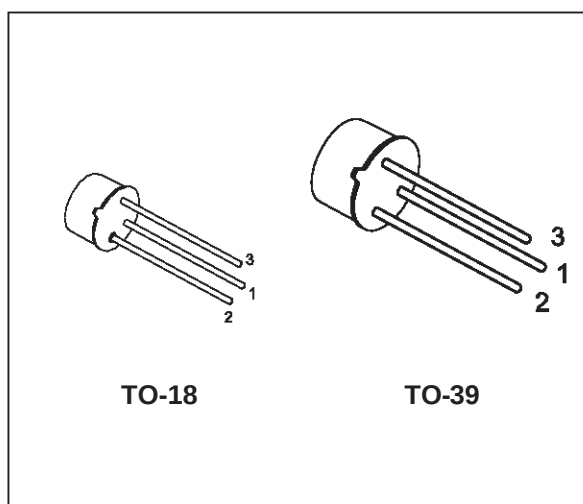


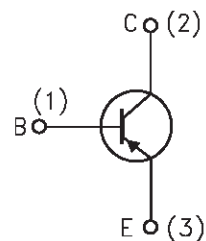
SMALL SIGNAL PNP TRANSISTORS

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.



INTERNAL SCHEMATIC DIAGRAM



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 $T_{amb} \leq 25^\circ\text{C}$ for 2N2905A for 2N2907A at $T_C \leq 25^\circ\text{C}$ for 2N2905A for 2N2907A	0.6	W
		0.4	W
		3	W
		1.8	W
T_{stg}	Storage Temperature	-65 to 175	$^\circ\text{C}$
T_j	Max. Operating Junction Temperature	175	$^\circ\text{C}$

THERMAL DATA

		TO-39	TO-18	
$R_{thj-case}$	Thermal Resistance Junction-Case	Max	50	83.3
$R_{thj-amb}$	Thermal Resistance Junction-Ambient	Max	250	375
				$^{\circ}\text{C/W}$

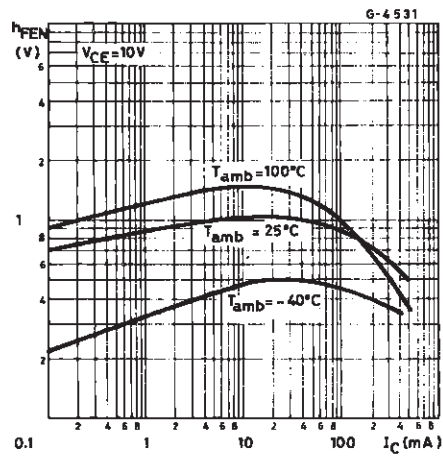
ELECTRICAL CHARACTERISTICS ($T_{case} = 25^{\circ}\text{C}$ unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_{CBO}	Collector Cut-off Current ($I_E = 0$)	$V_{CB} = -50\text{ V}$ $V_{CB} = -50\text{ V}$ $T_C = 150^{\circ}\text{C}$			-10 -10	nA μA
I_{CEX}	Collector Cut-off Current ($V_{BE} = 0.5\text{V}$)	$V_{CE} = -30\text{ V}$			-50	nA
I_{BEX}	Base Cut-off Current ($V_{BE} = 0.5\text{V}$)	$V_{CE} = -30\text{ V}$			-50	nA
$V_{(BR)CBO}$	Collector-Base Breakdown Voltage ($I_E = 0$)	$I_C = -10\text{ }\mu\text{A}$	-60			V
$V_{(BR)CEO}^*$	Collector-Emitter Breakdown Voltage ($I_B = 0$)	$I_C = -10\text{ mA}$	-60			V
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage ($I_C = 0$)	$I_E = -10\text{ }\mu\text{A}$	-5			V
$V_{CE(sat)}^*$	Collector-Emitter Saturation Voltage	$I_C = -150\text{ mA}$ $I_B = -15\text{ mA}$ $I_C = -500\text{ mA}$ $I_B = -50\text{ mA}$			-0.4 -1.6	V V
$V_{BE(sat)}^*$	Base-Emitter Saturation Voltage	$I_C = -150\text{ mA}$ $I_B = -15\text{ mA}$ $I_C = -500\text{ mA}$ $I_B = -50\text{ mA}$			-1.3 -2.6	V V
h_{FE}^*	DC Current Gain	$I_C = -0.1\text{ mA}$ $V_{CE} = -10\text{ V}$ $I_C = -1\text{ mA}$ $V_{CE} = -10\text{ V}$ $I_C = -10\text{ mA}$ $V_{CE} = -10\text{ V}$ $I_C = -150\text{ mA}$ $V_{CE} = -10\text{ V}$ $I_C = -500\text{ mA}$ $V_{CE} = -10\text{ V}$	75 100 100 100 50		300	
f_T	Transition Frequency	$V_{CE} = -20\text{ V}$ $f = 100\text{ MHz}$ $I_C = -50\text{ mA}$	200			MHz
C_{EBO}	Emitter-Base Capacitance	$I_C = 0$ $V_{EB} = -2\text{ V}$ $f = 1\text{ MHz}$			30	pF
C_{CBO}	Collector-Base Capacitance	$I_E = 0$ $V_{CB} = -10\text{ V}$ $f = 1\text{ MHz}$			8	pF
t_d^{**}	Delay Time	$V_{CC} = -30\text{ V}$ $I_C = -150\text{ mA}$ $I_{B1} = -15\text{ mA}$			10	ns
t_r^{**}	Rise Time	$V_{CC} = -30\text{ V}$ $I_C = -150\text{ mA}$ $I_{B1} = -15\text{ mA}$			40	ns
t_s^{**}	Storage Time	$V_{CC} = -6\text{ V}$ $I_C = -150\text{ mA}$ $I_{B1} = -I_{B2} = -15\text{ mA}$			80	ns
t_f^{**}	Fall Time	$V_{CC} = -6\text{ V}$ $I_C = -150\text{ mA}$ $I_{B1} = -I_{B2} = -15\text{ mA}$			30	ns
t_{on}^{**}	Turn-on Time	$V_{CC} = -30\text{ V}$ $I_C = -150\text{ mA}$ $I_{B1} = -15\text{ mA}$			45	ns
t_{off}^{**}	Turn-off Time	$V_{CC} = -6\text{ V}$ $I_C = -150\text{ mA}$ $I_{B1} = -I_{B2} = -15\text{ mA}$			100	ns

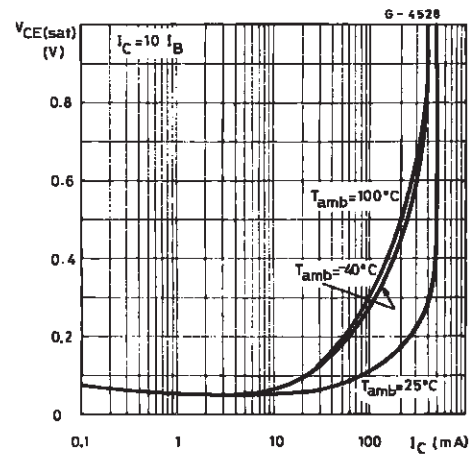
* Pulsed: Pulse duration = 300 μs , duty cycle $\leq 1\%$

** See test circuit

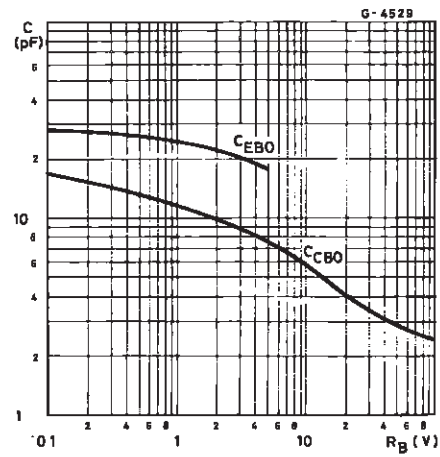
Normalized DC Current Gain.



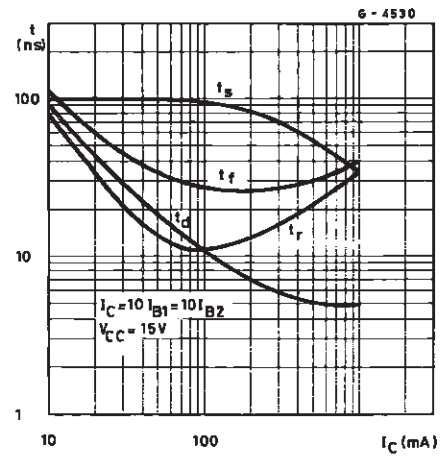
Collector Emitter Saturation Voltage.



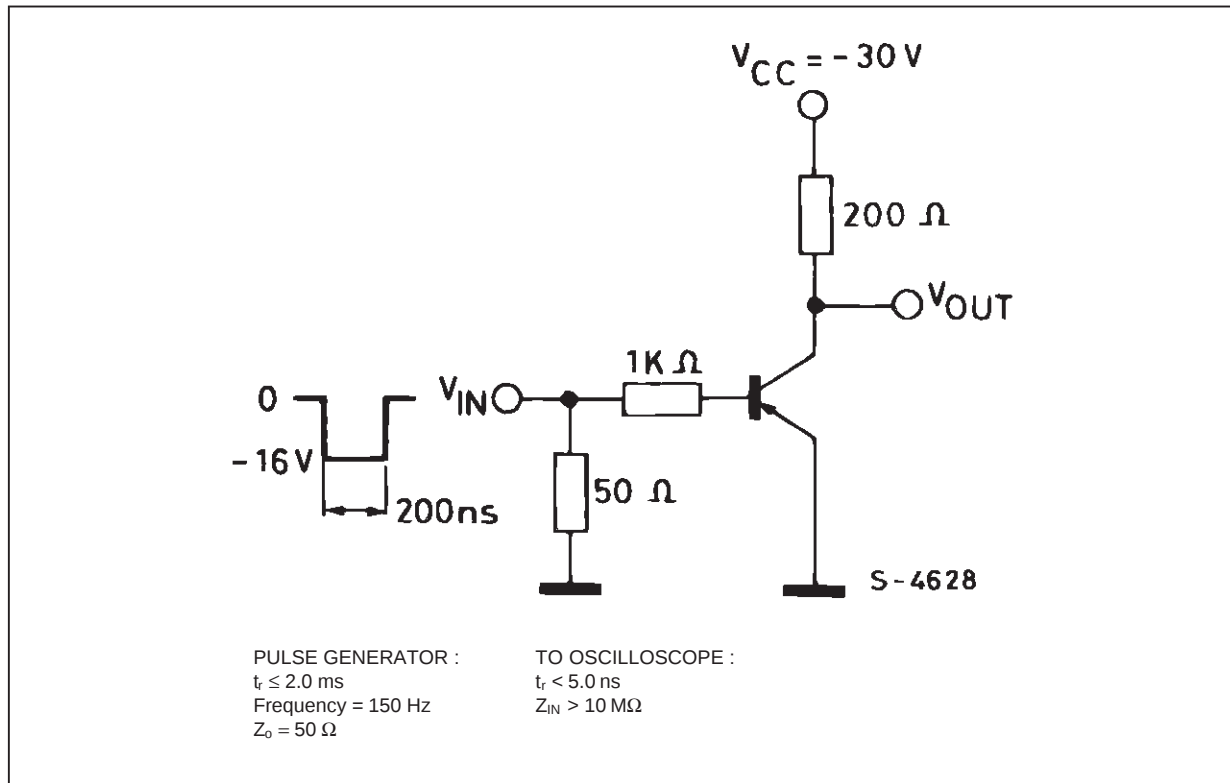
Collector Base and Emitter-base capacitances.



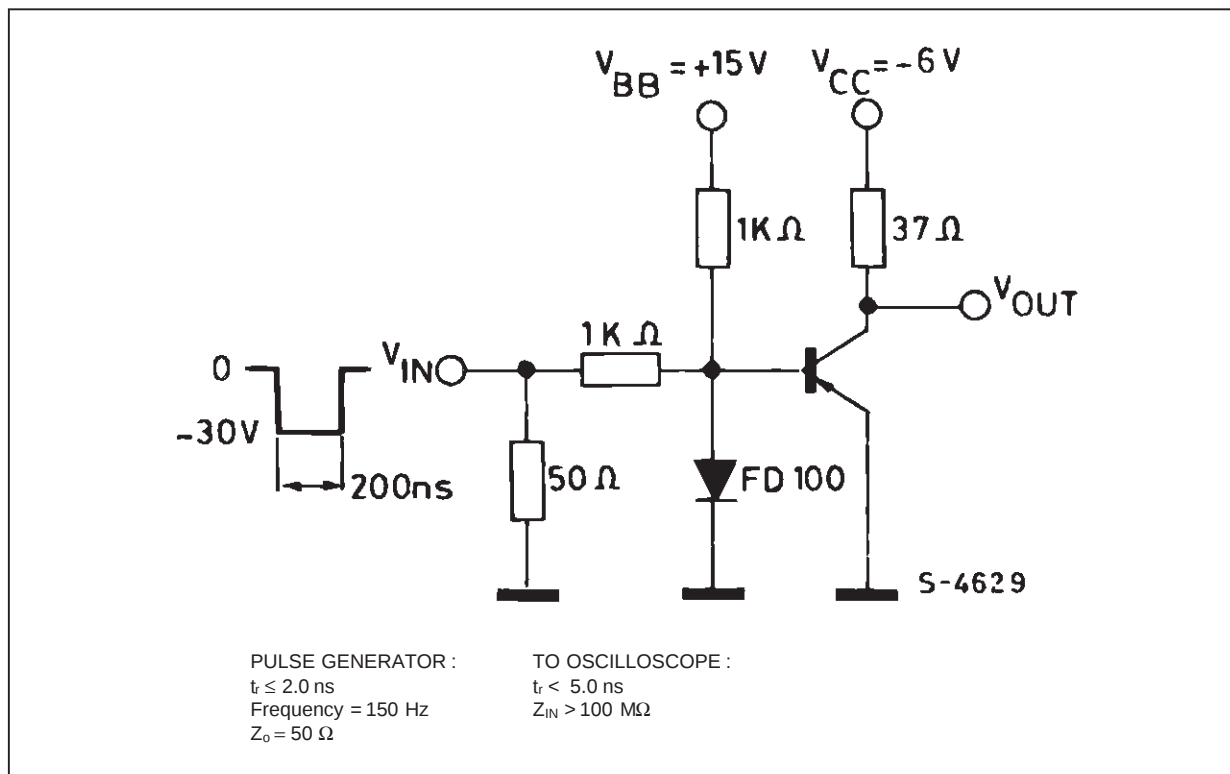
Switching Characteristics.



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

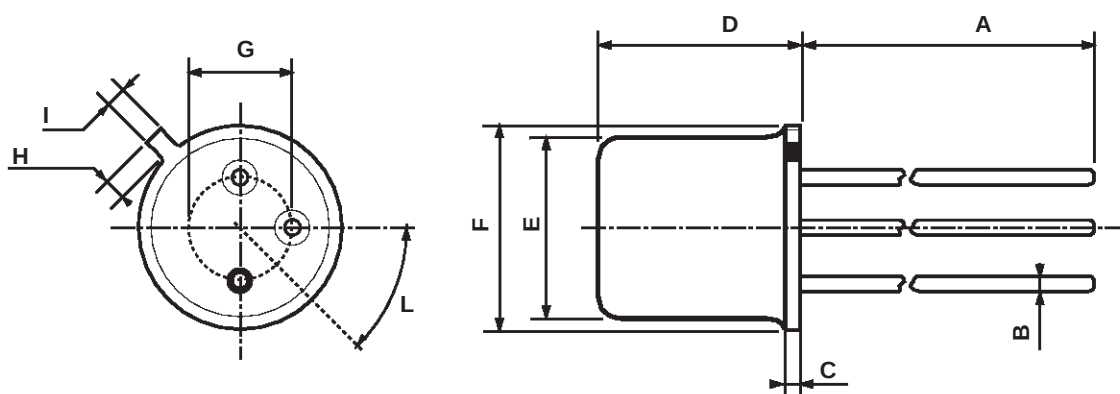


Test Circuit for t_{off} , t_o , t_f .



TO-18 MECHANICAL DATA

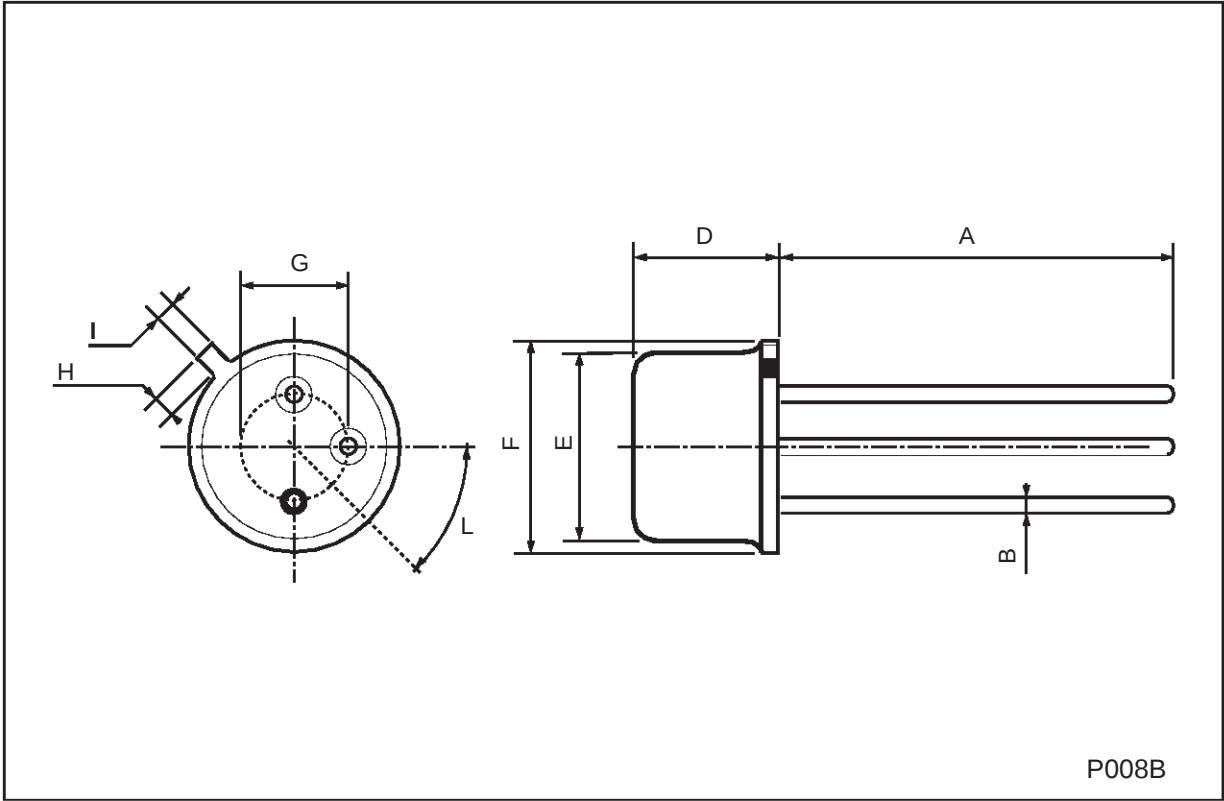
DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A		12.7			0.500	
B			0.49			0.019
D			5.3			0.208
E			4.9			0.193
F			5.8			0.228
G	2.54			0.100		
H			1.2			0.047
I			1.16			0.045
L	45°			45°		



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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