

MOTOROLA

SEMICONDUCTOR TECHNICAL DATA

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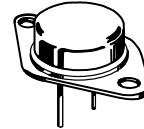
MJ802

High-Power NPN Silicon Transistor

... for use as an output device in complementary audio amplifiers to 100-Watts music power per channel.

- High DC Current Gain — $h_{FE} = 25-100$ @ $I_C = 7.5$ A
- Excellent Safe Operating Area
- Complement to the PNP MJ4502

**30 AMPERE
POWER TRANSISTOR
NPN SILICON
100 VOLTS
200 WATTS**



**CASE 1-07
TO-204AA
(TO-3)**

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector-Emitter Voltage	V_{CER}	100	Vdc
Collector-Base Voltage	V_{CB}	100	Vdc
Collector-Emitter Voltage	V_{CEO}	90	Vdc
Emitter-Base Voltage	V_{EB}	4.0	Vdc
Collector Current	I_C	30	Adc
Base Current	I_B	7.5	Adc
Total Device Dissipation @ $T_C = 25^\circ\text{C}$ Derate above 25°C	P_D	200 1.14	Watts 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}	0.875	$^\circ\text{C/W}$

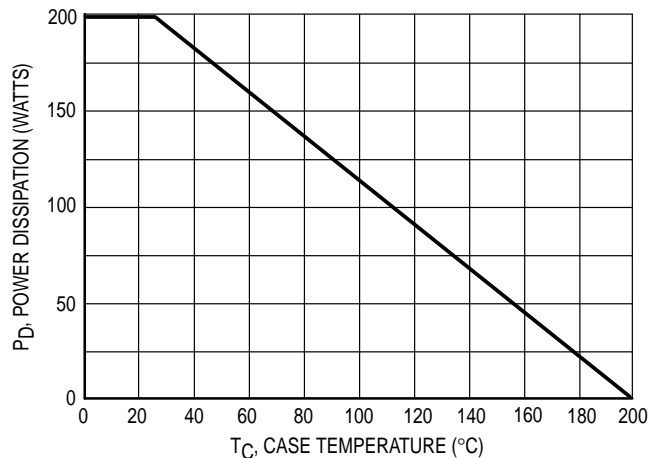


Figure 1. Power-Temperature Derating Curve

REV 7



MJ802**ELECTRICAL CHARACTERISTICS** ($T_C = 25^\circ\text{C}$ unless otherwise noted)

Characteristic	Symbol	Min	Max	Unit
OFF CHARACTERISTICS				
Collector–Emitter Breakdown Voltage ⁽¹⁾ ($I_C = 200\text{ mA}$, $R_{BE} = 100\text{ Ohms}$)	BV_{CER}	100	—	Vdc
Collector–Emitter Sustaining Voltage ⁽¹⁾ ($I_C = 200\text{ mA}$)	$V_{CEO(sus)}$	90	—	Vdc
Collector–Base Cutoff Current ($V_{CB} = 100\text{ Vdc}$, $I_E = 0$) ($V_{CB} = 100\text{ Vdc}$, $I_E = 0$, $T_C = 150^\circ\text{C}$)	I_{CBO}	—	1.0 5.0	mA
Emitter–Base Cutoff Current ($V_{BE} = 4.0\text{ Vdc}$, $I_C = 0$)	I_{EBO}	—	1.0	mA

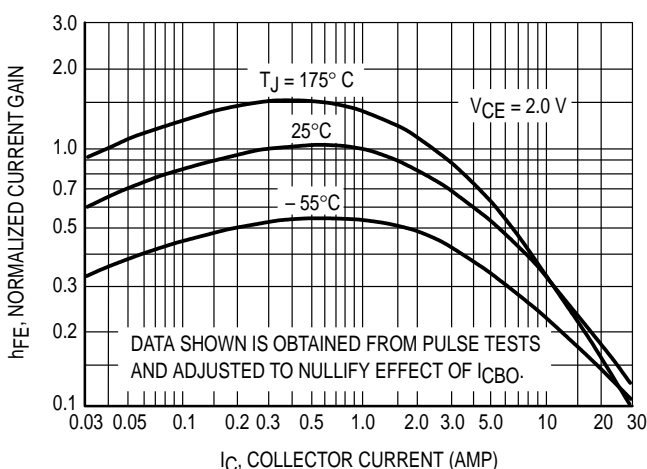
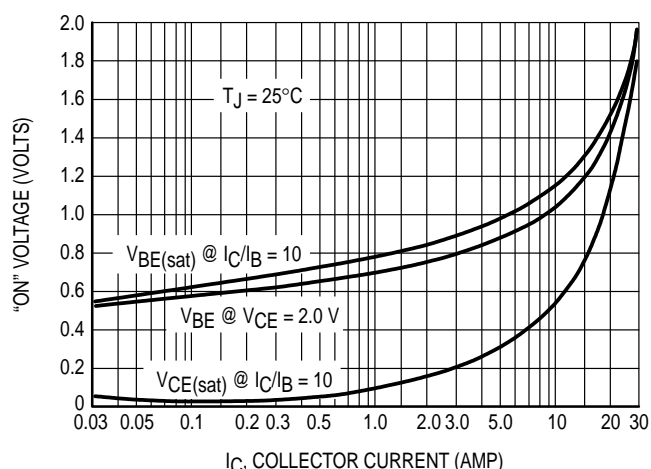
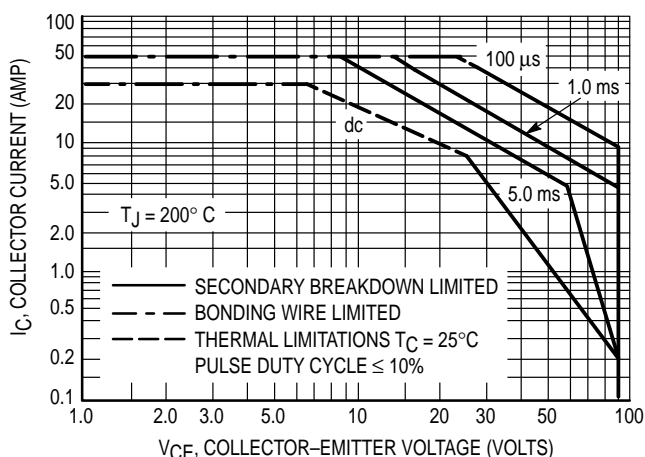
ON CHARACTERISTICS⁽¹⁾

DC Current Gain ⁽¹⁾ ($I_C = 7.5\text{ A}$, $V_{CE} = 2.0\text{ Vdc}$)	h_{FE}	25	100	—
Base–Emitter “On” Voltage ($I_C = 7.5\text{ A}$, $V_{CE} = 2.0\text{ Vdc}$)	$V_{BE(on)}$	—	1.3	Vdc
Collector–Emitter Saturation Voltage ($I_C = 7.5\text{ A}$, $I_B = 0.75\text{ A}$)	$V_{CE(sat)}$	—	0.8	Vdc
Base–Emitter Saturation Voltage ($I_C = 7.5\text{ A}$, $I_B = 0.75\text{ A}$)	$V_{BE(sat)}$	—	1.3	Vdc

DYNAMIC CHARACTERISTICS

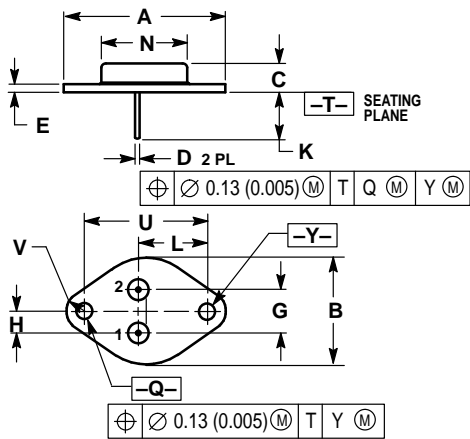
Current Gain — Bandwidth Product ($I_C = 1.0\text{ A}$, $V_{CE} = 10\text{ Vdc}$, $f = 1.0\text{ MHz}$)	f_T	2.0	—	MHz
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⁽¹⁾Pulse Test: Pulse Width $\leq 300\text{ }\mu\text{s}$, Duty Cycle $\leq 2.0\%$.

**Figure 2. DC Current Gain****Figure 3. “On” Voltages****Figure 4. Active Region Safe Operating Area**

The Safe Operating Area Curves indicate $I_C - V_{CE}$ limits below which the device will not enter secondary breakdown. Collector load lines for specific circuits must fall within the applicable Safe Area to avoid causing a catastrophic failure. To insure operation below the maximum T_J , power temperature derating must be observed for both steady state and pulse power conditions.

PACKAGE DIMENSIONS




- 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	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	1.550 REF		39.37 REF	
B	—	1.050	—	26.67
C	0.250	0.335	6.35	8.51
D	0.038	0.043	0.97	1.09
E	0.055	0.070	1.40	1.77
G	0.430 BSC		10.92 BSC	
H	0.215 BSC		5.46 BSC	
K	0.440	0.480	11.18	12.19
L	0.665 BSC		16.89 BSC	
N	—	0.830	—	21.08
Q	0.151	0.165	3.84	4.19
U	1.187 BSC		30.15 BSC	
V	0.131	0.188	3.33	4.77

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

CASE 1-07
TO-204AA (TO-3)
ISSUE Z

MJ802

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How to reach us:

USA / EUROPE: Motorola Literature Distribution;
P.O. Box 20912; Phoenix, Arizona 85036. 1-800-441-2447

MFAX: RMFAX0@email.sps.mot.com – TOUCHTONE (602) 244-6609
INTERNET: http://Design-NET.com

JAPAN: Nippon Motorola Ltd.; Tatsumi-SPD-JLDC, Toshikatsu Otsuki,
6F Seibu-Butsuryu-Center, 3-14-2 Tatsumi Koto-Ku, Tokyo 135, Japan. 03-3521-8315

HONG KONG: Motorola Semiconductors H.K. Ltd.; 8B Tai Ping Industrial Park,
51 Ting Kok Road, Tai Po, N.T., Hong Kong. 852-26629298

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