BD201, BD202, BD203, BD204

File Number **1282**

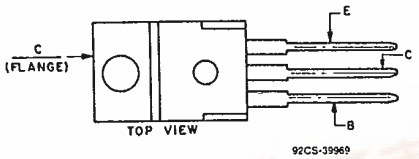
Epitaxial-Base, Silicon N-P-N and P-N-P VERSAWATT Transistors

General-Purpose Medium-Power Types for Switching and Amplifier Applications

Features:

- *Low saturation voltages*
- *Complementary n-p-n and p-n-p types*
- *Maximum safe-area-of-operation curves*

TERMINAL DESIGNATIONS



JEDEC TO-220AB

The RCA-BD201 and BD203 n-p-n transistors and their complementary p-n-p types, BD202 and BD204 respectively, are epitaxial-base transistors intended for a wide variety of medium-power switching and amplifier applications, such as series and shunt regulators, and driver and output stages of high-fidelity amplifier.

All types utilize the JEDEC TO-220AB (VERSAWATT) plastic package.

MAXIMUM RATINGS, *Absolute-Maximum Values:*

	N-P-N P-N-P	BD201 BD202■	BD203 BD204■	
V_{CBO}		60	80	V
$V_{CEO(SUS)}$		45	60	V
V_{EBO}		5		V
I_C		8		A
I_B		3		A
P_T				
$T_C \leq 25°C$		60		W
$T_C > 25°C$		Derate linearly 0.48		W/°C
T_{stg}, T_J		-65 to 150		°C
T_L				
At distances ≥ 1/8 in. (3.17 mm) from case for 10 s max.		235		°C

■For p-n-p devices, voltage and current values are negative.

BD201, BD202, BD203, BD204

T-33-19

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

CHARACTERISTIC	TEST CONDITIONS[■] VOLTAGE V dc			CURRENT A dc		LIMITS BD201 BD202[■]		LIMITS BD203 BD204[■]		UNITS
	V_{CB}	V_{CE}	V_{BE}	I_C	I_B	Min.	Max.	Min.	Max.	
I_{CBO}	40					—	1	—	1	mA
I_{CBO} T_J=150°C	40					—	1	—	1	mA
I_{CEO}		30				—	1	—	1	mA
I_{EBO}			-5			—	5	—	5	mA
$V_{CEO(sus)}$[a]				0.2[b]		45	—	60	—	V
h_{FE}		2		1[b]		30	—	30	—	
		2		2[b]		—	—	30	—	
		2		3[b]		30	—	—	—	
V_{BE}		2		3[b]		—	1.5	—	1.5	V
$V_{CE(sat)}$				3[b]	0.3	—	1	—	1	V
$I_{S/b}$		20		3		0.5	—	0.5	—	s
$\|h_{fe}\|$ (f=1 kHz)		3		0.3		3	—	3	—	
h_{fe} (f=1 kHz)		3		0.3		25	—	25	—	
$R_{\theta JC}$						—	2.08	—	2.08	°C/W
$R_{\theta JA}$						—	70	—	70	°C/W

[a]CAUTION: The sustaining voltage $V_{CEO(sus)}$ *MUST NOT* be measured on a curve tracer.
[b]Pulsed: pulse duration = 300 μs, duty factor = 0.018.
[■]For p-n-p devices, voltage and current values are negative.

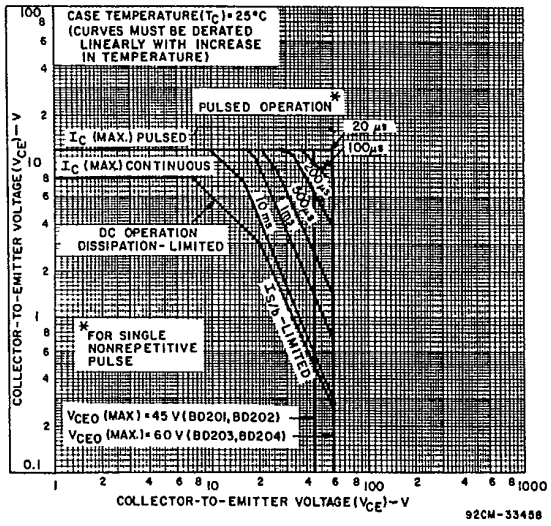


Fig. 1 — Maximum operating areas for all types (T_C = 25°C).

BD201, BD202, BD203, BD204

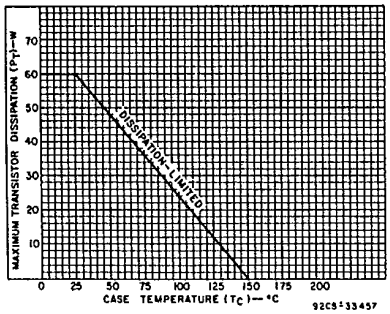


Fig. 2 - Derating curve for all types.

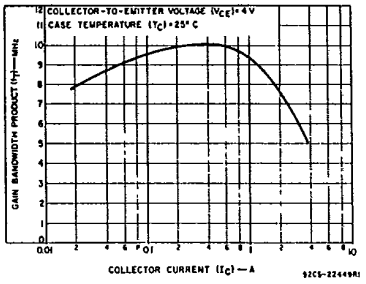


Fig. 3 - Typical gain-bandwidth product vs. collector current for all types.