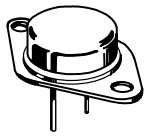
MJ4502

High-Power PNP 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 NPN MJ802

30 AMPERE
POWER TRANSISTOR
PNP 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°C Derate above 25°C	P_D	200 1.14	Watts W/°C
Operating and Storage Junction Temperature Range	T_J, T_{stg}	–65 to +200	°C

MAXIMUM RATINGS

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

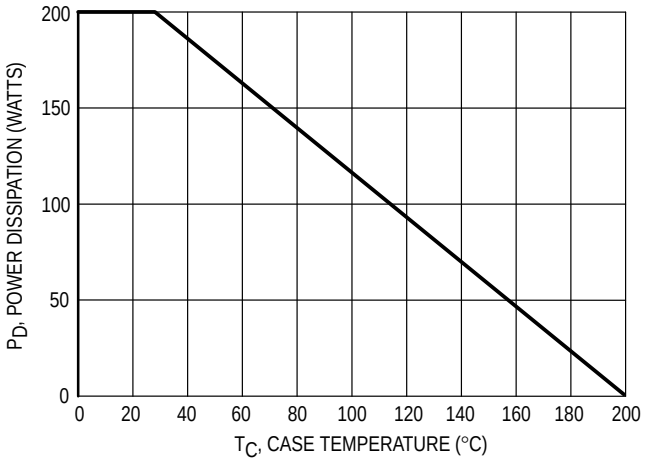


Figure 1. Power–Temperature Derating Curve

REV 7

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

Characteristic	Symbol	Min	Max	Unit
OFF CHARACTERISTICS				
Collector–Emitter Breakdown Voltage(1) (I_C = 200 mAdc, R_{BE} = 100 Ohms)	$V_{(BR)CER}$	100	—	Vdc
Collector–Emitter Sustaining Voltage(1) (I_C = 200 mAdc)	$V_{CEO(sus)}$	90	—	Vdc
Collector–Base Cutoff Current (V_{CB} = 100 Vdc, I_E = 0) (V_{CB} = 100 Vdc, I_E = 0, T_C = 150°C)	I_{CBO}	 — —	 1.0 5.0	mAdc
Emitter–Base Cutoff Current (V_{BE} = 4.0 Vdc, I_C = 0)	I_{EBO}	—	1.0	mAdc
ON CHARACTERISTICS				
DC Current Gain (I_C = 7.5 Adc, V_{CE} = 2.0 Vdc)	h_{FE}	25	100	—
Base–Emitter “On” Voltage (I_C = 7.5 Adc, V_{CE} = 2.0 Vdc)	$V_{BE(on)}$	—	1.3	Vdc
Collector–Emitter Saturation Voltage (I_C = 7.5 Adc, I_B = 0.75 Adc)	$V_{CE(sat)}$	—	0.8	Vdc
Base–Emitter Saturation Voltage (I_C = 7.5 Adc, I_B = 0.75 Adc)	$V_{BE(sat)}$	—	1.3	Vdc
DYNAMIC CHARACTERISTICS				
Current Gain — Bandwidth Product (I_C = 1.0 Adc, V_{CE} = 10 Vdc, f = 1.0 MHz)	f_T	2.0	—	MHz

(1)Pulse Test: Pulse Width ≤ 300 μs, Duty Cycle ≤ 2.0%.

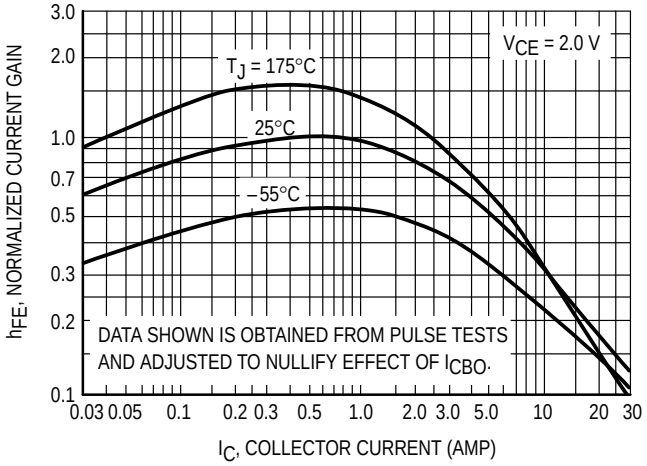


Figure 2. DC Current Gain

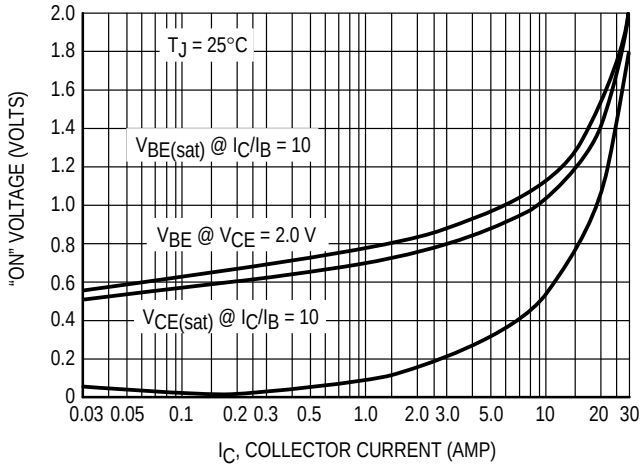


Figure 3. “On” Voltages

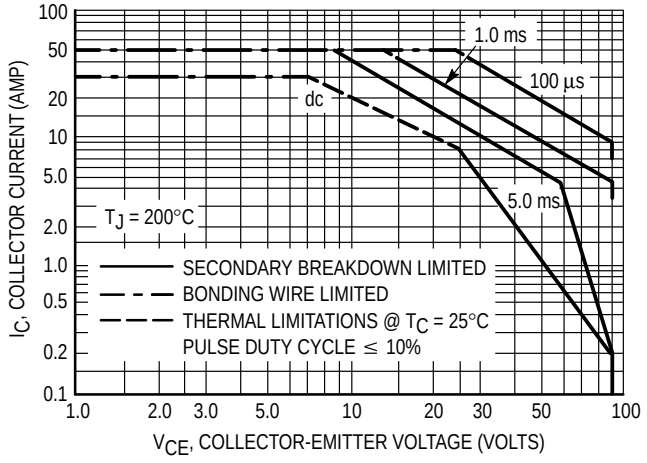
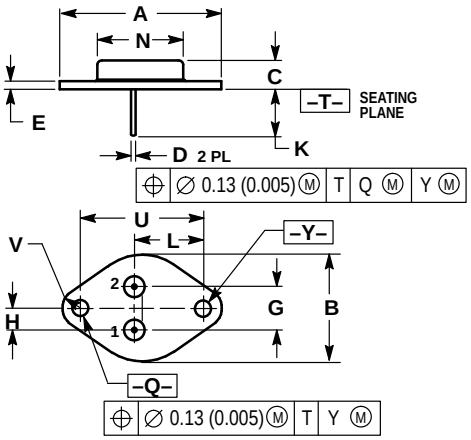


Figure 4. Active Region Safe Operating Area

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.

	INCHES		MILLIMETERS	
DIM	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

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