

**BD180**

**3.0 AMPERES  
POWER TRANSISTOR  
PNP SILICON  
80 VOLTS  
30 WATTS**

# Plastic Medium Power Silicon PNP Transistor

... designed for use in 5.0 to 10 Watt audio amplifiers and drivers utilizing complementary or quasi complementary circuits.

- DC Current Gain —  $h_{FE} = 40$  (Min) @  $I_C = 0.15$  Adc
- BD180 is complementary with BD179

### 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	$I_C$	3.0	Adc
Base Current	$I_B$	1.0	Adc
Total Power Dissipation @ $T_C = 25^\circ\text{C}$ Derate above $25^\circ\text{C}$	$P_D$	30 240	Watts mW/ $^\circ\text{C}$
Operating and Storage Junction Temperature Range	$T_J, T_{stg}$	-65 to +150	$^\circ\text{C}$

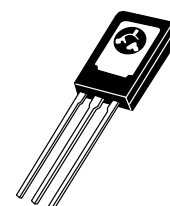
### THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	$\theta_{JC}$	4.16	$^\circ\text{C}/\text{W}$

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

Characteristic	Symbol	Min	Max	Unit
Collector–Emitter Sustaining Voltage* ( $I_C = 0.1$ Adc, $I_B = 0$ )	$V_{(BR)CEO}$	80	—	Vdc
Collector Cutoff Current ( $V_{CB} = 45$ Vdc, $I_E = 0$ ) ( $V_{CB} = 80$ Vdc, $I_E = 0$ )	$I_{CBO}$	— —	— 1.0	mAdc
Emitter Cutoff Current ( $V_{BE} = 5.0$ Vdc, $I_C = 0$ )	$I_{EBO}$	—	1.0	mAdc
DC Current Gain ( $I_C = 0.15$ A, $V_{CE} = 2.0$ V) ( $I_C = 1.0$ A, $V_{CE} = 2.0$ V)	$h_{FE}$	40 15	250 —	—
Collector–Emitter Saturation Voltage* ( $I_C = 1.0$ Adc, $I_B = 0.1$ Adc)	$V_{CE(sat)}$	—	0.8	Vdc
Base–Emitter On Voltage* ( $I_C = 1.0$ Adc, $V_{CE} = 2.0$ Vdc)	$V_{BE(on)}$	—	1.3	Vdc
Current–Gain — Bandwidth Product ( $I_C = 250$ mAdc, $V_{CE} = 10$ Vdc, $f = 1.0$ MHz)	$f_T$	3.0	—	MHz

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



**CASE 77-08  
TO-225AA TYPE**

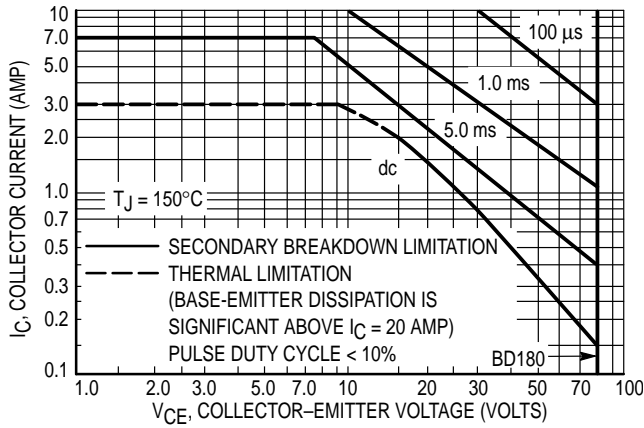


Figure 1. Active Region Safe Operating Area

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.

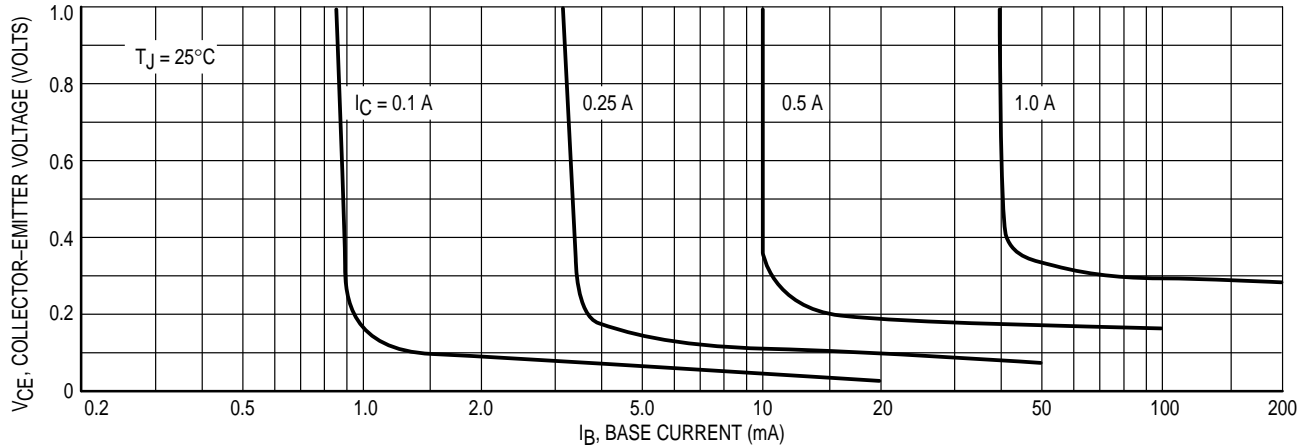


Figure 2. Collector Saturation Region

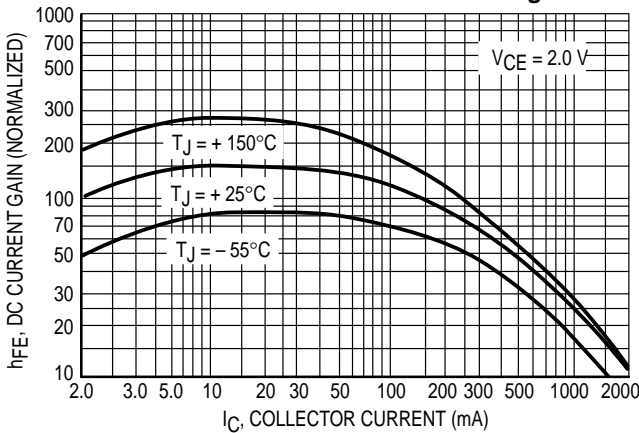


Figure 3. Current Gain

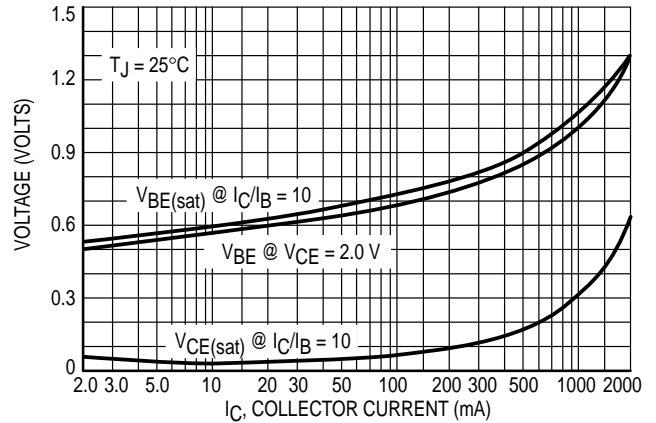


Figure 4. "On" Voltages

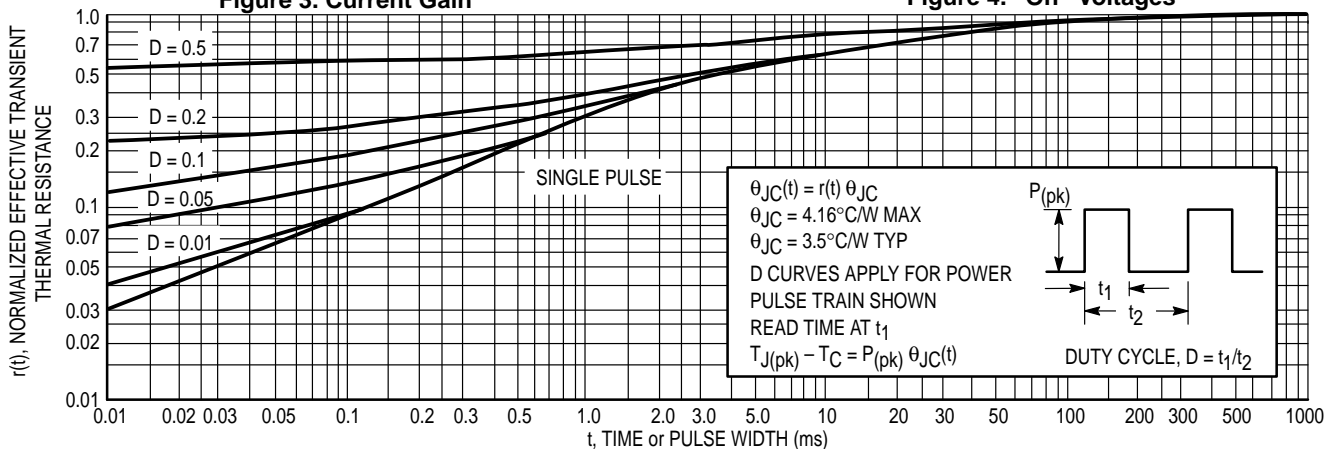
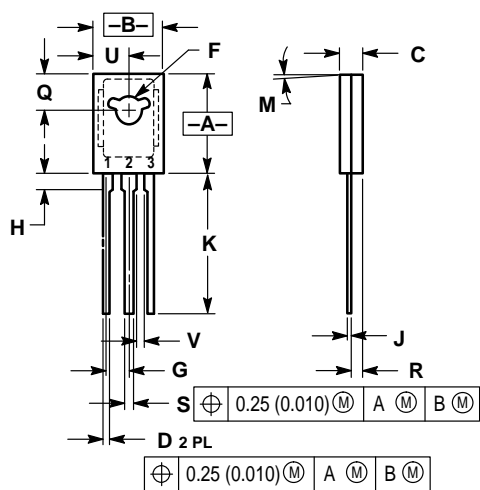


Figure 5. Thermal Response

PACKAGE DIMENSIONS



- NOTES:  
 1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.  
 2. CONTROLLING DIMENSION: INCH.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.425	0.435	10.80	11.04
B	0.295	0.305	7.50	7.74
C	0.095	0.105	2.42	2.66
D	0.020	0.026	0.51	0.66
F	0.115	0.130	2.93	3.30
G	0.094 BSC		2.39 BSC	
H	0.050	0.095	1.27	2.41
J	0.015	0.025	0.39	0.63
K	0.575	0.655	14.61	16.63
M	5° TYP		5° TYP	
Q	0.148	0.158	3.76	4.01
R	0.045	0.055	1.15	1.39
S	0.025	0.035	0.64	0.88
U	0.145	0.155	3.69	3.93
V	0.040	—	1.02	—

- STYLE 1:  
 PIN 1. EMITTER  
 2. COLLECTOR  
 3. BASE

CASE 77-08  
 TO-225AA TYPE  
 ISSUE V

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