

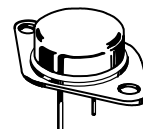
**MJ802**

**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**



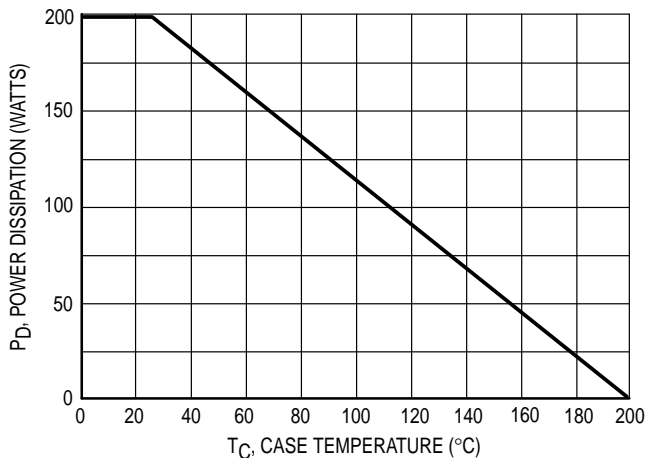
**CASE 1-07  
TO-204AA  
(TO-3)**

**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 $25^\circ\text{C}$	$P_D$	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	$\theta_{JC}$	0.875	$^\circ\text{C/W}$



**Figure 1. Power-Temperature Derating Curve**

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

Characteristic	Symbol	Min	Max	Unit
<b>OFF CHARACTERISTICS</b>				
Collector–Emitter Breakdown Voltage <sup>(1)</sup> ( $I_C = 200\text{ mAdc}$ , $R_{BE} = 100\text{ Ohms}$ )	$BV_{CER}$	100	—	Vdc
Collector–Emitter Sustaining Voltage <sup>(1)</sup> ( $I_C = 200\text{ mAdc}$ )	$V_{CEO(sus)}$	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

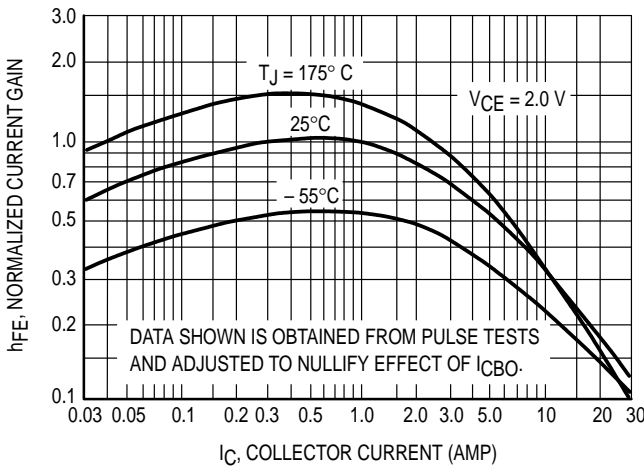
**ON CHARACTERISTICS<sup>(1)</sup>**

DC Current Gain <sup>(1)</sup> ( $I_C = 7.5\text{ Adc}$ , $V_{CE} = 2.0\text{ Vdc}$ )	$h_{FE}$	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

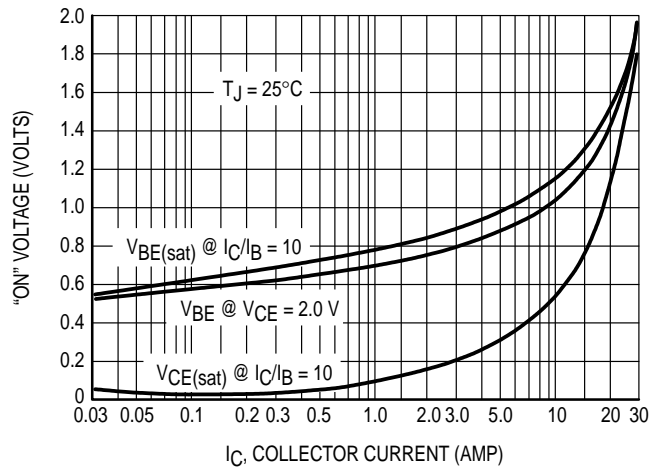
**DYNAMIC CHARACTERISTICS**

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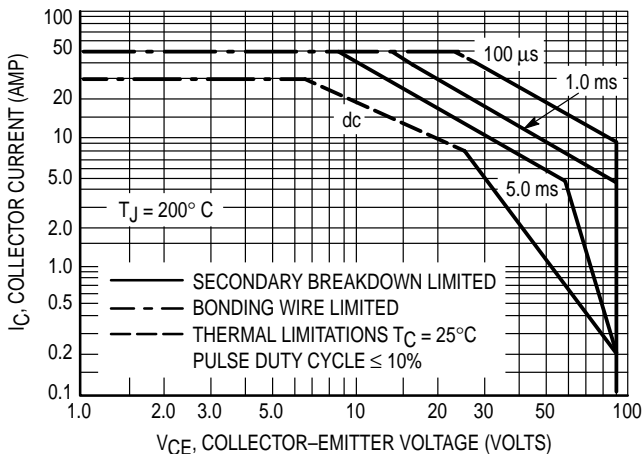
<sup>(1)</sup>Pulse Test: Pulse Width  $\leq 300\ \mu\text{s}$ , Duty Cycle  $\leq 2.0\%$ .



**Figure 2. DC Current Gain**



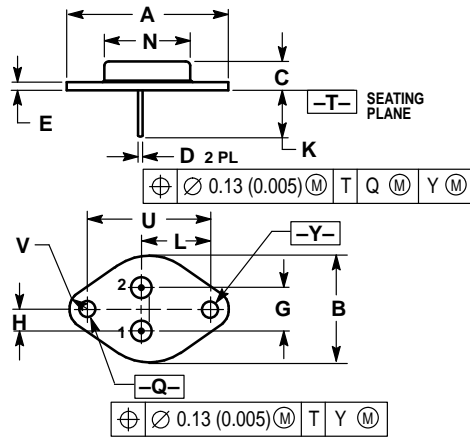
**Figure 3. “On” Voltages**



**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

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