

BD181, BD182, BD183

File Number **700**

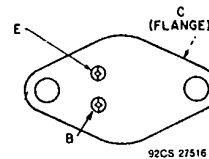
High-Power Silicon N-P-N Transistors

Broadly Applicable Devices
For Commercial Use

Features:

- Maximum safe-area-of-operation curves
- Low saturation voltages
- High dissipation ratings

TERMINAL DESIGNATIONS



JEDEC TO-204AA

RCA-BD181, BD182 and BD183 are silicon n-p-n transistors intended for a wide variety of high-power applications. Typical applications include power-switching circuits, audio amplifiers, solenoid drivers, and series and shunt regulators.

These devices are supplied in the popular JEDEC TO-204AA package.

		BD181	BD182	BD183	
MAXIMUM RATINGS, Absolute-Maximum Values:					
COLLECTOR-TO-BASE VOLTAGE	V_{CBO}	55	70	85	V
COLLECTOR-TO-EMITTER SUSTAINING VOLTAGE:					
With external base-to-emitter resistance (R_{BE}) = 100 Ω	$V_{CER(sus)}$	55	70	85	V
With base open	$V_{CEO(sus)}$	45	60	80	V
EMITTER-TO-BASE VOLTAGE	V_{EBO}	7	7	7	V
CONTINUOUS COLLECTOR CURRENT	I_C	15	15	15	A
CONTINUOUS BASE CURRENT	I_B	7	7	7	A
TRANSISTOR DISSIPATION:	P_T				
At case temperatures up to 25°C		117	117	117	W
At case temperatures above 25°C		← See Fig. 2 →			
TEMPERATURE RANGE:					
Storage and Operating (Junction)		← -65 to +200 →			°C
PIN TEMPERATURE (During Soldering):					
At distances \geq 1/32 in. (0.8 mm) from seating plane for 10 s max.		← 235 →			°C

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ELECTRICAL CHARACTERISTICS, At Case Temperature (T_C) = 25°C Unless Otherwise Specified

CHARACTERISTIC	SYMBOL	TEST CONDITIONS						LIMITS						UNITS	
		VOLTAGE V dc				CUR- RENT A dc		BD181		BD182		BD183			
		V _{CB}	V _{CE}	V _{EB}	V _{BE}	I _C	I _B	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.		
Collector-Cutoff Current: With emitter open and $T_C = 200^\circ\text{C}$	I _{CBO}	45 60 80				0 0 0		2	-	-	-	-	-	-	mA
With base-emitter junction reverse-biased	I _{CEX}		45 60 80		-1.5 -1.5 -1.5			1	-	-	-	-	-	-	
Emitter-Cutoff Current	I _{EBO}			7				5	-	5	-	5	-	5	mA
Collector-to-Emitter Sustaining Voltage: With base open	V _{CEO(sus)}					0.2 ^a	0	45	-	60	-	80	-		V
With external base-to-emitter resistance (R _{BE})=100 Ω	V _{CER(sus)}					0.2 ^a		55	-	70	-	85	-		
DC Forward Current Transfer Ratio	h _{FE}		4 4			4 ^a 3 ^a		- 20	- 70	20 -	70 -	- 20	- 70		
Base-to-Emitter Voltage	V _{BE}		4 4			3 ^a 4 ^a		- -	1.5 -	- -	- 1.5	- -	1.5 -	V	
Collector-to-Emitter Saturation Voltage	V _{CE(sat)}					4 ^a 3 ^a	0.4 ^a 0.3 ^a	- 1	- -	- -	1 -	- -	1 -	V	
Magnitude of Common-Emitter, Small- Signal, Short-Circuit, Forward Current Transfer Ratio (f = 0.4 MHz)	h _{fe}		4			1		2	-	2	-	2	-		
Gain-Bandwidth Product	f _T					1		800	-	800	-	800	-	kHz	
Common-Emitter, Short-Circuit, Small- Signal, Forward Current Transfer Ratio Cutoff Frequency	f _{hfe}		4			0.3		15	-	15	-	15	-	kHz	
Forward-Bias Second Breakdown Collector Current (t ≥ 1 s)	I _{S/b}		30					3.95	-	3.95	-	3.95	-	A	
Thermal Resistance (Junction-to-Case)	R _{θJC}							-	1.5	-	1.5	-	1.5	°C/W	

^a Pulsed: Pulse duration = 300 μs, duty factor = 1.8%.

Pro Electron Power Transistors

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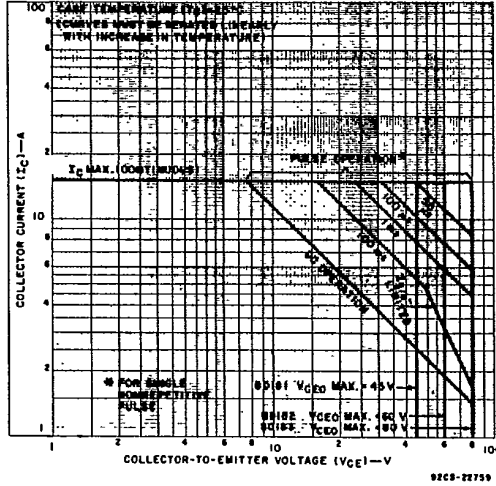


Fig. 1 — Maximum operating areas for all types.

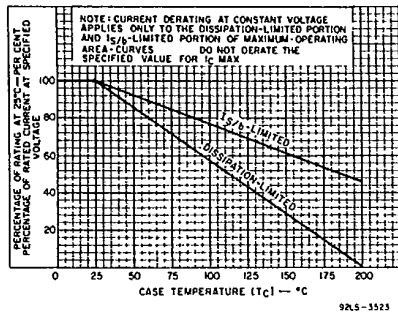


Fig. 2 — Dissipation and I_{Sb} derating of all types.

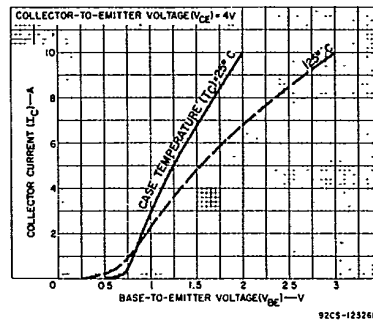


Fig. 3 — Typical transfer characteristics for all types.

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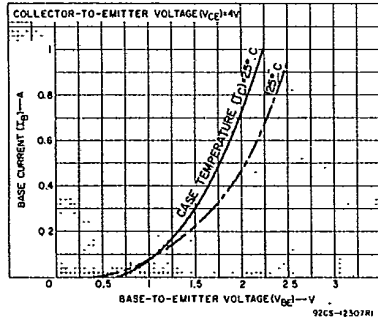


Fig. 4 — Typical input characteristics for BD182.

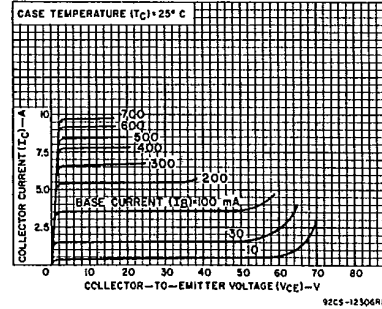


Fig. 5 — Typical output characteristics for BD182.

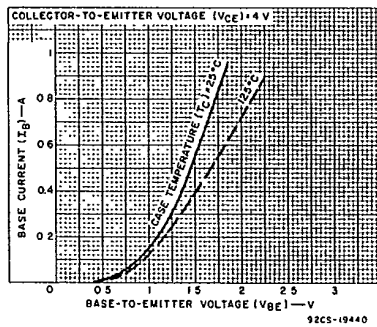


Fig. 6 — Typical input characteristics for BD181 and BD183.

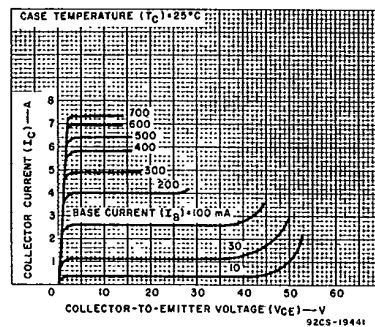


Fig. 7 — Typical output characteristics for BD181 and BD183.

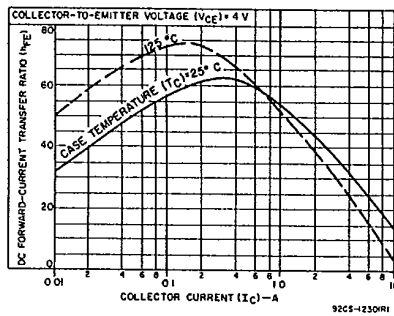


Fig. 8 — Typical dc-beta characteristics for BD182.

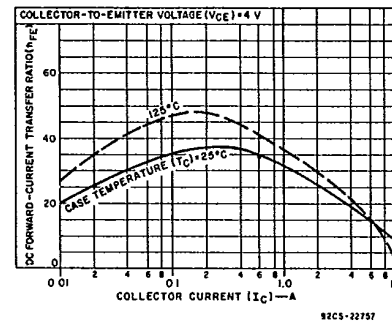


Fig. 9 — Typical dc-beta characteristics for BD181 and BD183.