



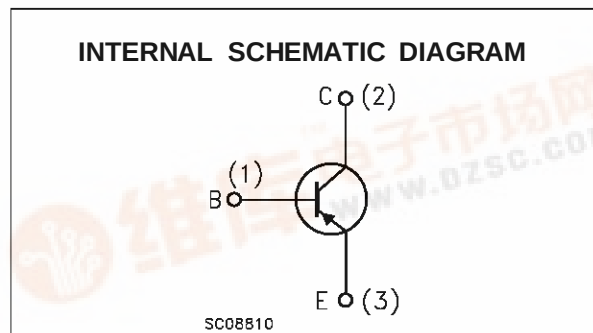
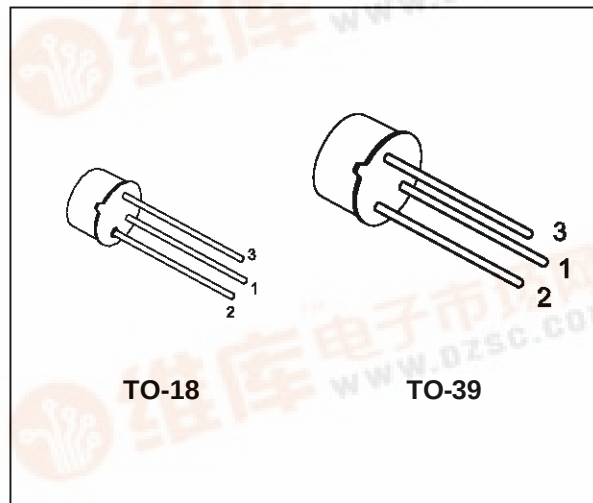
2N2905A
2N2907A

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 $T_{amb} \leq 25^\circ\text{C}$ for 2N2905A for 2N2907A at $T_{case} \leq 25^\circ\text{C}$ for 2N2905A for 2N2907A	0.6	W
		0.4	W
		3	W
		1.8	W
T_{stg}	Storage Temperature	-65 to 200	$^\circ\text{C}$
T_j	Max. Operating Junction Temperature	200	$^\circ\text{C}$

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THERMAL DATA

		TO-39	TO-18	
R _{thj-case}	Thermal Resistance Junction-Case	Max	58.3	°C/W
R _{thj-amb}	Thermal Resistance Junction-Ambient	Max	292	°C/W

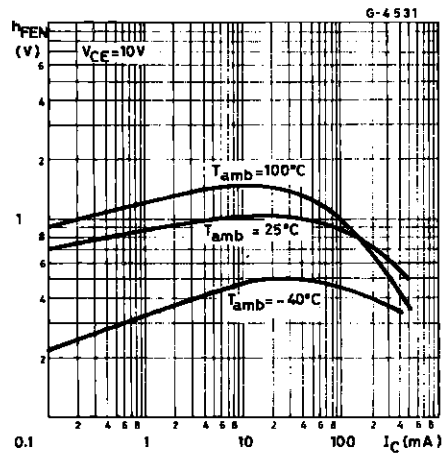
ELECTRICAL CHARACTERISTICS (T_{case} = 25 °C unless otherwise specified)

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

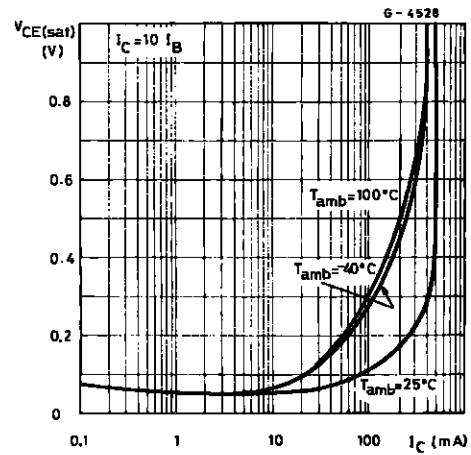
* Pulsed: Pulse duration = 300 μs, duty cycle ≤ 1 %

** See test circuit

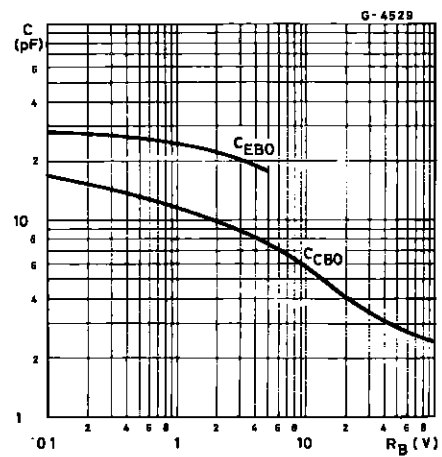
Normalized DC Current Gain.



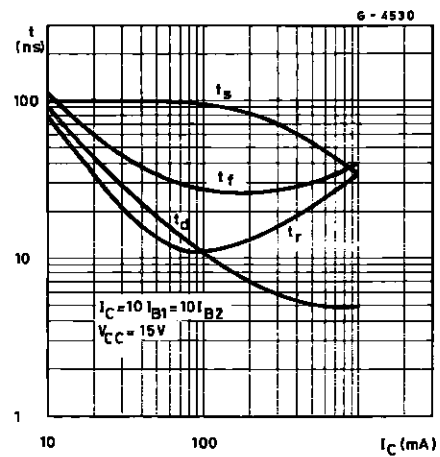
Collector-emitter Saturation Voltage.



Collector-base and Emitter-base capacitances.

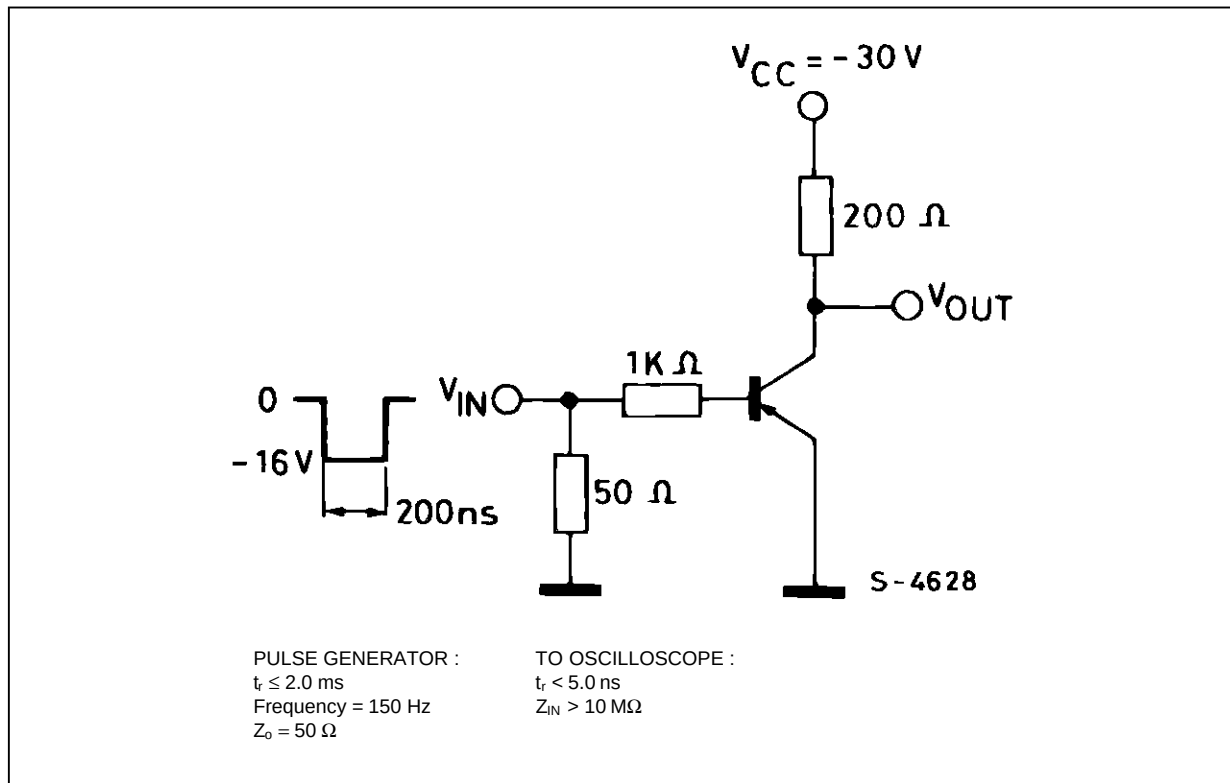


Switching Characteristics.

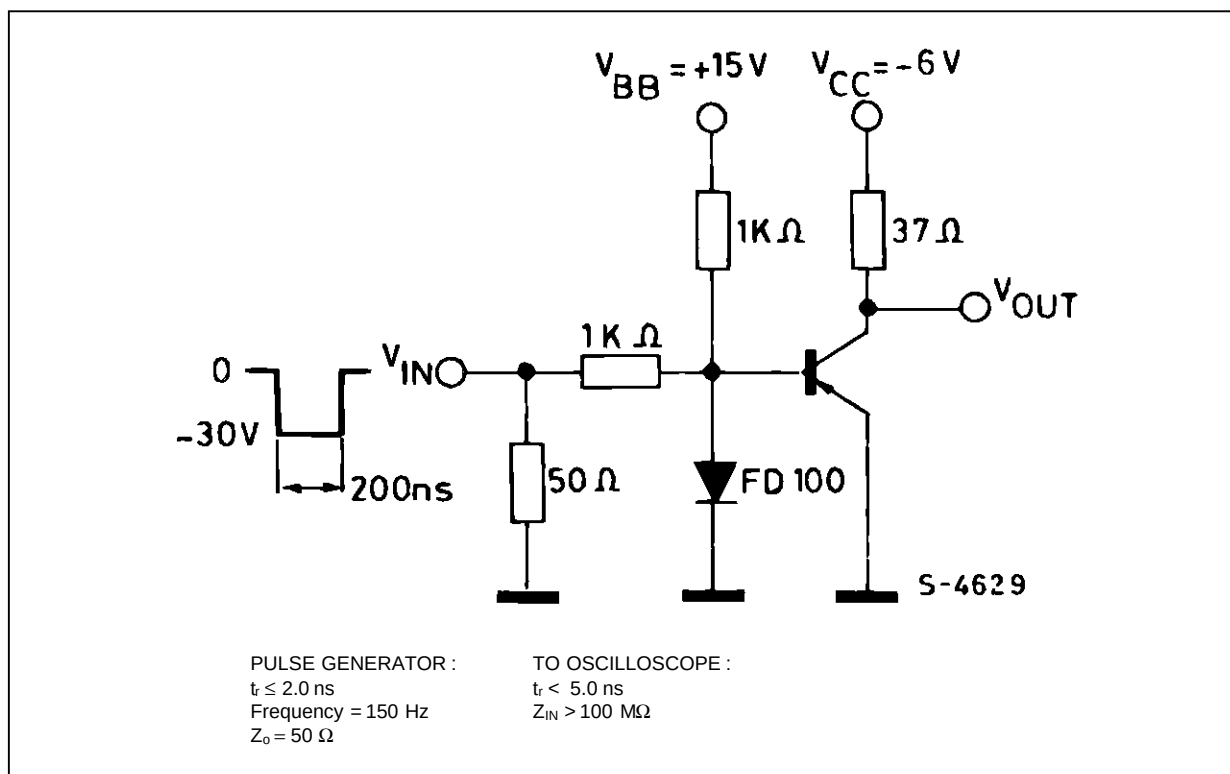


2N2905A/2N2907A

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

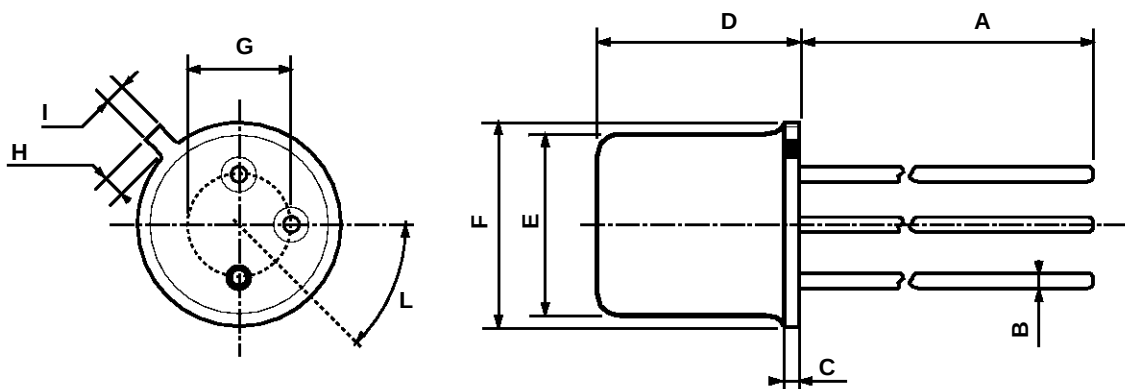


Test Circuit for t_{off} , t_o , t_f .



TO-18 MECHANICAL DATA

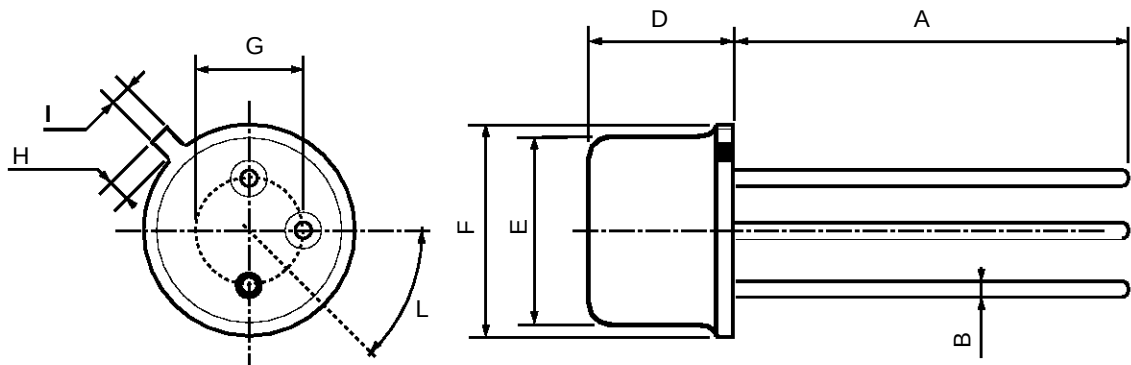
DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A		12.7			0.500	
B			0.49			0.019
D			5.3			0.208
E			4.9			0.193
F			5.8			0.228
G	2.54			0.100		
H			1.2			0.047
I			1.16			0.045
L	45°			45°		



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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