

## HIGH-POWER NPN SILICON TRANSISTOR

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

### FEATURES

- \* Continuous Collector Current-  $I_C = 30A$
- \* High DC Current Gain-  $hFE = 25-100 @ I_C = 7.5A$
- \* Excellent Safe Operating Area  
 $V_{CE(sat)} = 0.8V(\text{Max}) @ I_C = 7.5A, I_B = 750mA$
- \* Complement to the PNP MJ4502

### MAXIMUM RATINGS

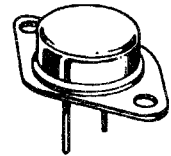
Characteristic	Symbol	Rating	Unit
Collector-Base Voltage	$V_{CBO}$	100	V
Collector-Emitter Voltage	$V_{CER}$	100	V
Collector-Emitter Voltage	$V_{CEO}$	90	V
Emitter-Base Voltage	$V_{EBO}$	4.0	V
Collector Current - Continuous	$I_C$	30	A
Base Current-Continuous	$I_B$	7.5	A
Total Power Dissipation @ $T_C = 25^\circ C$ Derate above $25^\circ C$	$P_D$	200 1.14	W W/ $^\circ C$
Operating and Storage Junction Temperature Range	$T_J, T_{STG}$	-65 to +200	$^\circ C$

### THERMAL CHARACTERISTICS

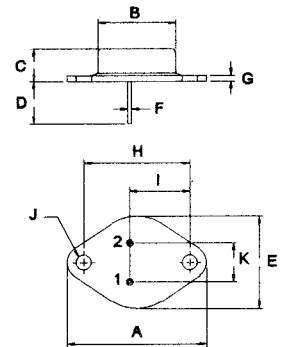
Characteristic	Symbol	Max	Unit
Thermal Resistance Junction to Case	$R_{\theta jc}$	0.875	$^\circ C/W$

**NPN  
MJ802**

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



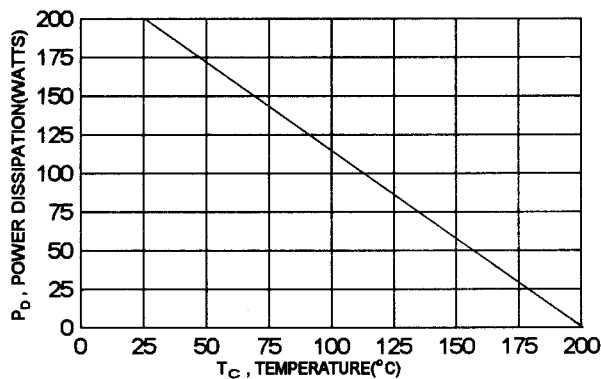
**TO-3**



PIN 1.BASE  
2.EMITTER  
COLLECTOR(CASE)

DIM	MILLIMETERS	
	MIN	MAX
A	38.75	39.96
B	19.28	22.23
C	7.96	9.28
D	11.18	12.19
E	25.20	26.67
F	0.92	1.09
G	1.38	1.62
H	29.90	30.40
I	16.64	17.30
J	3.88	4.36
K	10.67	11.18

**FIGURE -1 POWER DERATING**



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

Characteristic	Symbol	Min	Max	Unit
----------------	--------	-----	-----	------

**OFF CHARACTERISTICS**

Collector-Emitter Sustaining Voltage(1) ( $I_C = 200\text{ mA}$ , $I_B = 0$ )	$V_{CEO(sus)}$	90		V
Collector-Emitter Breakdown Voltage(1) ( $I_C = 200\text{ mA}$ , $R_{BE} = 100\text{ ohm}$ )	$BV_{CER}$	100		V
Collector Cutoff Current ( $V_{CB} = 100\text{ V}$ , $I_E = 0$ ) ( $V_{CB} = 100\text{ V}$ , $I_E = 0$ , $T_C = 150^\circ\text{C}$ )	$I_{CBO}$		1.0 5.0	mA
Emitter Cutoff Current ( $V_{BE} = 4.0\text{ V}$ , $I_C = 0$ )	$I_{EBO}$		1.0	mA

**ON CHARACTERISTICS (1)**

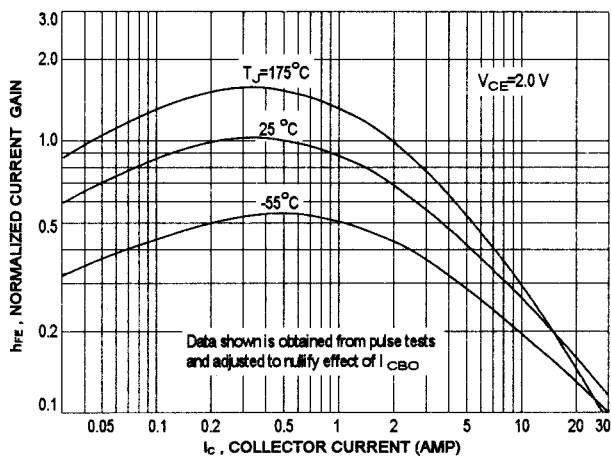
DC Current Gain ( $I_C = 7.5\text{ A}$ , $V_{CE} = 2.0\text{ V}$ )	hFE	25	100	
Collector-Emitter Saturation Voltage ( $I_C = 7.5\text{ A}$ , $I_B = 0.75\text{ A}$ )	$V_{CE(sat)}$		0.8	V
Base-Emitter Saturation Voltage ( $I_C = 7.5\text{ A}$ , $I_B = 0.75\text{ A}$ )	$V_{BE(sat)}$		1.3	V
Base-Emitter On Voltage ( $I_C = 7.5\text{ A}$ , $V_{CE} = 2.0\text{ V}$ )	$V_{BE(on)}$		1.3	V

**DYNAMIC CHARACTERISTICS**

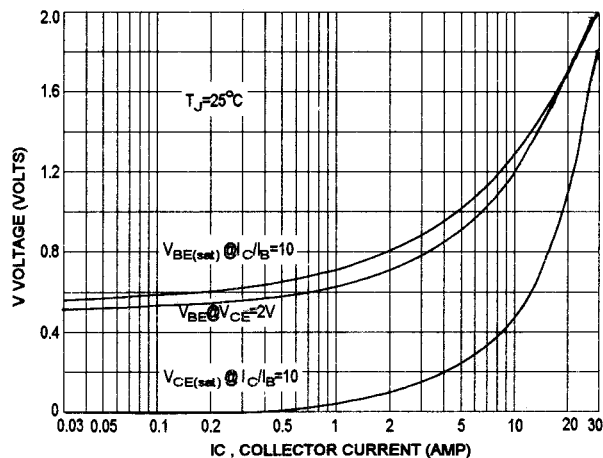
Current-Gain Bandwidth Product ( $I_C = 1.0\text{ A}$ , $V_{CE} = 10\text{ V}$ , $f = 1.0\text{ MHz}$ )	$f_T$	2.0		MHz
--	-------	-----	--	-----

(1) Pulse Test: Pulse width =  $300\text{ }\mu\text{s}$  , Duty Cycle  $\leq 2.0\%$

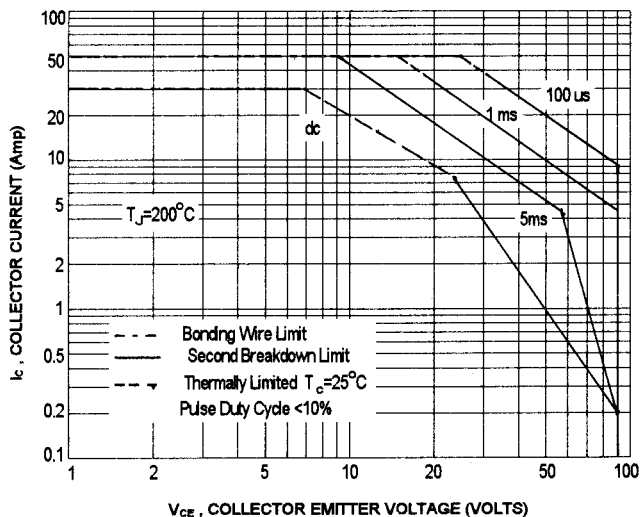
DC CURRENT GAIN



"ON" VOLTAGE



ACTIVE-REGION SAFE OPERATING AREA (SOA)



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 operating below the maximum  $T_J$ , power-temperature derating must be observed for both steady state and pulse power conditions.