed PW ≦ 350 μs, duty cycle ≦ 2 %.

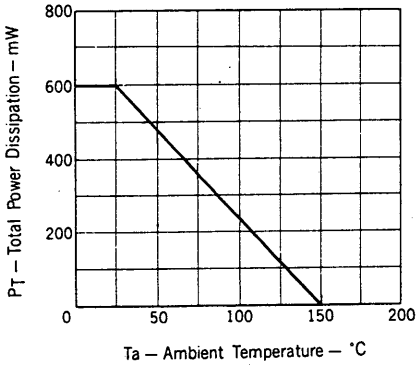
Classification of h_{FE}

Rank	L	K
Range	40 – 120	100 – 200

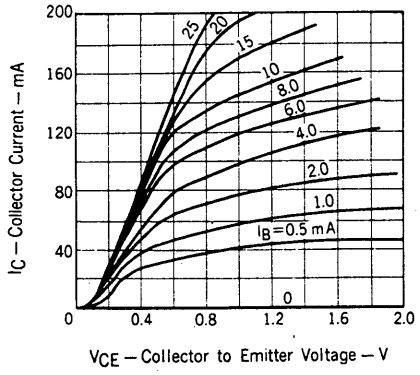
Test Conditions : V_{CE} = 1.0 V, I_C = 10 mA

TYPICAL CHARACTERISTICS (Ta=25 °C)

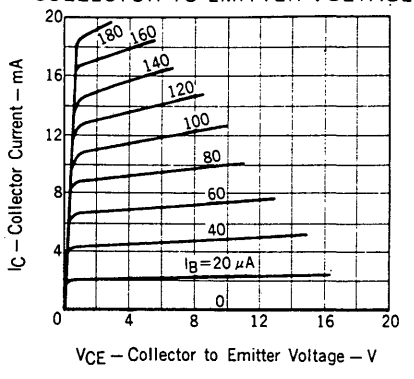
TOTAL POWER DISSIPATION vs. AMBIENT TEMPERATURE



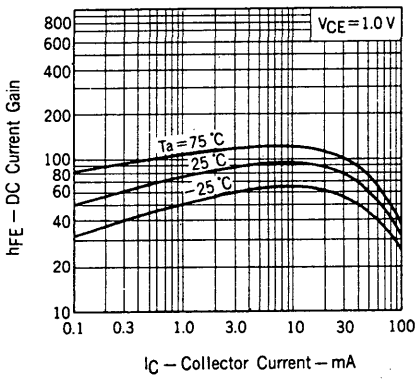
COLLECTOR CURRENT vs. COLLECTOR TO EMITTER VOLTAGE



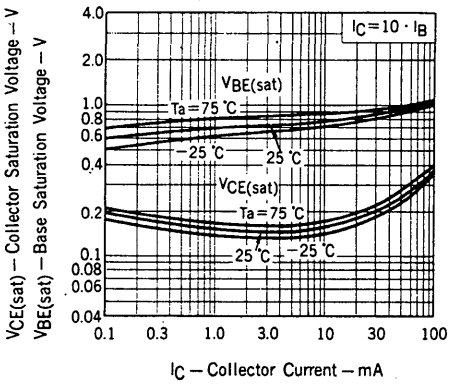
COLLECTOR CURRENT vs. COLLECTOR TO EMITTER VOLTAGE



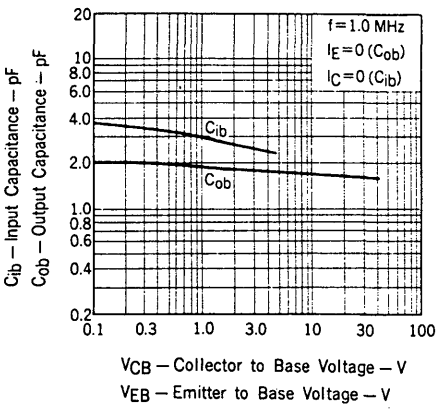
DC CURRENT GAIN vs. COLLECTOR CURRENT



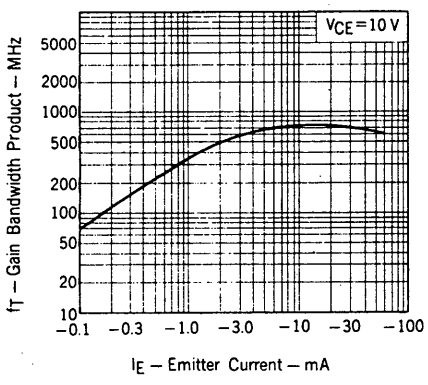
COLLECTOR AND BASE SATURATION VOLTAGE vs. COLLECTOR CURRENT



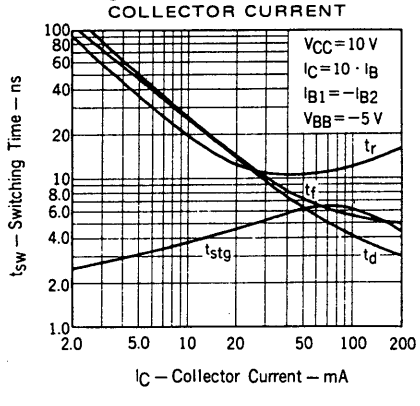
INPUT AND OUTPUT CAPACITANCE vs. REVERSE VOLTAGE



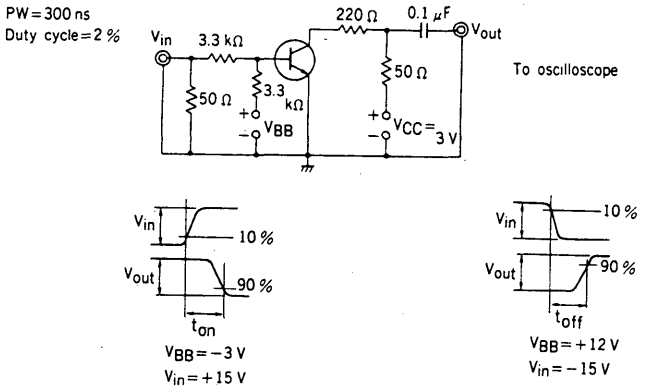
GAIN BANDWIDTH PRODUCT vs. EMITTER CURRENT



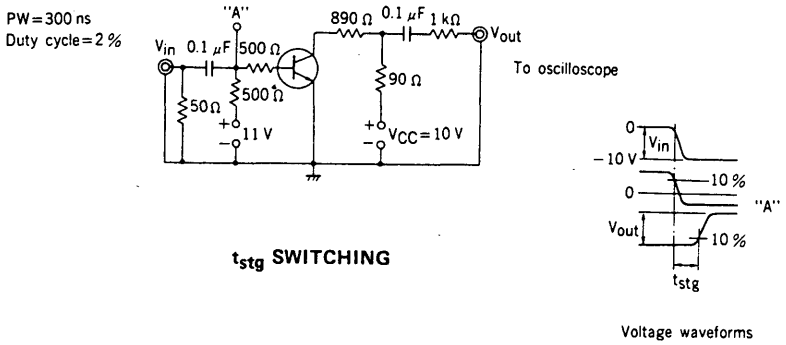
SWITCHING TIME vs. COLLECTOR CURRENT



SWITCHING TIME TEST CIRCUIT



t_{on}, t_{off} SWITCHING



t_{stg} SWITCHING

Voltage waveforms