



SEMICONDUCTOR TECHNOLOGY, INC.

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2N2906A 2N2907A

I. General Description

These devices are PNP, silicon, low-power triode transistors designed primarily for high speed, saturated switching and driver applications for industrial service.

II. Mechanical Data

A. Outline

TO-18

B. Terminal Designations

Terminal	Element
1	Emitter
2	Base
3	Collector
	Collector internally connected to case

C. Handling Precautions - None

D. Mounting Positions - Any

III. Maximum Ratings

A. Temperature

1. Storage temperature, T_{stg} -65 to +200° C
2. Lead Temperature 1/16" from case for 10 sec 230° C

B. Reverse Ratings

1. Collector-base V_{CBO} - 60 Vdc
2. Emitter-base V_{EBO} - 5 Vdc
3. Collector-emitter V_{CEO} - 60 Vdc

Applicable 0 to 100 mA

2N2906A, 2N2907A

C. Current

1. DC collector current 600 ma

D. Power

1. Total device dissipation at 25°C
Case temperature P_D

2N2904A, 2N2905A - TO-5 3 watts
Derating factor above 25°C 17.3 mW/°C

2N2906A, 2N2907A - TO-18 1.2 watts
Derating factor above 25°C 6.85 mW/°C

2. Total device dissipation at 25°C
Ambient temperature P_D

2N2904A, 2N2905A - TO-5 0.6 watt
Derating factor above 25°C 3.43 mW/°C

2N2906A, 2N2907A - TO-18 0.4 watt
Derating factor above 25°C 2.28 mW/°C

IV. Electric Characteristics, 25°C Free Air Temperature Unless
Otherwise Noted

A. Static

Min. Max.

1. Collector cutoff current, I_{CBO}

$V_{CB} = -50V$, $I_E = 0$, $T_A = 25^\circ C$ 10 nA

$V_{CB} = -50V$, $I_E = 0$, $T_A = 150^\circ C$ 10 uA

2. Collector reverse current, I_{CEX}

$V_{CE} = -30V$, $V_{BE} = +.5V$ 50 nA

3. Base current, I_B

$V_{CE} = -30V$, $V_{BE} = +.5V$ 50 nA

4. Collector-base breakdown voltage, $BV_{CBO} = 60$

V

$I_E = 0$, $I_C = -10 \mu A$

		<u>Min.</u>	<u>Max.</u>
5.	Emitter-base breakdown voltage, BV_{EBO}	-5	V
	$I_C = 0, I_E = -10\mu A$		
6.	Collector-emitter breakdown voltage, BV_{CEO}^{**-60}		V
	$I_C = 10mA, I_B = 0$		
7.	Static forward current transfer ratio, h_{FE}		
	$I_C = .1mA, V_{CE} = 10V$	2N2904A, 2N2906A	40
		2N2905A, 2N2907A	75
	$I_C = 1mA, V_{CE} = 10V$	2N2904A, 2N2906A	40
		2N2905A, 2N2907A	100
	$I_C = 10mA, V_{CE} = 10V$	2N2904A, 2N2906A	40
		2N2905A, 2N2907A	100
	$**I_C = 150mA, V_{CE} = 10V$	2N2904A, 2N2906A	40
		2N2905A, 2N2907A	120
	$**I_C = 500mA, V_{CE} = 10V$	2N2904A, 2N2906A	100
		2N2905A, 2N2907A	300
8.	Collector-emitter saturation voltage, $V_{CE}^{(sat) **}$		
	$I_C = -150mA, I_B = -15mA$		-4 V
	$I_C = -500mA, I_B = -50mA$		-1.6 V
9.	Base-emitter voltage, $V_{BE}^{(sat) **}$		
	$I_C = -150mA, I_B = -15mA$		-1.3 V
	$I_C = -500mA, I_B = -50mA$		-2.6 V

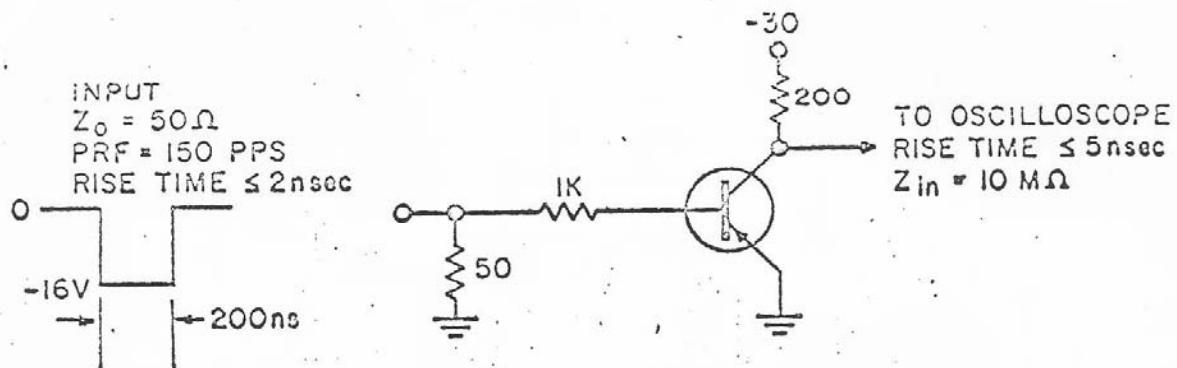
B. Dynamic

1. Turn-on delay time, t_d 10 nsec
 $V_{CC} = -30V, I_{CS} = 150mA, I_{BL} = 15\mu A$
See Figure 1
2. Rise time, t_r 40 nsec
 $V_{CC} = -30V, I_{CS} = -150mA, I_{BL} = 15mA$
See Figure 1.

**Pulse width ≤ 300 usec, Duty cycle $\leq 2\%$

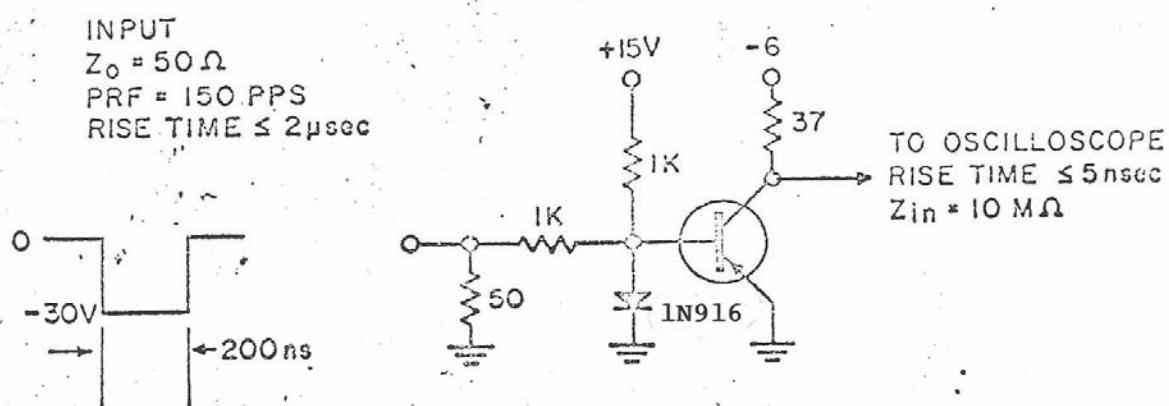
	<u>Min.</u>	<u>Max.</u>	
	80	30	nsec
3. Storage time, t_s			
$V_{CC} = -6V$, $I_{CS} = -150mA$, $I_{B1} = -15mA$			
$I_{B2} = +15mA$			
See Figure 2			
4. Fall time, t_f		30	nsec
$V_{CC} = -6V$, $I_{CS} = -150mA$, $I_{B1} = -15mA$			
$I_{B2} = +15mA$			
See Figure 2			
5. Common base, open circuit output capacitance, C_{ob}	8	pf	
$I_E = 0$, $V_{CB} = -10V$, $f = 100 KC$			
6. Common base, open circuit input capacitance, C_{ib}	30	pf	
$V_{BE} = 2V$, $f = 100 KC$, $I_C = 0$			
7. Magnitude of small-signal, short circuit, forward current transfer ratio, h_{fe}	2		
$V_{CE} = 20V$, $I_C = 50mA$, $f = 100 MC$			
8. Turn On Time, T_{ON}			
$V_{CC} = -30V$, $I_{CS} = -150MA$, $I_{B1} = 15MA$	45	nsec	
(See Figure 1)			
9. Turn Off Time, T_{OFF}			
$V_{CC} = -6V$, $I_{CS} = 150MA$, $I_{B1} = -15MA$	100	nsec	
$I_{B2} = +15MA$			

2N2906A, 2N2907A



TEST CIRCUIT FOR DETERMINING DELAY TIME AND RISE TIME

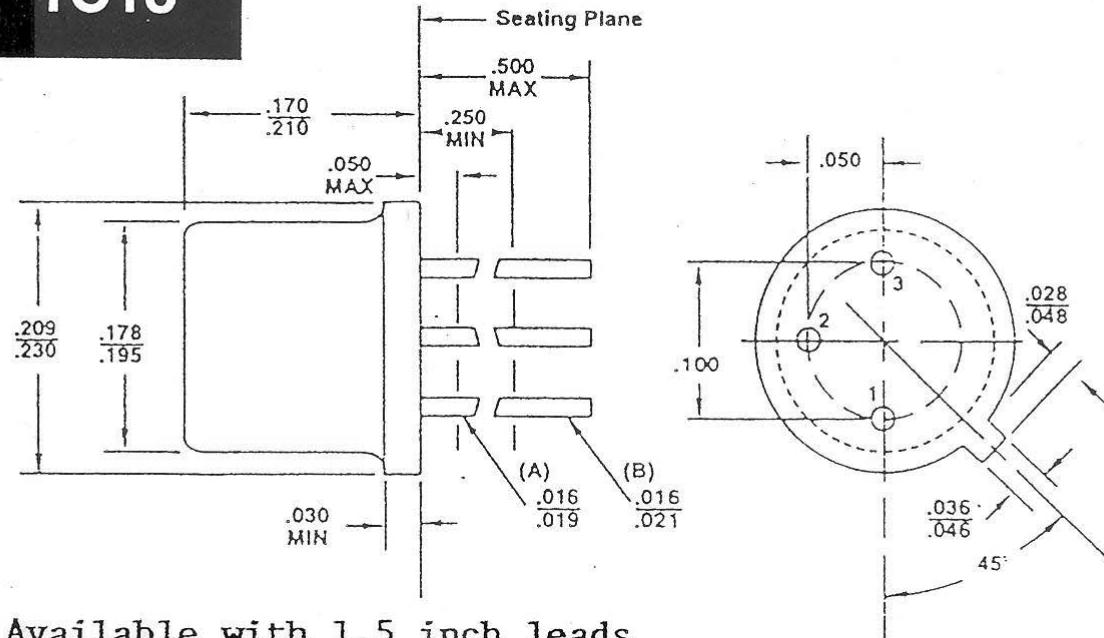
FIGURE 1



TEST CIRCUIT FOR DETERMINING STORAGE TIME AND FALL TIME

FIGURE 2

TO18



Available with 1.5 inch leads

PIN 1 = Emitter
PIN 2 = Base
PIN 3 = Collector