New Jersey Semi-Conductor Products, Inc.

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2N6182 thru 2N6185 (SILICON)
2N6186 thru 2N6189

MEDIUM-POWER PNP SILICON TRANSISTORS

. . . designed for switching and wide-band amplifier applications.

- Low Collector-Emitter Saturation Voltage – $V_{CE(sat)}$ = 1.2 Vdc (Max) @ I_C = 10 Adc
- DC Current Gain Specified to 5 Amperes
- Excellent Safe Operating Area
- Packaged in the Compact, High Dissipation TO-59 Case
- Isolated Collector Configuration
- 2N6182 thru 2N6185 Complement to NPN 2N5477 thru 2N5480
  2N6186 thru 2N6189 Complement to NPN 2N5346 thru 2N5349

10 AMPERE POWER TRANSISTORS

PNP SILICON

80-100 VOLTS
60 WATTS

***MAXIMUM RATINGS**

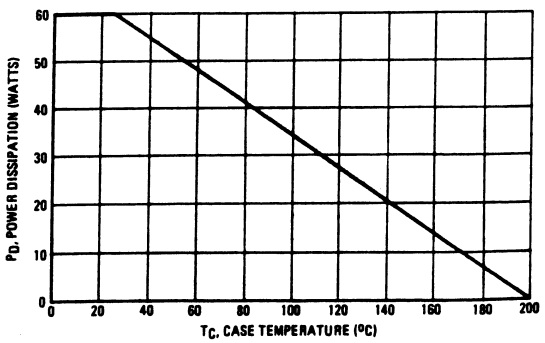
Rating	Symbol	2N6182 2N6183 2N6186 2N6187	2N6184 2N6185 2N6188 2N6189	Unit
Collector-Emitter Voltage	V_{CEO}	80	100	Vdc
Collector-Base Voltage	V_{CB}	80	100	Vdc
Emitter-Base Voltage	V_{EB}	6.0		Vdc
Collector Current – Continuous	I_C	10		Adc
Base Current	I_B	2.0		Adc
Total Device Dissipation @ T_C = 25°C	P_D	60		Watts
Derate above 25°C		343		mW/°C
Operating and Storage Junction Temperature Range	T_J, T_{stg}	-65 to +200		°C

THERMAL CHARACTERISTICS

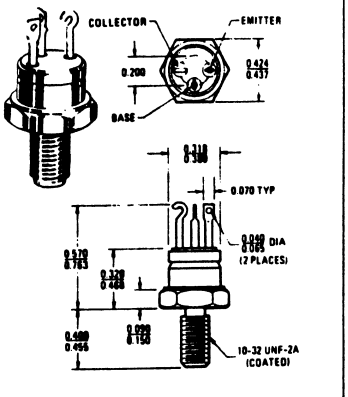
Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	θ_{JC}	2.91	°C/W

*Indicates JEDEC Registered Data

FIGURE 1 – POWER-TEMPERATURE DERATING

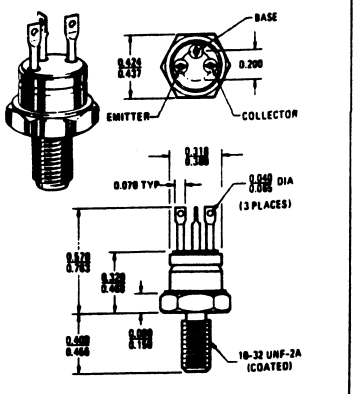


Safe Area Curves are indicated by Figure 5. All limits are applicable and must be observed.



All JEDEC dimensions and notes apply
Collector connected to case

2N6182 thru 2N6185 — CASE 160A TO-59



All JEDEC dimensions and notes apply
All leads isolated from case

2N6186 thru 2N6189 — CASE 169 TO-59

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2N6182 thru 2N6185, 2N6186 thru 2N6189 (continued)

*** ELECTRICAL CHARACTERISTICS** (T_C = 25°C unless otherwise noted)

Characteristic		Fig. No.	Symbol	Min	Max	Unit
OFF CHARACTERISTICS						
Collector-Emitter Sustaining Voltage (1)		–	$V_{CEO(sus)}$			Vdc
(I_C = 50 mAdc, I_B = 0)	2N6182, 83, 86, 87			80	–	
	2N6184, 85, 88, 89			100	–	
Collector Cutoff Current		–	I_{CEO}			μAdc
(V_{CE} = 75 Vdc, I_B = 0)	2N6182, 83, 86, 87			–	100	
(V_{CE} = 90 Vdc, I_B = 0)	2N6184, 85, 88, 89			–	100	
Collector Cutoff Current		12	I_{CEX}			μAdc
(V_{CE} = 75 Vdc, $V_{BE(off)}$ = 1.5 Vdc)	2N6182, 83, 86, 87			–	10	
(V_{CE} = 90 Vdc, $V_{BE(off)}$ = 1.5 Vdc)	2N6184, 85, 88, 89			–	10	
(V_{CE} = 75 Vdc, $V_{BE(off)}$ = 1.5 Vdc, T_C = 150°C)	2N6182, 83, 86, 87			–	1.0	mAdc
(V_{CE} = 90 Vdc, $V_{BE(off)}$ = 1.5 Vdc, T_C = 150°C)	2N6184, 85, 88, 89			–	1.0	
Collector Cutoff Current		–	I_{CBO}			μAdc
(V_{CB} = Rated V_{CB}, I_E = 0)				–	10	
Emitter Cutoff Current		–	I_{EBO}			μAdc
(V_{BE} = 6.0 Vdc, I_C = 0)				–	100	
ON CHARACTERISTICS (1)						
DC Current Gain		8	h_{FE}			–
(I_C = 0.5 Adc, V_{CE} = 2.0 Vdc)	2N6182, 84, 86, 88			30	–	
	2N6183, 85, 87, 89			60	–	
(I_C = 2.0 Adc, V_{CE} = 2.0 Vdc)	2N6182, 84, 86, 88			30	120	
	2N6183, 85, 87, 89			60	240	
(I_C = 5.0 Adc, V_{CE} = 2.0 Vdc)	2N6182, 84, 86, 88			20	–	
	2N6183, 85, 87, 89			40	–	
Collector-Emitter Saturation Voltage		9, 10, 11	$V_{CE(sat)}$			Vdc
(I_C = 2.0 Adc, I_B = 0.2 Adc)				–	0.7	
(I_C = 10 Adc, I_B = 1.0 Adc)				–	1.2	
Base-Emitter Saturation Voltage		10, 11	$V_{BE(sat)}$			Vdc
(I_C = 2.0 Adc, I_B = 0.2 Adc)				–	1.2	
(I_C = 10 Adc, I_B = 1.0 Adc)				–	2.0	
DYNAMIC CHARACTERISTICS						
Current-Gain-Bandwidth Product (2) (I_C = 500 mAdc, V_{CE} = 10 Vdc, f_{Test} = 10 MHz)		–	f_T	30	–	MHz
Output Capacitance (V_{CB} = 10 Vdc, I_E = 0, f = 100 kHz)		7	C_{ob}	–	300	pF
Input Capacitance (V_{BE} = 2.0 Vdc, I_C = 0, f = 100 kHz)		7	C_{ib}	–	1250	pF
SWITCHING CHARACTERISTICS						
Delay Time	(V_{CC} = 40 Vdc, $V_{BE(off)}$ = 3.0 Vdc,	2, 3	t_d	–	100	ns
Rise Time	I_C = 2.0 Adc, I_{B1} = 200 mAdc)		t_r	–	100	ns
Storage Time	(V_{CC} = 40 Vdc, I_C = 2.0 Adc,	2, 6	t_s	–	2.0	μs
Fall Time	I_{B1} = I_{C2} = 200 mAdc)		t_f	–	200	ns

*Indicates JEDEC Registered Data
(1) Pulse Test: Pulse Width ≈ 300 μs, Duty Cycle ≈ 2.0%.
(2) $f_T = |h_{fe}| \cdot f_{Test}$

FIGURE 2 – SWITCHING TIME TEST CIRCUIT

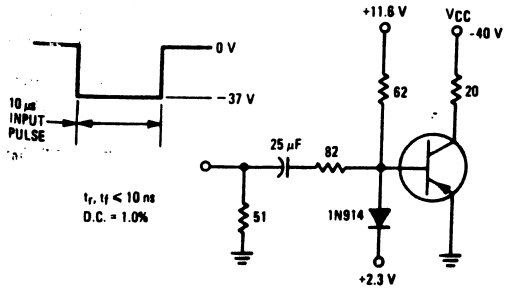
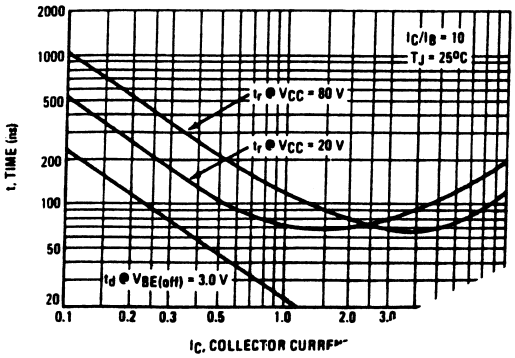


FIGURE 3 – TURN-ON TIME



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