New Jersey Semi-Conductor Products, Inc.

20 STERN AVE.
SPRINGFIELD, NEW JERSEY 07081
U.S.A.

TELEPHONE: (973) 376-2922
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2N2904,A, 2N2905,A, 2N2906,A, 2N2907,A, 2N3485,A, 2N3486,A

JAN, JTX, JTXV AVAILABLE*

CASE 79-02, STYLE 1
2N2904/2905 TO-39 (TO-205AD)
CASE 22-03, STYLE 1
2N2906/2907 TO-18 (TO-206AA)
CASE 26-03, STYLE 1
2N3485/3486 TO-46 (TO-206AB)

GENERAL PURPOSE TRANSISTOR

PNP SILICON

MAXIMUM RATINGS

Rating	Symbol	Non-A Suffix	A-Suffix	Unit
Collector-Emitter Voltage	V_{CEO}	40	60	Vdc
Collector-Base Voltage	V_{CBO}	60		Vdc
Emitter-Base Voltage	V_{EBO}	5.0		Vdc
Collector Current — Continuous	I_C	600		mAdc
		2N2904,A 2N2906,A 2N3485,A 2N2905,A 2N2907,A 2N3486,A		
Total Device Dissipation @ T_A = 25°C Derate above 25°C	P_D	600 3.43	400 2.28	400 2.28	mW mW/°C
Total Device Dissipation @ T_C = 25°C Derate above 25°C	P_D	3.0 17.2	1.8 10.3	2.0 11.43	Watts mW/°C
Operating and Storage Junction Temperature Range	T_J, T_{stg}	−65 to +200			°C

ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted.)

Characteristic		Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS						
Collector-Emitter Breakdown Voltage(1) (I_C = 10 mAdc, I_B = 0)	Non-A Suffix A-Suffix	$V_{(BR)CEO}$	40 60	— —	— —	Vdc
Collector-Base Breakdown Voltage (I_C = 10 μAdc, I_E = 0)		$V_{(BR)CBO}$	60	—	—	Vdc
Emitter-Base Breakdown Voltage (I_E = 10 μAdc, I_C = 0)		$V_{(BR)EBO}$	5.0	—	—	Vdc
Collector Cutoff Current (V_{CE} = 30 Vdc, V_{BE} = 0.5 Vdc)		I_{CEX}	—	—	50	nAdc
Collector Cutoff Current (V_{CB} = 50 Vdc, I_E = 0)	Non-A Suffix A-Suffix	I_{CBO}	— —	— —	0.020 0.010	μAdc
(V_{CB} = 50 Vdc, I_E = 0, T_A = 150°C)	Non-A Suffix A-Suffix		— —	— —	20 10	
Base Current (V_{CE} = 30 Vdc, V_{BE} = 0.5 Vdc)		I_B	—	—	50	nAdc
ON CHARACTERISTICS						
DC Current Gain (I_C = 0.1 mAdc, V_{CE} = 10 Vdc)	2N2904, 2N2906, 2N3485 2N2905, 2N2907, 2N3486 2N2904A, 2N2906A, 2N3485A 2N2905A, 2N2907A, 2N3486A	h_{FE}	20 35 40 75	— — — —	— — — —	—
(I_C = 1.0 mAdc, V_{CE} = 10 Vdc)	2N2904, 2N2906, 2N3485 2N2905, 2N2907, 2N3486 2N2904A, 2N2906A, 2N3485A 2N2905A, 2N2907A, 2N3486A		25 50 40 100	— — — —	— — — —	
(I_C = 10 mAdc, V_{CE} = 10 Vdc)	2N2904, 2N2906, 2N3485 2N2905, 2N2907, 2N3486 2N2904A, 2N2906A, 2N3485A 2N2905A, 2N2907A, 2N3486A		35 75 40 100	— — — —	— — — —	
(I_C = 150 mAdc, V_{CE} = 10 Vdc)(1)	2N2904A, 2N2906A, 2N3485,A 2N2905A, 2N2907A, 2N3486A		40 100	— —	120 300	

*ALSO AVAILABLE 2N2905ALJANS AND 2N2907AJANS

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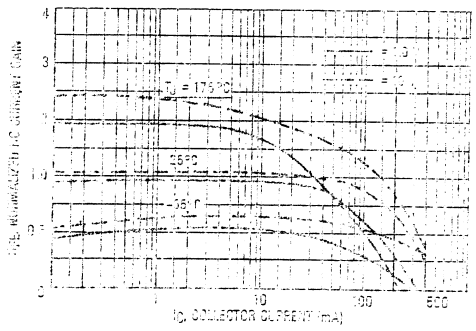
ELECTRICAL CHARACTERISTICS (continued) (T_A = 25°C unless otherwise noted.)

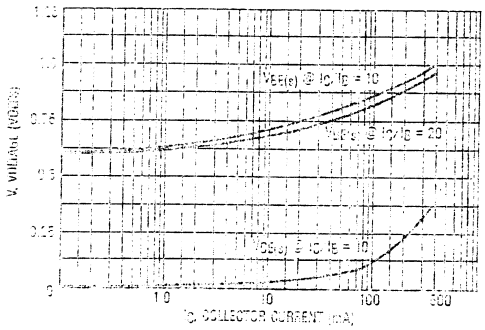
Characteristic		Symbol	Min	Typ	Max	Unit
(I_C = 500 mAdc, V_{CE} = 10 Vdc)(1)	2N2904, 2N2906, 2N3485		30	—	—	
	2N2905, 2N2907, 2N3486		30	—	—	
	2N2904A, 2N2906A, 2N3485A		40	—	—	
	2N2905A, 2N2907A, 2N3486A		50	—	—	
Collector-Emitter Saturation Voltage(1)		$V_{CE(sat)}$				Vdc
(I_C = 150 mAdc, I_B = 15 mAdc)			—	—	0.4	
(I_C = 500 mAdc, I_B = 50 mAdc)			—	—	1.6	
Base-Emitter Saturation Voltage		$V_{BE(sat)}$				Vdc
(I_C = 150 mAdc, I_B = 15 mAdc)(1)			—	—	1.3	
(I_C = 500 mAdc, I_B = 50 mAdc)			—	—	2.6	
SMALL-SIGNAL CHARACTERISTICS						
Current-Gain — Bandwidth Product(2) (I_C = 50 mAdc, V_{CE} = 20 Vdc, f = 100 MHz)		f_T	200	—	—	MHz
Output Capacitance (V_{CB} = 10 Vdc, I_E = 0, f = 100 kHz)		C_{obo}	—	—	8.0	pF
Input Capacitance (V_{BE} = 2.0 Vdc, I_C = 0, f = 100 kHz)		C_{ibo}	—	—	30	pF
SWITCHING CHARACTERISTICS						
Turn-On Time	(V_{CC} = 30 Vdc, I_C = 150 mAdc, I_{B1} = 15 mAdc)	t_{on}	—	26	45	ns
Delay Time		t_d	—	6.0	10	ns
Rise Time		t_r	—	20	40	ns
Turn-Off Time	(V_{CC} = 6.0 Vdc, I_C = 150 mAdc, I_{B1} = I_{B2} = 15 mAdc)	t_{off}	—	70	100	ns
Storage Time		t_s	—	60	80	ns
Fall Time		t_f	—	20	30	ns

(1) Pulse Test: Pulse Width ≤ 300 μs, Duty Cycle ≤ 2.0%.
(2) f_T is defined as the frequency at which $|h_{fe}|$ extrapolates to unity.

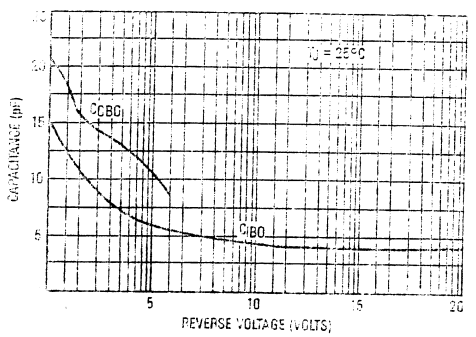
NORMALIZED DC CURRENT GAIN



CURRENT GAIN—BANDWIDTH PRODUCT



"ON" VOLTAGES



CURRENT GAIN—BANDWIDTH PRODUCT