BD181, BD182, BD183 File Number **700**

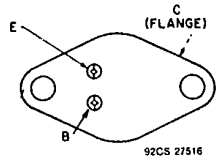
High-Power Silicon N-P-N Transistors

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 ≥ 1/32 in. (0.8 mm) from seating plane for 10 s max.		← 235 →			°C

BD181, BD182, BD183

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

CHARACTERISTIC	SYMBOL	TEST CONDITIONS						LIMITS						UNITS
		VOLTAGE V dc				CURRENT 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°C	I_{CBO}	45					0	–	2	–	–	–	–	mA
		60					0	–	–	–	5	–	–	
		80					0	–	–	–	–	–	5	
With base-emitter junction reverse-biased	I_{CEX}		45		−1.5				1	–	–	–	–	
			60		−1.5			–	–	–	1	–	–	
			80		−1.5			–	–	–	–	–	1	
Emitter-Cutoff Current	I_{EBO}			7				–	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[a]		–	–	20	70	–	–	
			4			3[a]		20	70	–	–	20	70	
Base-to-Emitter Voltage	V_{BE}		4			3[a]		–	1.5	–	–	–	1.5	V
			4			4[a]		–	–	–	1.5	–	–	
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$					4[a]	0.4[a]	–	–	–	1	–	–	
						3[a]	0.3[a]	–	1	–	–	–	1	V
Magnitude of Common-Emitter, Small-Signal, Short-Circuit, Forward Current Transfer Ratio (f = 0.4 MHz)	$\lvert h_{fe} \rvert$		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 ($t \geq 1$ s)	$I_{S/b}$		30					3.95	–	3.95	–	3.95	–	A
Thermal Resistance (Junction-to-Case)	$R_{\theta JC}$							–	1.5	–	1.5	–	1.5	°C/W

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

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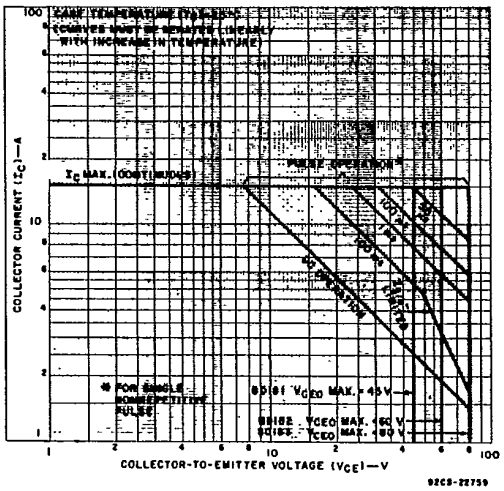

Fig. 1 — Maximum operating areas for all types.

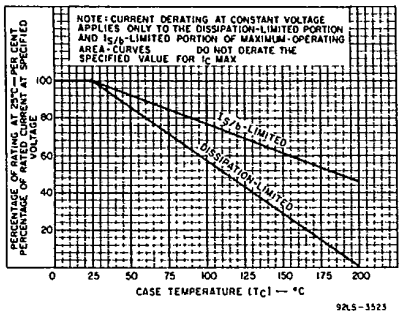

Fig. 2 — Dissipation and $I_{S/b}$ derating of all types.

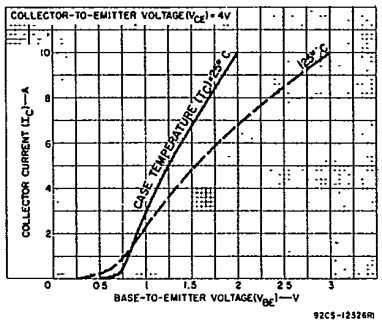

Fig. 3 — Typical transfer characteristics for all types.

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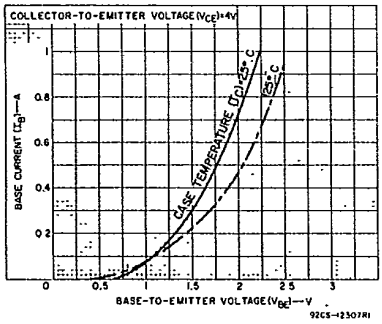

Fig. 4 — Typical input characteristics for BD182.

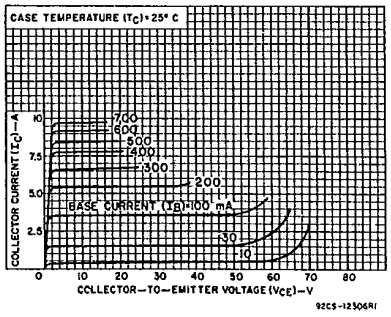

Fig. 5 — Typical output characteristics for BD182.

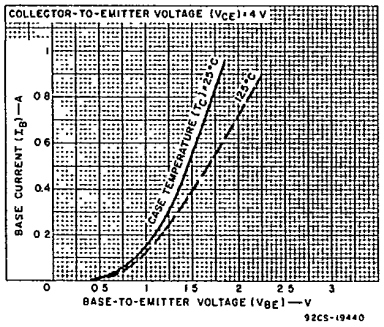

Fig. 6 — Typical input characteristics for BD181 and BD183.

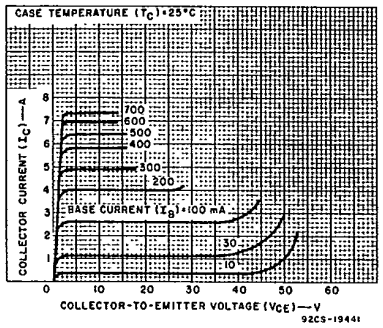

Fig. 7 — Typical output characteristics for BD181 and BD183.

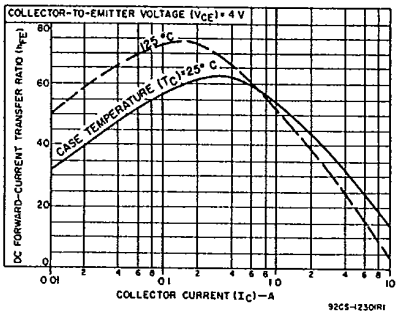

Fig. 8 — Typical dc-beta characteristics for BD182.

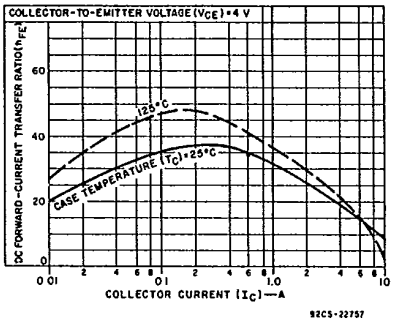

Fig. 9 — Typical dc-beta characteristics for BD181 and BD183.