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2N6211 2N6212 2N6213

MEDIUM-POWER HIGH-VOLTAGE PNP POWER TRANSISTORS

... designed for high-speed switching and linear amplifier applications for high-voltage operational amplifiers, switching regulators, converters, inverters, deflection stages and high fidelity amplifiers.

- Collector-Emitter Sustaining Voltage –
 $V_{CE(sus)} = 225 \text{ to } 350 \text{ Vdc} @ I_C = 200 \text{ mAdc}$
- Second Breakdown Collector Current –
 $I_{S/B} = 875 \text{ mAdc} @ V_{CE} = 40 \text{ Vdc}$
- $t_f = 0.6 \mu\text{s}$ Resistive Fall Time
- Usable DC Current Gain to 2.0 Adc

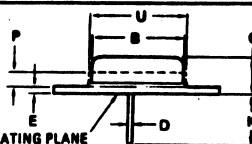
**2 AMPERE
POWER TRANSISTORS
PNP SILICON
225–350 VOLTS
35 WATTS**

*MAXIMUM RATINGS

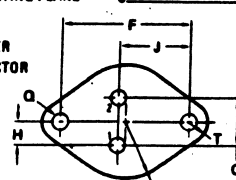
Rating	Symbol	2N6211	2N6212	2N6213	Unit
Collector-Emitter Voltage	V_{CEO}	225	300	350	Vdc
Collector-Base Voltage	V_{CB}	275	350	400	Vdc
Emitter-Base Voltage	V_{EB}	5			Vdc
Collector Current – Continuous	I_C	2			Adc
Peak		5			
Base Current	I_B	1			Adc
Total Power Dissipation @ $T_C = 25^\circ\text{C}$ Derate above 25°C	P_D	35			Watts
		0.2			W/ $^\circ\text{C}$
Operating and Storage Junction Temperature Range	T_J, T_{stg}	-65 to +200			$^\circ\text{C}$

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	θ_{JC}	5.0	$^\circ\text{C/W}$



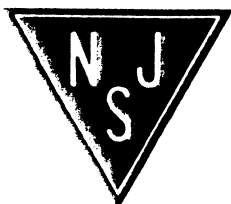
STYLE 1:
PIN 1: BASE
2: EMITTER
CASE: COLLECTOR



DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
B	11.94	12.70	0.470	0.500
C	6.35	6.63	0.250	0.260
D	0.71	0.80	0.028	0.031
E	1.27	1.31	0.050	0.051
F	24.33	24.43	0.958	0.962
G	4.83	5.33	0.190	0.210
H	2.41	2.67	0.095	0.105
J	14.48	14.99	0.570	0.590
K	9.14	—	0.360	—
P	—	1.27	—	0.050
Q	3.81	3.85	0.150	0.152
S	—	6.80	—	0.268
T	—	3.80	—	0.149
U	—	15.75	—	0.620

AN JEDEC Dimensions and Notes Apply.

(TO-66)



NJ Semi-Conductors reserves the right to change test conditions, parameter limits and package dimensions without notice. Information furnished by NJ Semi-Conductors is believed to be both accurate and reliable at the time of going to press. However NJ Semi-Conductors assumes no responsibility for any errors or omissions discovered in its use. NJ Semi-Conductors encourages customers to verify that datasheets are current before placing orders.

2N6211, 2N6212, 2N6213

ELECTRICAL CHARACTERISTICS ($T_C = 25^\circ\text{C}$ unless otherwise noted)

Characteristic	Symbol	Min	Max	Unit
OFF CHARACTERISTICS				
*Collector-Emitter Sustaining Voltage (1) ($I_C = 200\text{ mAdc}$, $I_B = 0$)	$V_{CE0(sus)}$	225 300 380	— — —	Vdc
*Collector-Emitter Sustaining Voltage ($I_C = 200\text{ mA}$, $V_{BE} = -1.5\text{ V}$, $L = 10\text{ mH}$)	$V_{CEX(sus)}$	275 350 400	— — —	Vdc
*Collector-Emitter Sustaining Voltage (1) ($I_C = 200\text{ mA}$, $I_B = 0$, $R_{BE} = 50\ \Omega$)	$V_{CER(sus)}$	250 325 375	— — —	Vdc
*Emitter-Base Breakdown Voltage (1) ($I_E = 0.5\text{ mAdc}$, $I_C = 0$) ($I_E = 1.0\text{ mAdc}$, $I_C = 0$)	V_{EBO}	6.0 6.0	— —	Vdc
*Collector Cutoff Current ($V_{CE} = 250\text{ Vdc}$, $V_{BE(off)} = 1.5\text{ Vdc}$, $T_C = 25^\circ\text{C}$) ($T_C = 100^\circ\text{C}$) ($V_{CE} = 315\text{ Vdc}$, $V_{BE(off)} = 1.5\text{ Vdc}$, $T_C = 25^\circ\text{C}$) ($T_C = 100^\circ\text{C}$) ($V_{CE} = 380\text{ Vdc}$, $V_{BE(off)} = 1.5\text{ Vdc}$, $T_C = 25^\circ\text{C}$) ($T_C = 100^\circ\text{C}$)	I_{CEV}	— — — — — —	0.5 5.0 0.5 5.0 0.5 5.0	mAdc
Collector Cutoff Current ($V_{CE} = 150\text{ Vdc}$, $I_B = 0$)	I_{CEO}	—	5.0	mAdc
*Emitter Cutoff Current ($V_{EB} = 6.0\text{ Vdc}$, $I_C = 0$)	I_{EBO}	— — —	1.0 0.5 0.5	mAdc

*ON CHARACTERISTICS (1)

DC Current Gain ($I_C = 1.0\text{ Adc}$, $V_{CE} = 2.8\text{ Vdc}$) ($I_C = 1.0\text{ Adc}$, $V_{CE} = 3.2\text{ Vdc}$) ($I_C = 1.0\text{ Adc}$, $V_{CE} = 4.0\text{ Vdc}$)	2N6211 2N6212 2N6213	h_{FE}	10 10 10	100 100 100	—
Collector-Emitter Saturation Voltage ($I_C = 1.0\text{ Adc}$, $I_B = 125\text{ mAdc}$)	2N6211 2N6212 2N6213	$V_{CE(sat)}$	— — —	1.4 1.6 2.0	Vdc
Base-Emitter Saturation Voltage ($I_C = 1.0\text{ Adc}$, $I_B = 125\text{ mAdc}$)	All Types	$V_{BE(sat)}$	—	1.4	Vdc

DYNAMIC CHARACTERISTICS

*Current Gain-Bandwidth Product (2) ($I_C = 200\text{ mAdc}$, $V_{CE} = 10\text{ Vdc}$, $f_{test} = 5.0\text{ MHz}$)	f_T	20	—	MHz
Output Capacitance ($V_{CB} = 10\text{ Vdc}$, $I_E = 0$, $f = 1.0\text{ MHz}$)	C_{ob}	—	220	pF

*SECOND BREAKDOWN

*Second Breakdown Collector Current with Base Forward Biased $t = 1.0\text{ s}$ (non-repetitive) ($V_{CE} = 40\text{ Vdc}$)	$I_{S/b}$	0.875	—	Adc
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*SWITCHING CHARACTERISTICS

Rise Time	$(V_{CC} = 200\text{ Vdc}$, $I_C = 1.0\text{ Adc}$, $I_{B1} = I_{B2} = 0.125\text{ Adc}$)	t_r	—	0.8	μs
Storage Time		t_s	—	2.5	μs
Fall Time		t_f	—	0.8	μs

*Indicates JEDEC Registered Data.

(1) Pulse Test: Pulse Width $< 300\ \mu\text{s}$, Duty Cycle $< 2.0\%$

FIGURE 2 — SWITCHING TIME TEST CIRCUIT

