

High-Power NPN Silicon Transistor

MJ802

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

Features

- High DC Current Gain – $h_{FE} = 25-100 @ I_C = 7.5 \text{ A}$
- Excellent Safe Operating Area
- Complement to the PNP MJ4502
- Pb-Free Package is Available*

MAXIMUM RATINGS

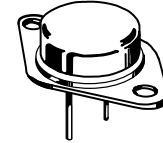
Rating	Symbol	Value	Unit
Collector-Emitter Voltage	V_{CER}	100	Vdc
Collector-Base Voltage	V_{CB}	100	Vdc
Collector-Emitter Voltage	V_{CEO}	90	Vdc
Emitter-Base Voltage	V_{EB}	4.0	Vdc
Collector Current	I_C	30	Adc
Base Current	I_B	7.5	Adc
Total Device Dissipation @ $T_C = 25^\circ\text{C}$ Derate above 25°C	P_D	200 1.14	W W/ $^\circ\text{C}$
Operating and Storage Junction Temperature Range	T_J, T_{stg}	-65 to +200	$^\circ\text{C}$

THERMAL CHARACTERISTICS

Characteristics	Symbol	Max	Unit
Thermal Resistance, Junction-to-Case	θ_{JC}	0.875	$^\circ\text{C}/\text{W}$

Maximum ratings are those values beyond which device damage can occur. Maximum ratings applied to the device are individual stress limit values (not normal operating conditions) and are not valid simultaneously. If these limits are exceeded, device functional operation is not implied, damage may occur and reliability may be affected.

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



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

MARKING DIAGRAM



MJ802 = Device Code
 G = Pb-Free Package
 A = Assembly Location
 YY = Year
 WW = Work Week
 MEX = Country of Origin

ORDERING INFORMATION

Device	Package	Shipping†
MJ802G	TO-204 (Pb-Free)	100 Units / Tray

DISCONTINUED (Note 1)

MJ802	TO-204	100 Units / Tray
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†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

1. **DISCONTINUED:** This device is not recommended for new design. Please contact your **onsemi** representative for information. The most current information on this device may be available on www.onsemi.com.

*For additional information on our Pb-Free strategy and soldering details, please download the **onsemi** Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

MJ802

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

Characteristic	Symbol	Min	Max	Unit
OFF CHARACTERISTICS				
Collector-Emitter Breakdown Voltage ($I_C = 200\text{ mAdc}$, $R_{BE} = 100\ \Omega$)	BV_{CER}	100	–	Vdc
Collector-Emitter Sustaining Voltage (Note 2) ($I_C = 200\text{ mAdc}$)	$V_{CEO(sus)}$	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	mAdc
Emitter-Base Cutoff Current ($V_{BE} = 4.0\text{ Vdc}$, $I_C = 0$)	I_{EBO}	–	1.0	mAdc

ON CHARACTERISTICS⁽¹⁾

DC Current Gain (Note 2) ($I_C = 7.5\text{ Adc}$, $V_{CE} = 2.0\text{ Vdc}$)	h_{FE}	25	100	–
Base-Emitter "On" Voltage ($I_C = 7.5\text{ Adc}$, $V_{CE} = 2.0\text{ Vdc}$)	$V_{BE(on)}$	–	1.3	Vdc
Collector-Emitter Saturation Voltage ($I_C = 7.5\text{ Adc}$, $I_B = 0.75\text{ Adc}$)	$V_{CE(sat)}$	–	0.8	Vdc
Base-Emitter Saturation Voltage ($I_C = 7.5\text{ Adc}$, $I_B = 0.75\text{ Adc}$)	$V_{BE(sat)}$	–	1.3	Vdc

DYNAMIC CHARACTERISTICS

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

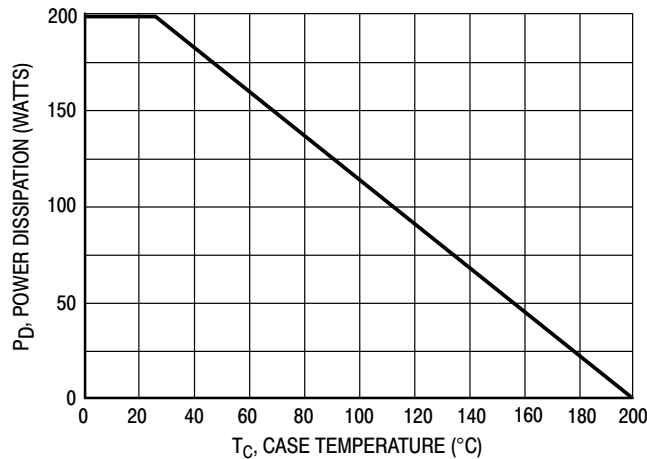


Figure 1. Power-Temperature Derating Curve

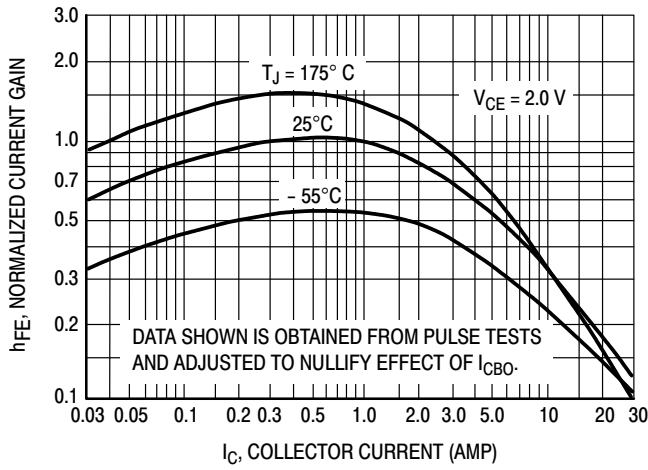


Figure 2. DC Current Gain

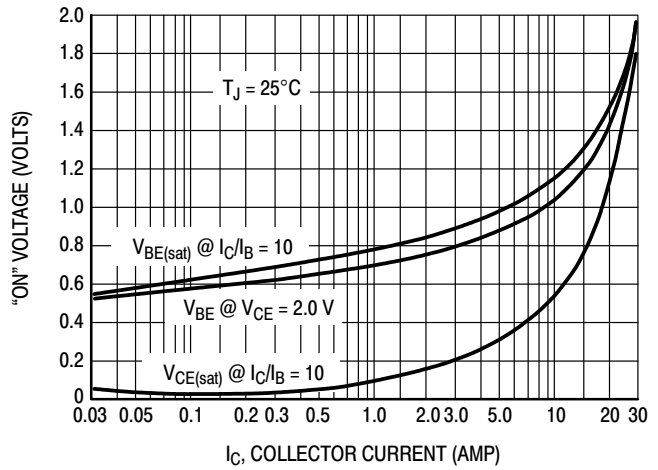


Figure 3. "On" Voltages

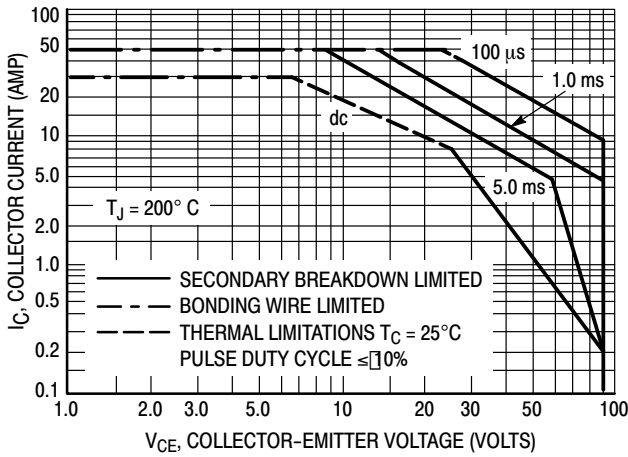
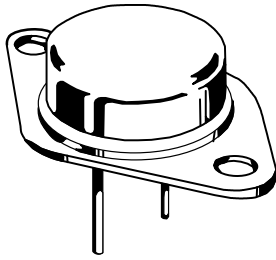


Figure 4. Active Region Safe Operating Area

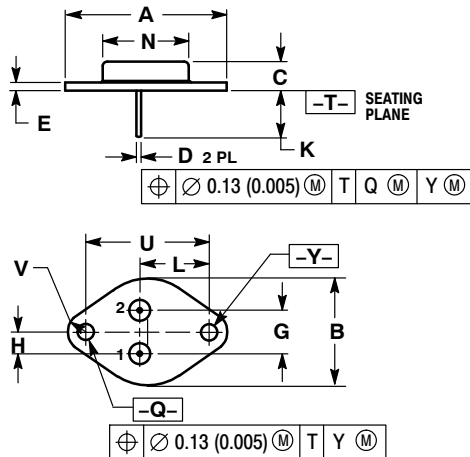
The Safe Operating Area Curves indicate $I_C - V_{CE}$ limits below which the device will not enter secondary breakdown. Collector load lines for specific circuits must fall within the applicable Safe Area to avoid causing a catastrophic failure. To insure operation below the maximum T_J , power temperature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



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

DATE 10 MAR 2000

SCALE 1:1



- 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

- | | | | | |
|--|--|---|---|---|
| <p>STYLE 1:
PIN 1. BASE
2. EMITTER
CASE: COLLECTOR</p> | <p>STYLE 2:
PIN 1. BASE
2. COLLECTOR
CASE: EMITTER</p> | <p>STYLE 3:
PIN 1. GATE
2. SOURCE
CASE: DRAIN</p> | <p>STYLE 4:
PIN 1. GROUND
2. INPUT
CASE: OUTPUT</p> | <p>STYLE 5:
PIN 1. CATHODE
2. EXTERNAL TRIP/DELAY
CASE: ANODE</p> |
| <p>STYLE 6:
PIN 1. GATE
2. EMITTER
CASE: COLLECTOR</p> | <p>STYLE 7:
PIN 1. ANODE
2. OPEN
CASE: CATHODE</p> | <p>STYLE 8:
PIN 1. CATHODE #1
2. CATHODE #2
CASE: ANODE</p> | <p>STYLE 9:
PIN 1. ANODE #1
2. ANODE #2
CASE: CATHODE</p> | |

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