

NPN
2N5629
2N5630
2N5631

PNP
2N6029
2N6030
2N6031

HIGH-VOLTAGE – HIGH POWER TRANSISTORS

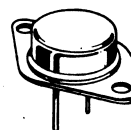
... designed for use in high power audio amplifier applications and high voltage switching regulator circuits.

- High Collector-Emitter Sustaining Voltage –
V_{CEO(sus)} = 100 Vdc – 2N5629, 2N6029
= 120 Vdc – 2N5630, 2N6030
= 140 Vdc – 2N5631, 2N6031
- High DC Current Gain – @ I_C = 8.0 Adc
h_{FE} = 25 (Min) – 2N5629, 2N6029
= 20 (Min) – 2N5630, 2N6030
= 15 (Min) – 2N5631, 2N6031
- Low Collector-Emitter Saturation Voltage –
V_{CE(sat)} = 1.0 Vdc (Max) @ I_C = 10 Adc

16 AMPERE

POWER TRANSISTORS COMPLEMENTARY SILICON

100-120-140 VOLTS
200 WATTS



*MAXIMUM RATINGS

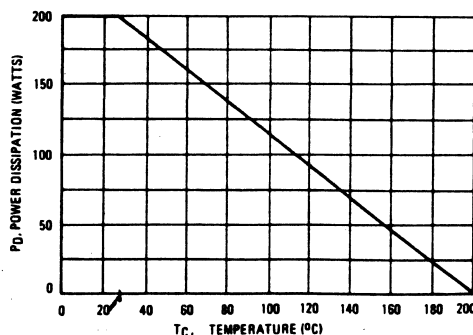
Rating	Symbol	2N5629 2N6029	2N5630 2N6030	2N5631 2N6031	Unit
Collector-Emitter Voltage	V _{CEO}	100	120	140	Vdc
Collector-Base Voltage	V _{CB}	100	120	140	Vdc
Emitter-Base Voltage	V _{EB}	7.0			Vdc
Collector Current - Continuous	I _C	16			Adc
Peak		20			
Base Current - Continuous	I _B	5.0			Adc
Total Device Dissipation @ T _C = 25°C	P _D	200			Watts
Derate above 25°C		1.14			W/°C
Operating and Storage Junction Temperature Range	T _J , T _{stg}	-65 to +200			°C

*THERMAL CHARACTERISTICS

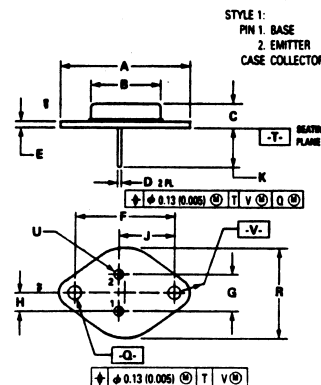
Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	θ _{JC}	0.875	°C/W

* Indicates JEDEC Registered Data.

FIGURE 1 – POWER DERATING



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



- NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
 2. CONTROLLING DIMENSION: INCH.
 3. ALL RULES AND NOTES ASSOCIATED WITH REFERENCED TO-204AA OUTLINE SHALL APPLY.

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	—	39.37	—	1.550
B	—	21.00	—	0.830
C	6.35	8.25	0.250	0.325
D	0.97	1.00	0.038	0.043
E	1.40	1.77	0.055	0.070
F	30.15 BSC	—	1.187 BSC	—
G	10.92 BSC	—	0.430 BSC	—
H	5.40 BSC	—	0.215 BSC	—
J	16.89 BSC	—	0.665 BSC	—
K	11.18	12.19	0.440	0.480
L	3.84	4.19	0.151	0.165
M	—	26.97	—	1.050
N	4.83	5.33	0.190	0.210
V	3.84	4.19	0.151	0.165

CASE 1-06
TO-204AA
(TO-3)



2N5629, 2N5630, 2N5631 NPN
2N6029, 2N6030, 2N6031 PNP

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

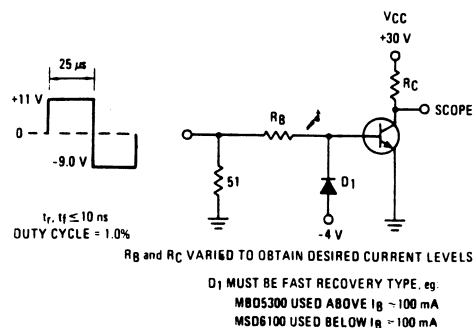
Characteristic	Symbol	Min	Max	Unit
OFF CHARACTERISTICS				
Collector-Emitter Sustaining Voltage (1) ($I_C = 200 \text{ mAdc}$, $I_B = 0$)	$V_{CE(sus)}$	100 120 140	— — —	Vdc
Collector-Emitter Cutoff Current ($V_{CE} = 50 \text{ Vdc}$, $I_B = 0$) ($V_{CE} = 60 \text{ Vdc}$, $I_B = 0$) ($V_{CE} = 70 \text{ Vdc}$, $I_B = 0$)	I_{CEO}	— — —	2.0 2.0 2.0	mAdc
Collector-Emitter Cutoff Current ($V_{CE} = \text{Rated } V_{CB}$, $V_{EB(off)} = 1.5 \text{ Vdc}$) ($V_{CE} = \text{Rated } V_{CB}$, $V_{EB(off)} = 1.5 \text{ Vdc}$, $T_C = 150^\circ\text{C}$)	I_{CEX}	— —	2.0 7.0	mAdc
Collector-Base Cutoff Current ($V_{CB} = \text{Rated } V_{CB}$, $I_E = 0$)	I_{CBO}	—	2.0	mAdc
Emitter-Base Cutoff Current ($V_{BE} = 7.0 \text{ Vdc}$, $I_C = 0$)	I_{EBO}	—	5.0	mAdc
ON CHARACTERISTICS (1)				
DC Current Gain ($I_C = 8.0 \text{ Adc}$, $V_{CE} = 2.0 \text{ Vdc}$) ($I_C = 16 \text{ Adc}$, $V_{CE} = 2.0 \text{ Vdc}$)	h_{FE}	25 20 15 4.0	100 80 60 —	—
Collector-Emitter Saturation Voltage ($I_C = 10 \text{ Adc}$, $I_B = 1.0 \text{ Adc}$) ($I_C = 16 \text{ Adc}$, $I_B = 4.0 \text{ Adc}$)	$V_{CE(sat)}$	— —	1.0 2.0	Vdc
Base-Emitter Saturation Voltage ($I_C = 10 \text{ Adc}$, $I_B = 1.0 \text{ Adc}$)	$V_{BE(sat)}$	—	1.8	Vdc
Base-Emitter On Voltage ($I_C = 8.0 \text{ Adc}$, $V_{CE} = 2.0 \text{ Vdc}$)	$V_{BE(on)}$	—	1.5	Vdc
DYNAMIC CHARACTERISTICS				
Current-Gain-Bandwidth Product (2) ($I_C = 1.0 \text{ Adc}$, $V_{CE} = 20 \text{ Vdc}$, $f_{test} = 0.5 \text{ MHz}$)	f_T	1.0	—	MHz
Output Capacitance ($V_{CB} = 10 \text{ Vdc}$, $I_E = 0$, $f = 0.1 \text{ MHz}$)	C_{ob}	—	500 1000	pF
Small-Signal Current Gain ($I_C = 4.0 \text{ Adc}$, $V_{CE} = 10 \text{ Vdc}$, $f = 1.0 \text{ kHz}$)	h_{fe}	15	—	—

*Indicates JEDEC Registered Data.

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

(2) $f_T = |h_{fe}| \cdot f_{test}$

FIGURE 2 — SWITCHING TIMES TEST CIRCUIT



For PNP test circuit, reverse all polarities and D1.

FIGURE 3 — TURN-ON TIME

