

Plastic High Power Silicon Transistor

... designed for use in high power audio amplifiers utilizing complementary or quasi complementary circuits.

- DC Current Gain —
 $h_{FE} = 30 \text{ (Min) @ } I_C = 2.0 \text{ Adc}$

MAXIMUM RATINGS

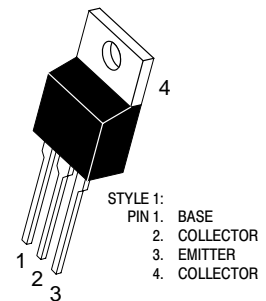
Rating	Symbol	Value	Unit
Collector–Emitter Voltage	V_{CEO}	80	Vdc
Collector–Base Voltage	V_{CBO}	80	Vdc
Emitter–Base Voltage	V_{EBO}	5.0	Vdc
Collector Current	I_C	10	Adc
Base Current	I_B	6.0	Adc
Total Device Dissipation $T_C = 25^\circ\text{C}$ Derate above 25°C	P_D	90 720	Watts mW/ $^\circ\text{C}$
Operating and Storage Junction Temperature Range	T_J, T_{stg}	-55 to +150	$^\circ\text{C}$

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	θ_{JC}	1.39	$^\circ\text{C/W}$

NPN
BD809
PNP
BD810

10 AMPERE
POWER TRANSISTORS
PNP SILICON
60, 80 VOLTS
90 WATTS



CASE 221A-09
TO-220AB

BD809 BD810

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

Characteristic	Symbol	Min	Max	Unit
Collector–Emitter Sustaining Voltage* ($I_C = 0.1 \text{ Adc}$, $I_B = 0$)	V_{CEO}	80	—	Vdc
Collector Cutoff Current ($V_{CB} = 80 \text{ Vdc}$, $I_E = 0$)	I_{CBO}	—	1.0	mAdc
Emitter Cutoff Current ($V_{BE} = 5.0 \text{ Vdc}$, $I_C = 0$)	I_{EBO}	—	2.0	mAdc
DC Current Gain ($I_C = 2.0 \text{ A}$, $V_{CE} = 2.0 \text{ V}$) ($I_C = 4.0 \text{ A}$, $V_{CE} = 2.0 \text{ V}$)	h_{FE}	30 15	—	
Collector–Emitter Saturation Voltage* ($I_C = 3.0 \text{ Adc}$, $I_B = 0.3 \text{ Adc}$)	$V_{CE(sat)}$	—	1.1	Vdc
Base–Emitter On Voltage* ($I_C = 4.0 \text{ Adc}$, $V_{CE} = 2.0 \text{ Vdc}$)	$V_{BE(on)}$	—	1.6	Vdc
Current–Gain Bandwidth Product ($I_C = 1.0 \text{ Adc}$, $V_{CE} = 10 \text{ Vdc}$, $f = 1.0 \text{ MHz}$)	f_T	1.5	—	MHz

*Pulse Test: Pulse Width $\leq 300 \mu\text{s}$, Duty Cycle $\leq 2.0\%$.

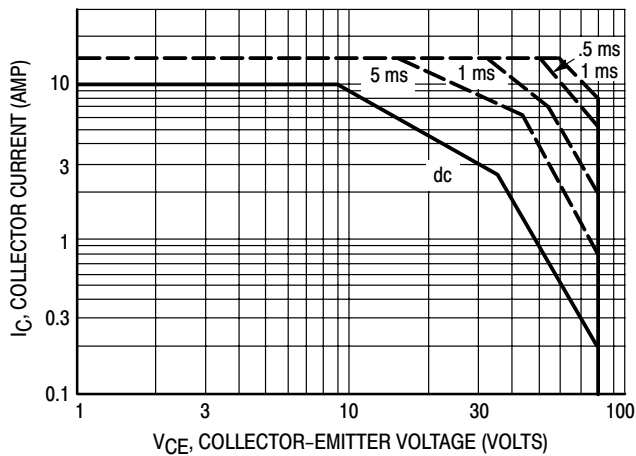


Figure 1. Active Region DC Safe Operating Area
(see Note 1)

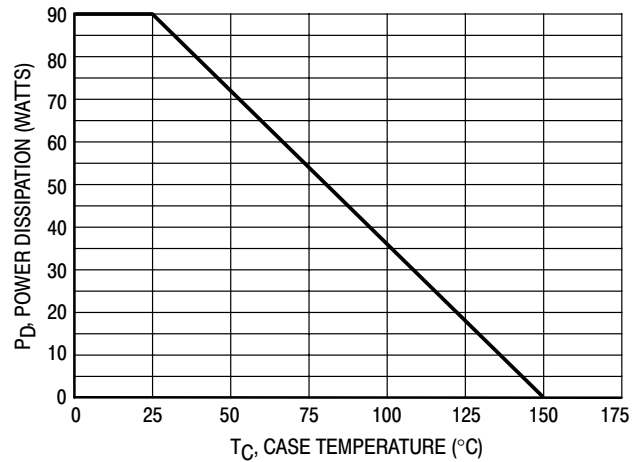


Figure 2. Power–Temperature Derating Curve

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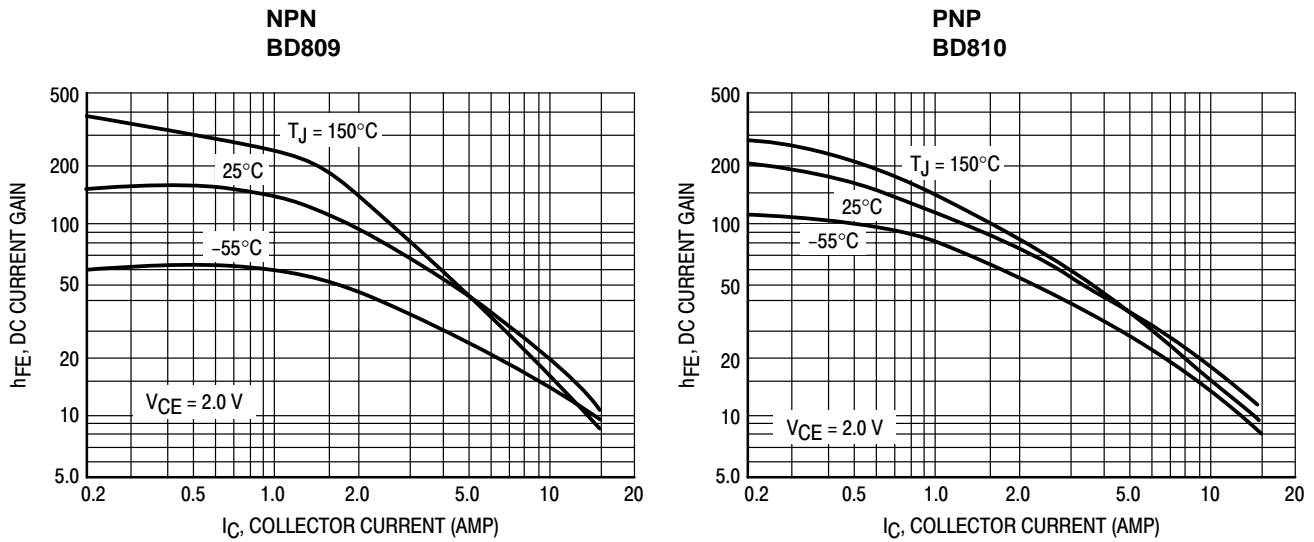


Figure 3. DC Current Gain

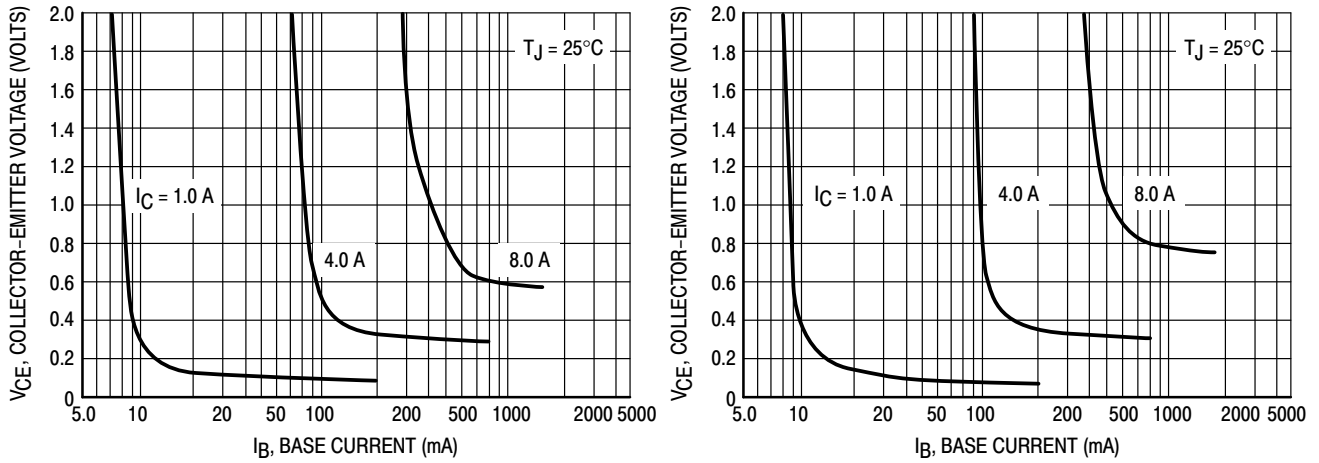


Figure 4. Collector Saturation Region

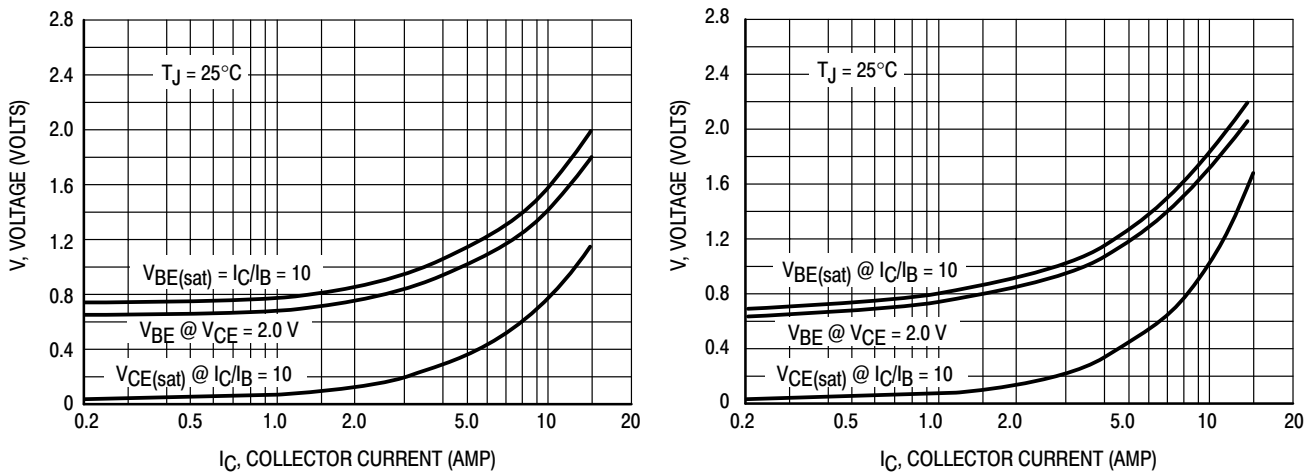


Figure 5. "On" Voltages

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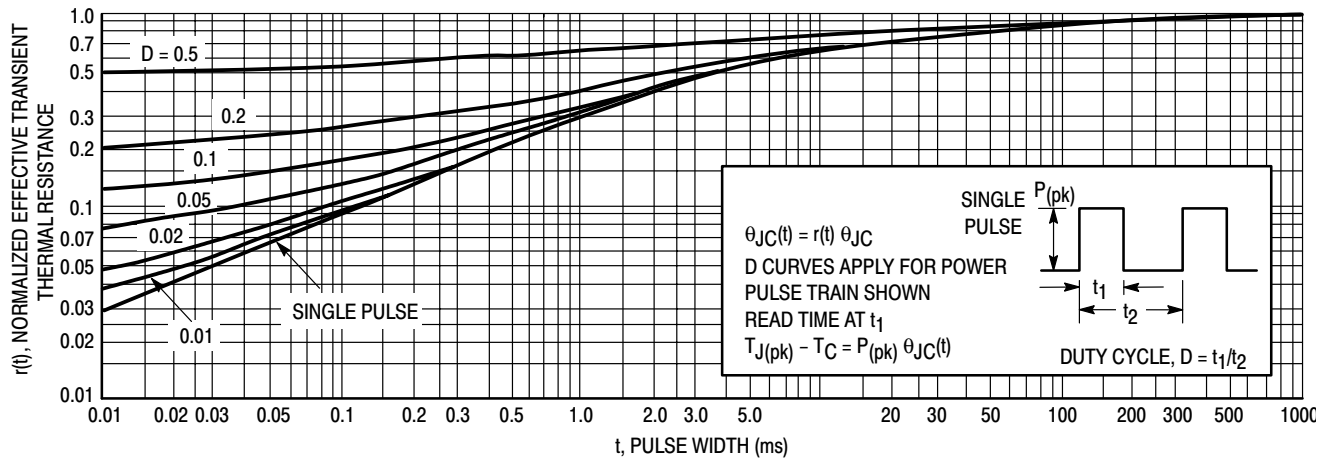


Figure 6. Thermal Response

Note 1:

There are two limitations on the power handling ability of a transistor: average junction temperature and second breakdown. Safe operating area curves indicate $I_C - V_{CE}$ limits of the transistor that must be observed for reliable operation, i.e., the transistor must not be subjected to greater dissipation than the curves indicate.

The data of Figure 1 is based on $T_{J(pk)} = 150^\circ\text{C}$; T_C is variable depending on conditions. Second breakdown pulse limits are valid for duty cycles to 10% provided $T_{J(pk)} \leq 150^\circ\text{C}$. At high case temperatures, thermal limitations will reduce the power that can be handled to values less than the limitations imposed by second breakdown.

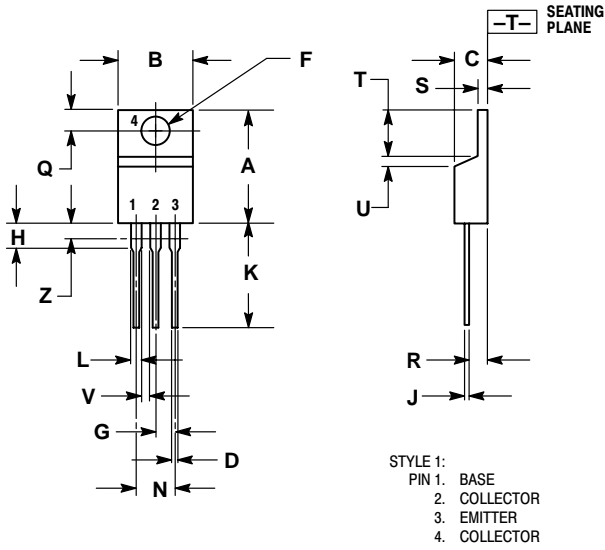
Notes

Notes

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PACKAGE DIMENSIONS

TO-220 CASE 221A-09 ISSUE AA



- NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
 2. CONTROLLING DIMENSION: INCH.
 3. DIMENSION Z DEFINES A ZONE WHERE ALL BODY AND LEAD IRREGULARITIES ARE ALLOWED.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.570	0.620	14.48	15.75
B	0.380	0.405	9.66	10.28
C	0.160	0.190	4.07	4.82
D	0.025	0.035	0.64	0.88
F	0.142	0.147	3.61	3.73
G	0.095	0.105	2.42	2.66
H	0.110	0.155	2.80	3.93
J	0.018	0.025	0.46	0.64
K	0.500	0.562	12.70	14.27
L	0.045	0.060	1.15	1.52
N	0.190	0.210	4.83	5.33
Q	0.100	0.120	2.54	3.04
R	0.080	0.110	2.04	2.79
S	0.045	0.055	1.15	1.39
T	0.235	0.255	5.97	6.47
U	0.000	0.050	0.00	1.27
V	0.045	---	1.15	---
Z	---	0.080	---	2.04

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