

# Plastic High Power Silicon PNP Transistor

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

- DC Current Gain —  

$$h_{FE} = 30 \text{ (Min) @ } I_C$$

$$= 2.0 \text{ Adc}$$
- BD 808, 810 are complementary with BD 807, 890

## MAXIMUM RATINGS

Rating	Symbol	Type	Value	Unit
Collector–Emitter Voltage	$V_{CEO}$	BD808 BD810	60 80	Vdc
Collector–Base Voltage	$V_{CBO}$	BD808 BD810	70 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 $25^\circ\text{C}$	$P_D$		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	$\theta_{JC}$	1.39	$^\circ\text{C/W}$

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

Characteristic	Symbol	Type	Min	Max	Unit
Collector–Emitter Sustaining Voltage* ( $I_C = 0.1 \text{ Adc}, I_B = 0$ )	$BV_{CEO}$	BD808 BD810	60 80	— —	Vdc
Collector Cutoff Current ( $V_{CB} = 70 \text{ Vdc}, I_E = 0$ ) ( $V_{CB} = 80 \text{ Vdc}, I_E = 0$ )	$I_{CBO}$	BD808 BD810	— —	1.0 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

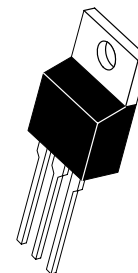
\*Pulse Test: Pulse Width  $\leq 300 \mu\text{s}$ , Duty Cycle  $\leq 2.0\%$ .

Preferred devices are ON Semiconductor recommended choices for future use and best overall value.

# BD808 BD810\*

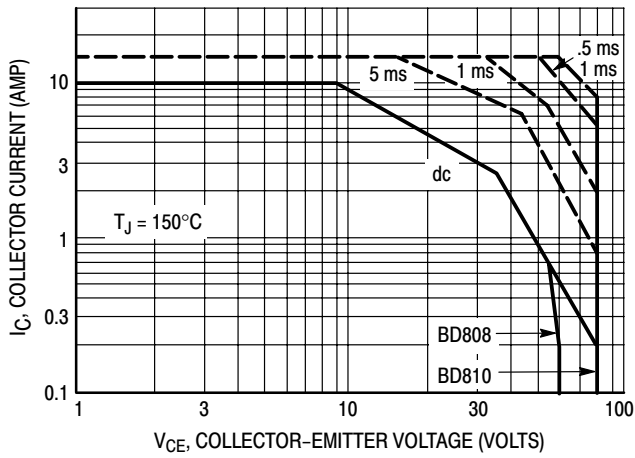
\*ON Semiconductor Preferred Device

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

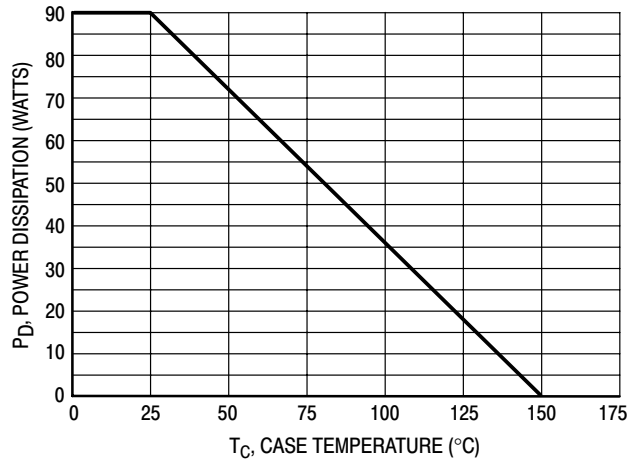


CASE 221A-06  
TO-220AB

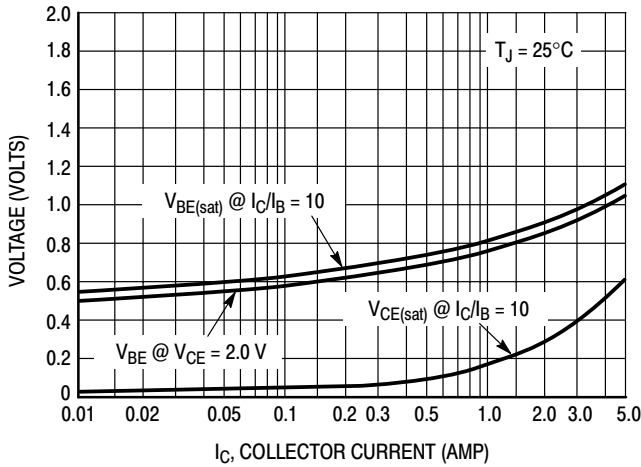
# BD808 BD810



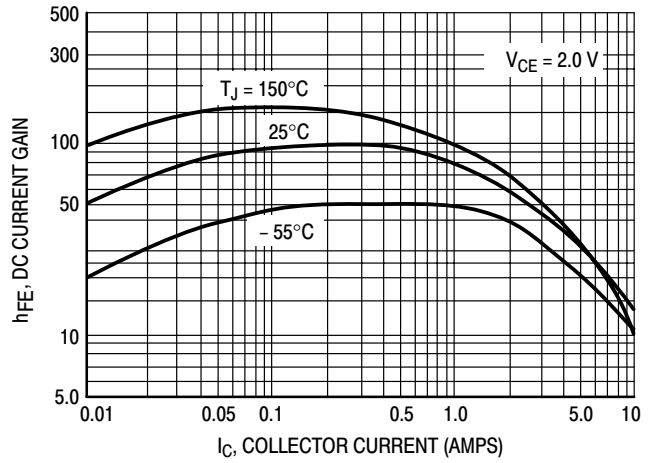
**Figure 1. Active Region DC Safe Operating Area (see Note 1)**



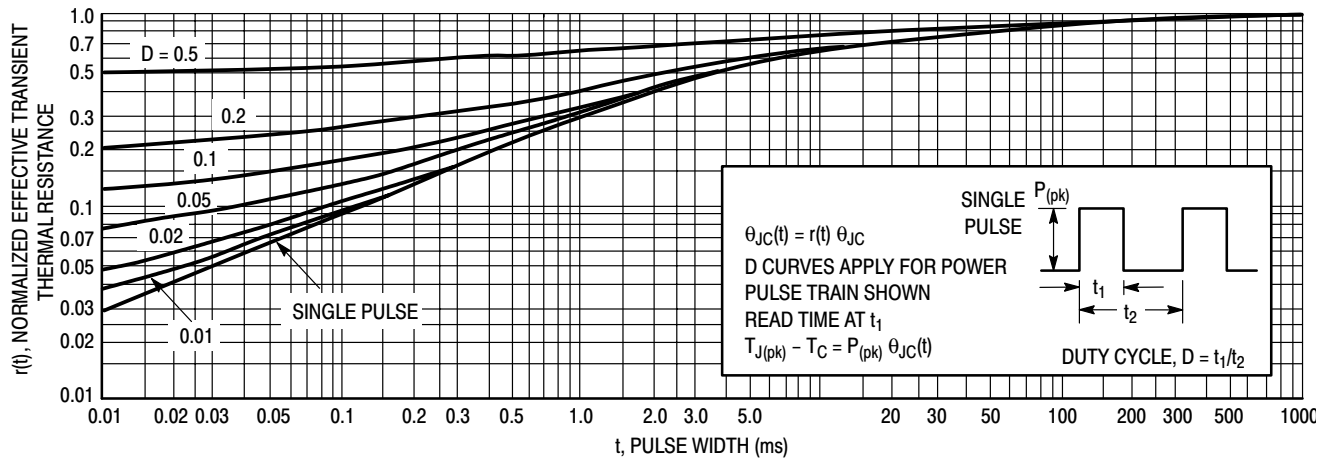
**Figure 2. Power-Temperature Derating Curve**



**Figure 3. "On" Voltages**



**Figure 4. Current Gain**



**Figure 5. Thermal Response**

## BD808 BD810

**Note 1:**

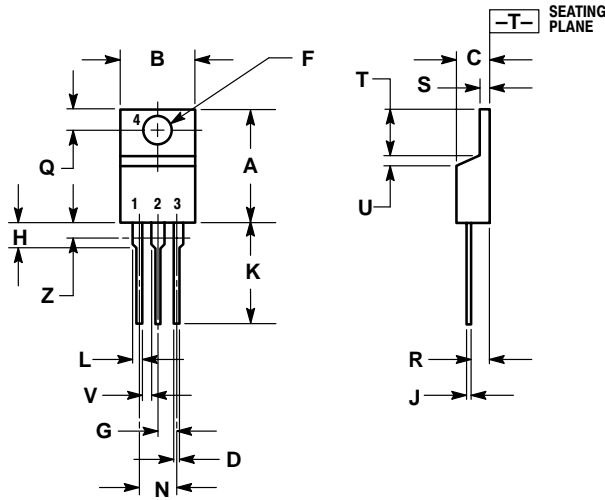
There are two limitations on the power handling ability of a transistor: average junction temperature and second breakdown. Safe operating area curves indicate  $I_C - V_{CE}$  limits of the transistor that must be observed for reliable operation, i.e., the transistor must not be subjected to greater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

# BD808 BD810

## PACKAGE DIMENSIONS

### CASE 221A-06 TO-220AB ISSUE Y



#### 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

#### STYLE 1:

1. BASE
2. COLLECTOR
3. EMITTER
4. COLLECTOR

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