

PNP - 2N6107, 2N6109, 2N6111; NPN - 2N6288, 2N6292

2N6109 and 2N6292 are Preferred Devices

Complementary Silicon Plastic Power Transistors

These devices are designed for use in general-purpose amplifier and switching applications.

Features

- DC Current Gain Specified to 7.0 Amperes
 $h_{FE} = 30-150 @ I_C$
 $= 3.0 \text{ Adc} - 2N6111, 2N6288$
 $= 2.3 (\text{Min}) @ I_C = 7.0 \text{ Adc} - \text{All Devices}$
- Collector-Emitter Sustaining Voltage -
 $V_{CEO(sus)} = 30 \text{ Vdc} (\text{Min}) - 2N6111, 2N6288$
 $= 50 \text{ Vdc} (\text{Min}) - 2N6109$
 $= 70 \text{ Vdc} (\text{Min}) - 2N6107, 2N6292$
- High Current Gain - Bandwidth Product
 $f_T = 4.0 \text{ MHz} (\text{Min}) @ I_C = 500 \text{ mAdc} - 2N6288, 90, 92$
 $= 10 \text{ MHz} (\text{Min}) @ I_C = 500 \text{ mAdc} - 2N6107, 09, 11$
- TO-220AB Compact Package
- Pb-Free Packages are Available*

MAXIMUM RATINGS (Note 1)

Rating	Symbol	Value	Unit
Collector-Emitter Voltage 2N6111, 2N6288 2N6109 2N6107, 2N6292	V_{CEO}	30 50 70	Vdc
Collector-Base Voltage 2N6111, 2N6288 2N6109 2N6107, 2N6292	V_{CB}	40 60 80	Vdc
Emitter-Base Voltage	V_{EB}	5.0	Vdc
Collector Current - Continuous - Peak	I_C	7.0 10	Adc
Base Current	I_B	3.0	Adc
Total Power Dissipation @ $T_C = 25^\circ\text{C}$ Derate above 25°C	P_D	40 0.32	W W/ $^\circ\text{C}$
Operating and Storage Junction Temperature Range	T_J, T_{stg}	-65 to +150	$^\circ\text{C}$

THERMAL CHARACTERISTICS

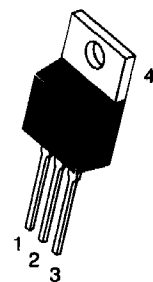
Characteristics	Symbol	Max	Unit
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	3.125	$^\circ\text{C/W}$

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

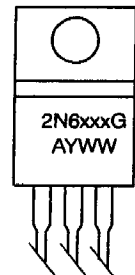
1. Indicates JEDEC Registered Data.

7 AMPERE POWER TRANSISTORS COMPLEMENTARY SILICON 30 - 50 - 70 VOLTS, 40 WATTS

MARKING DIAGRAM



TO-220AB



2N6xxx = Specific Device Code
xxx = See Table on Page 4
G = Pb-Free Package
A = Assembly Location
Y = Year
WW = Work Week



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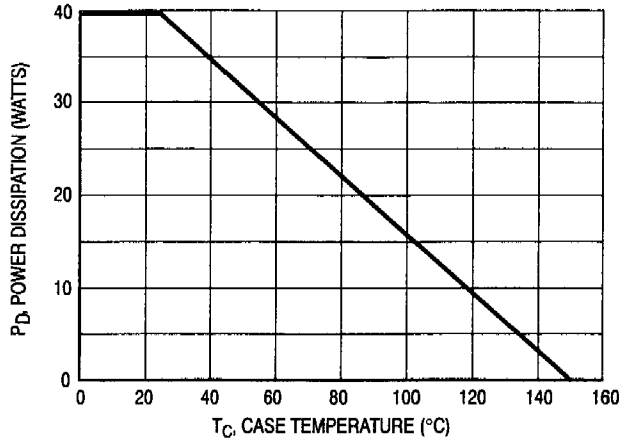


Figure 1. Power Derating

ELECTRICAL CHARACTERISTICS (T_C = 25°C unless otherwise noted) (Note 2)

Characteristic	Symbol	Min	Max	Unit
OFF CHARACTERISTICS				
Collector-Emitter Sustaining Voltage (Note 3) (I _C = 100 mA, I _B = 0)	V _{CEO(sus)}	30	-	Vdc
2N6111, 2N6288		50	-	
2N6109		70	-	
2N6107, 2N6292				
Collector Cutoff Current (V _{CE} = 20 Vdc, I _B = 0)	I _{CEO}	-	1.0	mA
(V _{CE} = 40 Vdc, I _B = 0)		-	1.0	
(V _{CE} = 60 Vdc, I _B = 0)		-	1.0	
Collector Cutoff Current (V _{CE} = 40 Vdc, V _{EB(off)} = 1.5 Vdc)	I _{CEX}	-	100	μA
(V _{CE} = 60 Vdc, V _{EB(off)} = 1.5 Vdc)		-	100	
(V _{CE} = 80 Vdc, V _{EB(off)} = 1.5 Vdc)		-	100	
(V _{CE} = 30 Vdc, V _{EB(off)} = 1.5 Vdc, T _C = 150°C)		-	2.0	mA
(V _{CE} = 50 Vdc, V _{EB(off)} = 1.5 Vdc, T _C = 150°C)		-	2.0	
(V _{CE} = 70 Vdc, V _{EB(off)} = 1.5 Vdc, T _C = 150°C)		-	2.0	
Emitter Cutoff Current (V _{BE} = 5.0 Vdc, I _C = 0)	I _{EBO}	-	1.0	mA

ON CHARACTERISTICS (Note 3)

DC Current Gain (I _C = 2.0 A, V _{CE} = 4.0 Vdc)	h _{FE}	30	150	-
(I _C = 2.5 A, V _{CE} = 4.0 Vdc)		30	150	
(I _C = 3.0 A, V _{CE} = 4.0 Vdc)		30	150	
(I _C = 7.0 A, V _{CE} = 4.0 Vdc)		2.3	-	
Collector-Emitter Saturation Voltage (I _C = 7.0 A, I _B = 3.0 A)	V _{CE(sat)}	-	3.5	Vdc
Base-Emitter On Voltage (I _C = 7.0 A, V _{CE} = 4.0 Vdc)	V _{BE(on)}	-	3.0	Vdc

DYNAMIC CHARACTERISTICS

Current Gain — Bandwidth Product (Note 4) (I _C = 500 mA, V _{CE} = 4.0 Vdc, f _{test} = 1.0 MHz)	f _T	4.0	-	MHz
		10	-	
Output Capacitance (V _{CB} = 10 Vdc, I _E = 0, f = 1.0 MHz)	C _{ob}	-	250	pF
Small-Signal Current Gain (I _C = 0.5 A, V _{CE} = 4.0 Vdc, f = 50 kHz)	h _{fe}	20	-	-

2. Indicates JEDEC Registered Data.

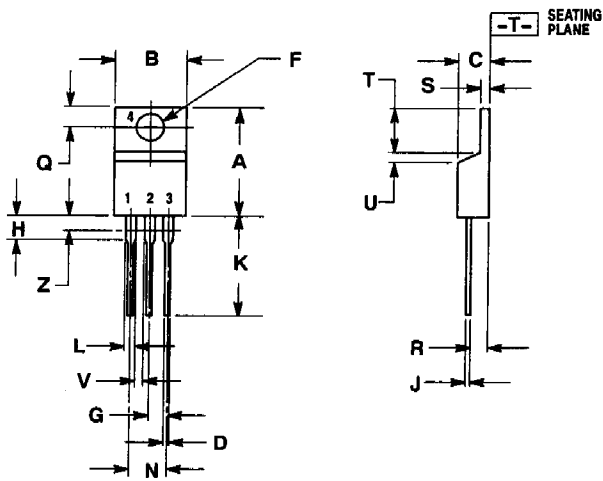
3. Pulse Test: Pulse Width ≤ 300 μs, Duty Cycle ≤ 2.0%.

4. f_T = |h_{fe}| • f_{test}

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PACKAGE DIMENSIONS

TO-220



NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. DIMENSION Z DEFINES A ZONE WHERE ALL BODY AND LEAD IRREGULARITIES ARE ALLOWED.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.570	0.620	14.48	15.75
B	0.380	0.405	9.66	10.28
C	0.190	0.190	4.07	4.82
D	0.025	0.035	0.64	0.88
F	0.142	0.161	3.61	4.09
G	0.095	0.105	2.42	2.66
H	0.110	0.155	2.80	3.93
J	0.014	0.025	0.36	0.64
K	0.500	0.562	12.70	14.27
L	0.045	0.060	1.15	1.52
N	0.190	0.210	4.83	5.33
Q	0.100	0.120	2.54	3.04
R	0.080	0.110	2.04	2.79
S	0.045	0.055	1.15	1.39
T	0.235	0.255	5.97	6.47
U	0.000	0.050	0.00	1.27
V	0.045	---	1.15	---
Z	---	0.080	---	2.04