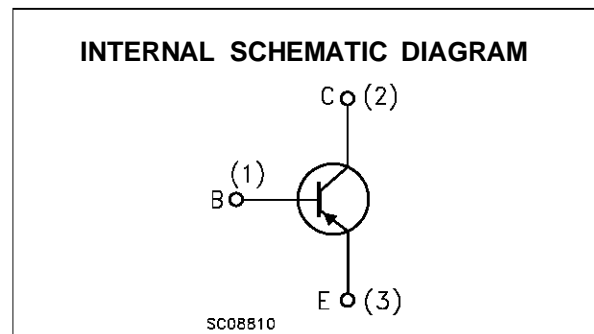
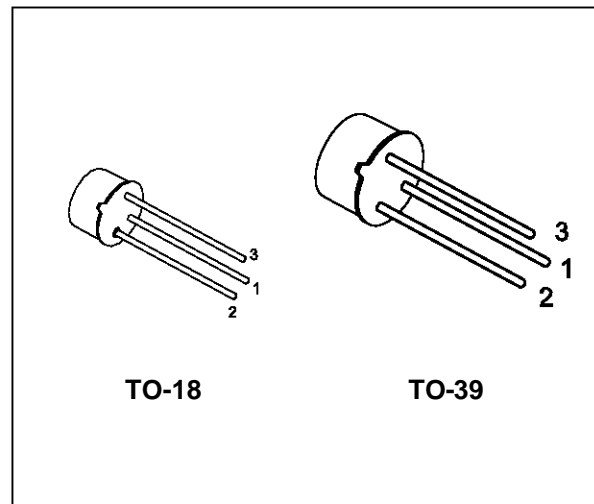


**GENERAL PURPOSE AMPLIFIERS AND SWITCHES**

**DESCRIPTION**

The 2N2905A and 2N2907A are silicon planar epitaxial PNP transistors in Jedec TO-39 (for 2N2905A) and in Jedec TO-18 (for 2N2907A) metal case. They are designed for high speed saturated switching and general purpose applications.

- ☰ 2N2905A approved to CECC 50002-100, 2N2906A approved to CECC 50002-103 available on request.



**ABSOLUTE MAXIMUM RATINGS**

Symbol	Parameter	Value	Unit
$V_{CBO}$	Collector-Base Voltage ( $I_E = 0$ )	-60	V
$V_{CEO}$	Collector-Emitter Voltage ( $I_B = 0$ )	-60	V
$V_{EBO}$	Emitter-Base Voltage ( $I_C = 0$ )	-5	V
$I_C$	Collector Current	-0.6	A
$P_{tot}$	Total Dissipation at $T_{amb} \leq 25\text{ }^\circ\text{C}$ for <b>2N2905A</b> for <b>2N2907A</b> at $T_{case} \leq 25\text{ }^\circ\text{C}$ for <b>2N2905A</b> for <b>2N2907A</b>	0.6	W
		0.4	W
		3	W
		1.8	W
$T_{stg}$	Storage Temperature	-65 to 200	$^\circ\text{C}$
$T_j$	Max. Operating Junction Temperature	200	$^\circ\text{C}$

## 2N2905A/2N2907A

### THERMAL DATA

			TO-39	TO-18	
R <sub>thj-case</sub>	Thermal Resistance Junction-Case	Max	58.3	97.3	°C/W
R <sub>thj-amb</sub>	Thermal Resistance Junction-Ambient	Max	292	437.5	°C/W

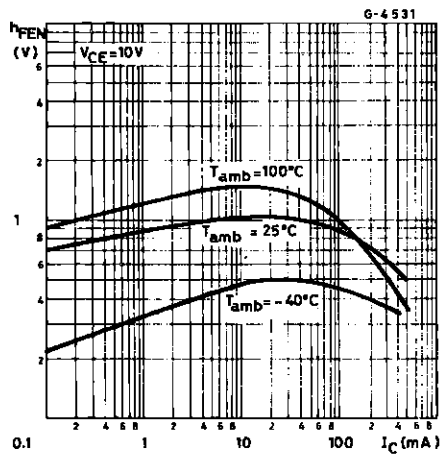
### ELECTRICAL CHARACTERISTICS (T<sub>case</sub> = 25 °C unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I <sub>CBO</sub>	Collector Cut-off Current (I <sub>E</sub> = 0)	V <sub>CB</sub> = -50 V V <sub>CB</sub> = -50 V T <sub>case</sub> = 150 °C			-10 -10	nA μA
I <sub>CEX</sub>	Collector Cut-off Current (V <sub>BE</sub> = -0.5V)	V <sub>CE</sub> = -30 V			-50	nA
I <sub>BEX</sub>	Base Cut-off Current (V <sub>BE</sub> = -0.5V)	V <sub>CE</sub> = -30 V			-50	nA
V <sub>(BR)CBO</sub> *	Collector-Base Breakdown Voltage (I <sub>E</sub> = 0)	I <sub>C</sub> = -10 μA	-60			V
V <sub>(BR)CEO</sub> *	Collector-Emitter Breakdown Voltage (I <sub>B</sub> = 0)	I <sub>C</sub> = -10 mA	-60			V
V <sub>(BR)EBO</sub> *	Emitter-Base Breakdown Voltage (I <sub>C</sub> = 0)	I <sub>E</sub> = -10 μA	-5			V
V <sub>CE(sat)</sub> *	Collector-Emitter Saturation Voltage	I <sub>C</sub> = -150 mA I <sub>B</sub> = -15 mA I <sub>C</sub> = -500 mA I <sub>B</sub> = -50 mA			-0.4 -1.6	V V
V <sub>BE(sat)</sub> *	Base-Emitter Saturation Voltage	I <sub>C</sub> = -150 mA I <sub>B</sub> = -15 mA I <sub>C</sub> = -500 mA I <sub>B</sub> = -50 mA			-1.3 -2.6	V V
h <sub>FE</sub> *	DC Current Gain	I <sub>C</sub> = -0.1 mA V <sub>CE</sub> = -10 V I <sub>C</sub> = -1 mA V <sub>CE</sub> = -10 V I <sub>C</sub> = -10 mA V <sub>CE</sub> = -10 V I <sub>C</sub> = -150 mA V <sub>CE</sub> = -10 V I <sub>C</sub> = -500 mA V <sub>CE</sub> = -10 V	75 100 100 100 50		300	
f <sub>T</sub>	Transition Frequency	V <sub>CE</sub> = -50 V f = 100 MHz I <sub>C</sub> = -20 mA	200			MHz
C <sub>EBO</sub>	Emitter Base Capacitance	I <sub>C</sub> = 0 V <sub>EB</sub> = -2 V f = 1MHz			30	pF
C <sub>CBO</sub>	Collector Base Capacitance	I <sub>E</sub> = 0 V <sub>CB</sub> = -10 V f = 1MHz			8	pF
t <sub>d</sub> **	Delay Time	V <sub>CC</sub> = -30 V I <sub>C</sub> = -150 mA I <sub>B1</sub> = -15 mA			10	ns
t <sub>r</sub> **	Rise Time	V <sub>CC</sub> = -30 V I <sub>C</sub> = -150 mA I <sub>B1</sub> = -15 mA			40	ns
t <sub>s</sub> **	Storage Time	V <sub>CC</sub> = -6 V I <sub>C</sub> = -150 mA I <sub>B1</sub> = -I <sub>B2</sub> = -15 mA			80	ns
t <sub>f</sub> **	Fall Time	V <sub>CC</sub> = -6 V I <sub>C</sub> = -150 mA I <sub>B1</sub> = -I <sub>B2</sub> = -15 mA			30	ns
t <sub>on</sub> **	Turn-on Time	V <sub>CC</sub> = -30 V I <sub>C</sub> = -150 mA I <sub>B1</sub> = -15 mA			45	ns
t <sub>off</sub> **	Turn-off Time	V <sub>CC</sub> = -6 V I <sub>C</sub> = -150 mA I <sub>B1</sub> = -I <sub>B2</sub> = -15 mA			100	ns

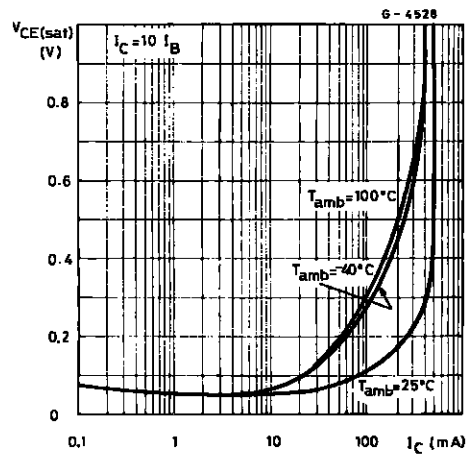
\* Pulsed: Pulse duration = 300 μs, duty cycle ≤ 1 %

\*\* See test circuit

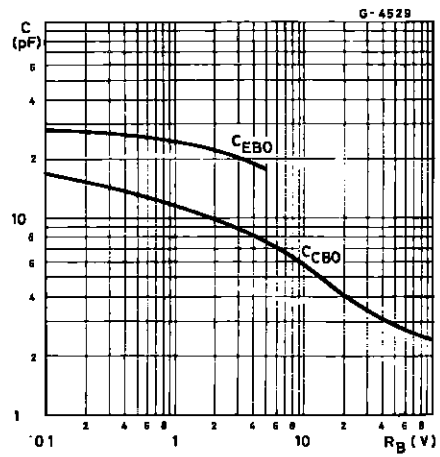
Normalized DC Current Gain.



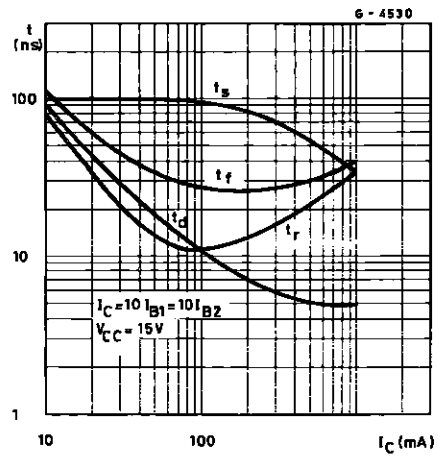
Collector-emitter Saturation Voltage.



Collector-base and Emitter-base capacitances.

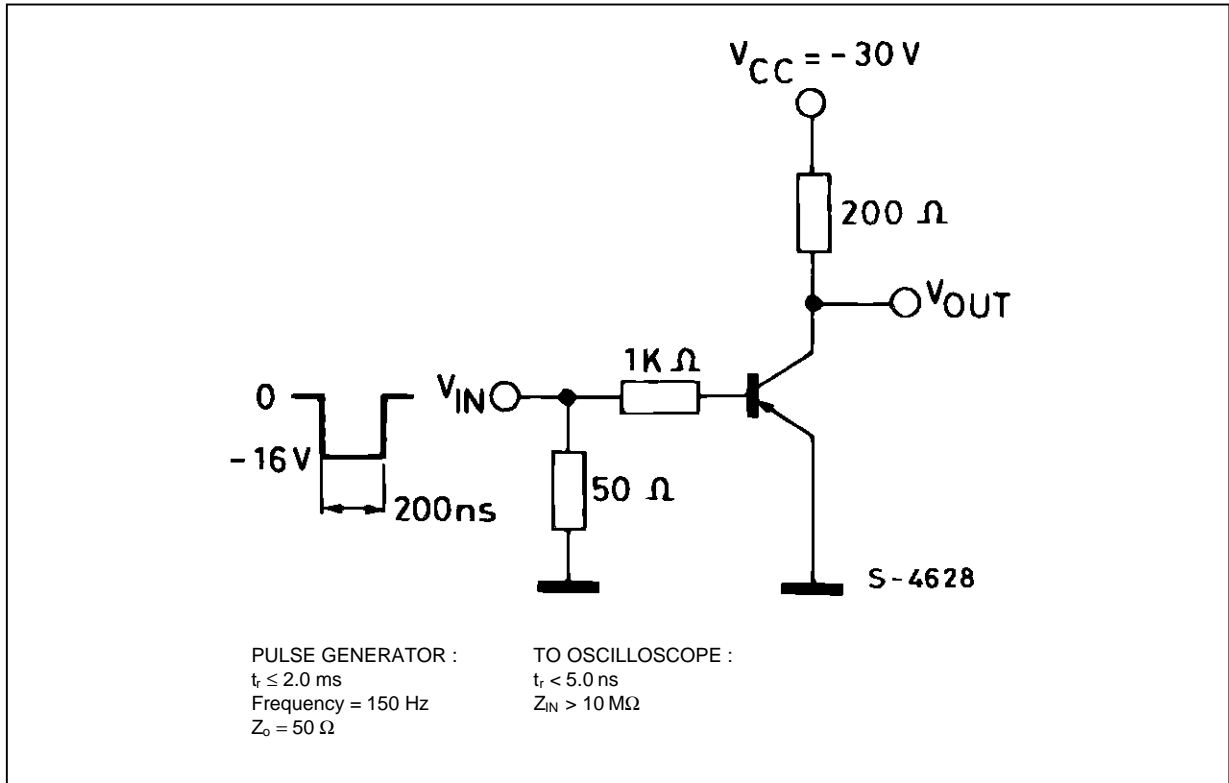


Switching Characteristics.

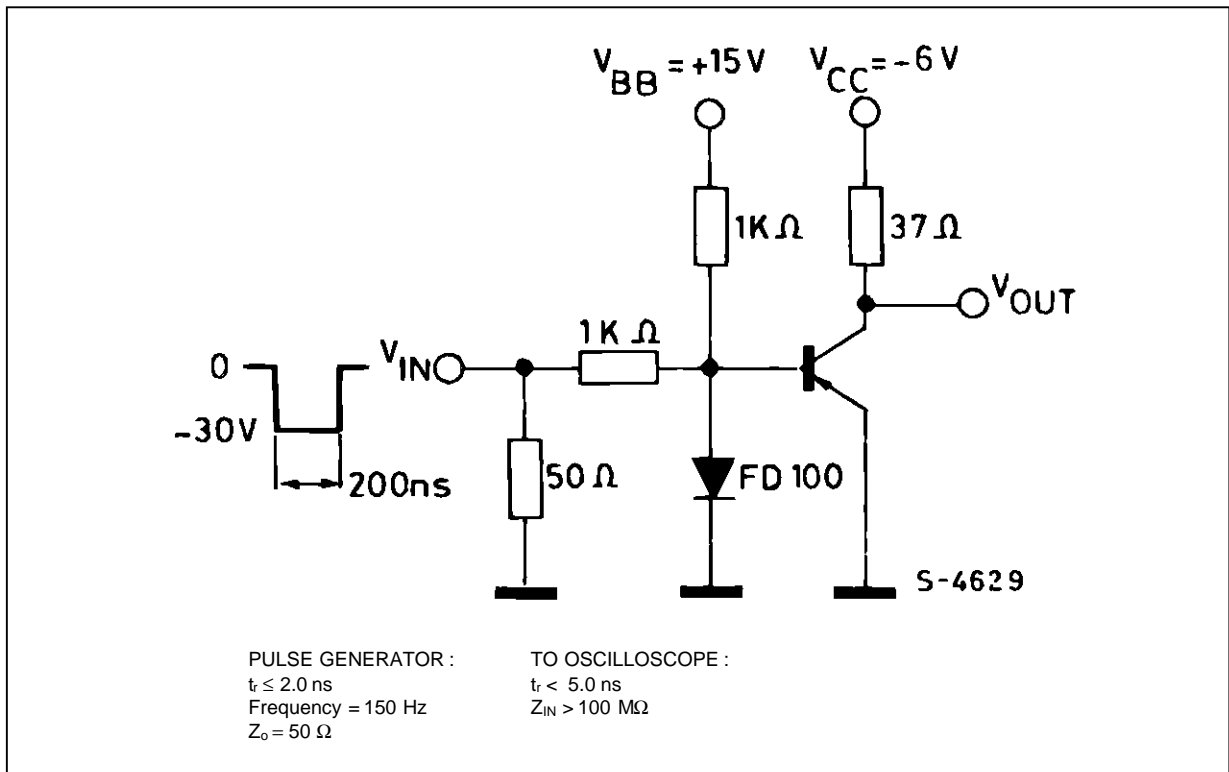


2N2905A/2N2907A

Test Circuit for  $t_{on}$ ,  $t_r$ ,  $t_d$ .

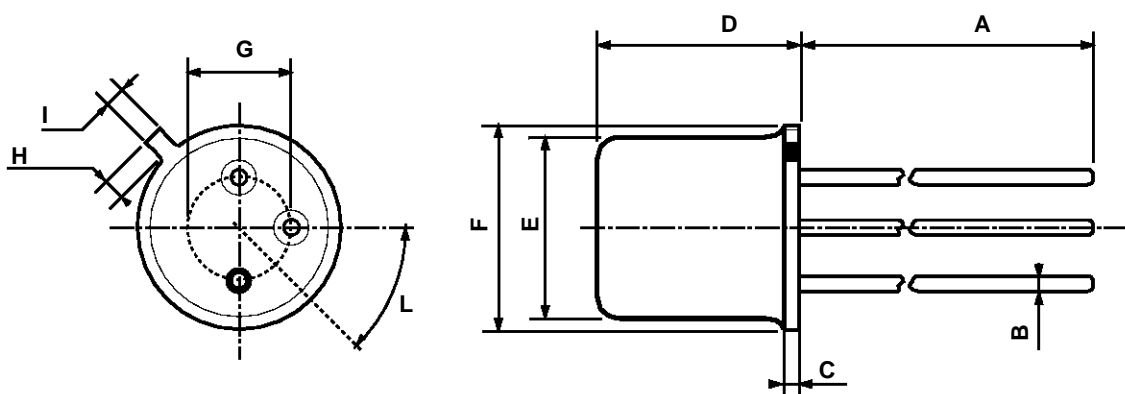


Test Circuit for  $t_{off}$ ,  $t_o$ ,  $t_f$ .



## TO-18 MECHANICAL DATA

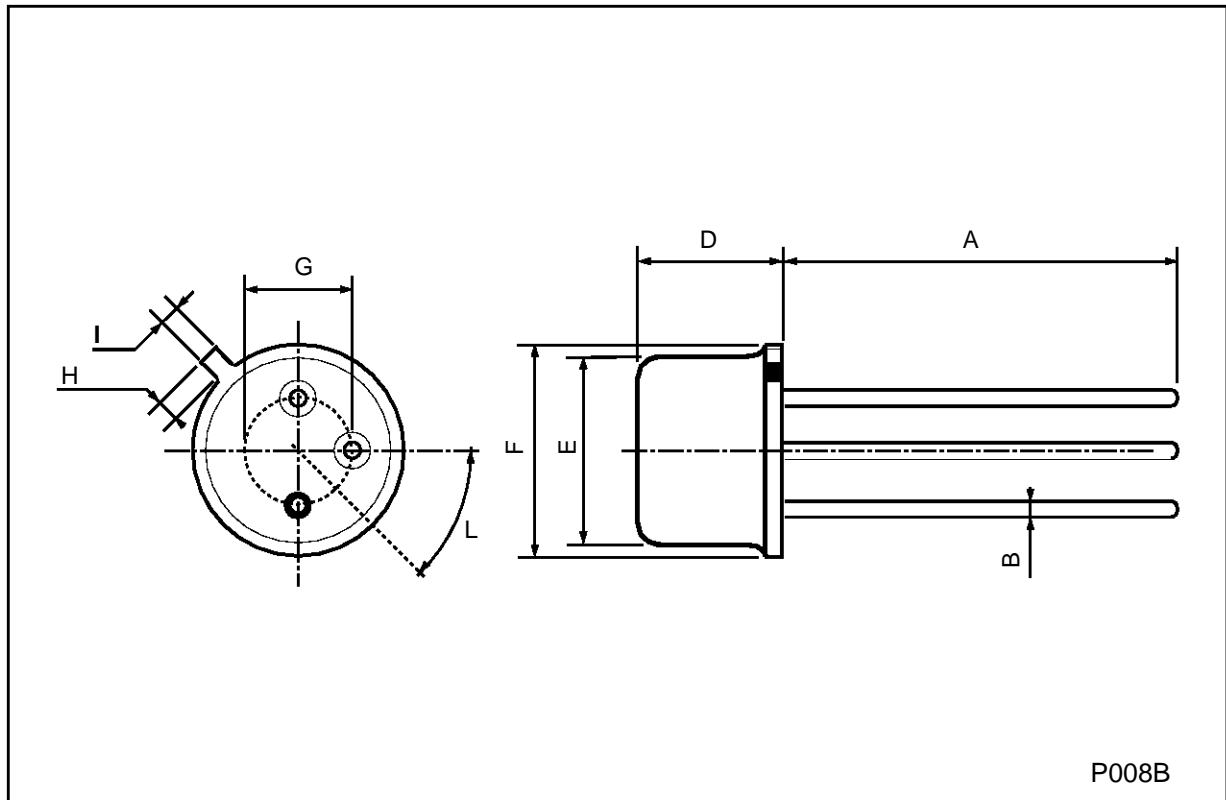
DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A		12.7			0.500	
B			0.49			0.019
D			5.3			0.208
E			4.9			0.193
F			5.8			0.228
G	2.54			0.100		
H			1.2			0.047
I			1.16			0.045
L	45°			45°		



0016043

**TO-39 MECHANICAL DATA**

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	12.7			0.500		
B			0.49			0.019
D			6.6			0.260
E			8.5			0.334
F			9.4			0.370
G	5.08			0.200		
H			1.2			0.047
I			0.9			0.035
L	45° (typ.)					



P008B

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