

# New Jersey Semi-Conductor Products, Inc.

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10 AMP POWER  
 TRANSISTORS  
 2N2811-2N2814

SILICON PLANAR NPN  
 POWER TRANSISTORS

## Electrical Specifications (at 25°C unless noted) †

Test	Symbol	2N2811 2N2813		2N2812 2N2814		Units	Test Conditions
		Min.	Max.	Min.	Max.		
D.C. Current gain	$h_{FE}$	10	—	10	—	—	$I_C = 10\text{mA}, V_{CE} = 5\text{V}$
D.C. Current gain (Note 2)	$h_{FE}$	20	60	40	120	—	$I_C = 5\text{A}, V_{CE} = 5\text{V}$
D.C. Current gain (Note 2)	$h_{FE}$	15	—	15	—	—	$I_C = 10\text{A}, V_{CE} = 5\text{V}$
Collector saturation voltage (Note 2)	$V_{CE}(\text{sat})$	—	0.5	—	0.5	V	$I_C = 5\text{A}, I_B = 500\text{mA}$
Collector saturation voltage (Note 2)	$V_{CE}(\text{sat})$	—	1.5	—	1.5	V	$I_C = 10\text{A}, I_B = 1\text{A}$
Base saturation voltage (Note 2)	$V_{BE}(\text{sat})$	—	1.2	—	1.2	V	$I_C = 5\text{A}, I_B = 500\text{mA}$
Base saturation voltage (Note 2)	$V_{BE}(\text{sat})$	—	2.0	—	2.0	V	$I_C = 10\text{A}, I_B = 1\text{A}$
Collector-emitter sustaining voltage (Note 2)	$V_{CEO}(\text{sus})$	50	—	70	—	V	$I_C = 10\text{mA}, I_B = 0$
Emitter-base breakdown voltage	$BV_{EBO}$	8	—	8	—	V	$I_E = 10\mu\text{A}, I_C = 0$
Collector cutoff current	$I_{CEX}$	—	10	—	10	$\mu\text{A}$	$V_{CE} = 70\text{V}, V_{EB} = .5\text{V}$
Collector cutoff current, 150°C	$I_{CEX}$	—	100	—	100	$\mu\text{A}$	$V_{CE} = 60\text{V}, V_{EB} = .5\text{V}, T = 150^\circ\text{C}$
Collector capacitance	$C_{ob}$	—	350	—	350	pf	$V_{CB} = 10\text{V}, I_E = 0, f = 1\text{MHz}$
A.C. Current gain (small signal)	$h_{fe}$	20	100	40	200	—	$I_C = 50\text{mA}, V_{CE} = 5\text{V}, f = 1\text{KHz}$
A.C. Current gain	$h_{fe}$	1.5	—	1.5	—	—	$I_C = 1\text{A}, V_{CE} = 10\text{V}, f = 10\text{mHz}$
Rise time	$t_r$	—	200	—	150	n sec	$\left\{ \begin{array}{l} V_{CC} = 30\text{V} \\ I_{b1} = 100\text{mA}, I_{b2} = -100\text{mA} \\ I_C = 1\text{A} \end{array} \right.$
Storage time	$t_s$	—	80	—	100	n sec	
Fall time	$t_f$	—	100	—	150	n sec	

### Notes:

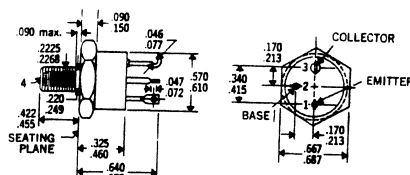
- The device may be switched between maximum rated collector current and maximum rated collector-emitter voltage along a resistive load line provided the switching time is less than 10 microseconds. Switching at low speed through regions of high instantaneous power dissipation may cause second breakdown to occur, with consequent damage to the device.
  - Pulse length = 300  $\mu\text{sec}$ ; duty cycle  $\leq 2\%$ .
- †All values in this table are JEDEC registered.



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### Mechanical Data

TO-61



### Absolute Maximum Ratings

	2N2811 2N2812	2N2813 2N2814
Collector-Base Voltage	80V	120V
Collector-Emitter Voltage	50V	70V
Emitter-Base Voltage	8V	8V
D.C. Collector Current	10A	10A
Power Dissipation at 25°C Ambient Temperature	3W	3W
Power Dissipation at 100°C Case Temperature	50W	50W
Operating and Storage Temperature Range	-65 to 200°C	

Quality Semi-Conductors