

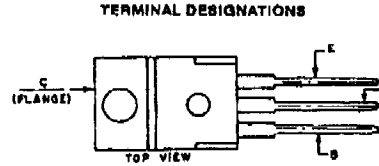
**BD201, BD202, BD203, BD204**

**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



JEDEC TO-220AB

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.

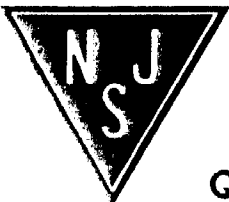
All types utilize the JEDEC TO-220AB (VERSAWATT) plastic package.

**MAXIMUM RATINGS, Absolute-Maximum Values:**

	N-P-N	BD201 BD202■	BD203 BD204■	
$V_{CBO}$ .....				V
$V_{CEO(80s)}$ .....		60	80	V
$V_{EBO}$ .....		45	60	V
$I_C$ .....		5	8	A
$I_E$ .....		8	3	A
$P_T$ .....		60		W
$T_C \leq 25^\circ C$ .....		Derate linearly 0.48		$W/^\circ C$
$T_C > 25^\circ C$ .....		-65 to 150		$^\circ C$
$T_{STP}$ .....				
$T_L$ .....			235	$^\circ C$

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

NJ Semi-Conductors reserves the right to change test conditions, parameter limits and package dimensions without notice. Information furnished by NJ Semi-Conductors is believed to be both accurate and reliable at the time of going to press. However, NJ Semi-Conductors assumes no responsibility for any errors or omissions discovered in its use. NJ Semi-Conductors encourages customers to verify that datasheets are current before placing orders.



## BD201, BD202, BD203, BD204

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

CHARACTERISTIC	TEST CONDITIONS <sup>a</sup>					LIMITS				UNITS
	VOLTAGE			CURRENT		BD201		BD203		
	$V_{CB}$	$V_{CE}$	$V_{BE}$	$I_C$	$I_B$	Min.	Max.	Min.	Max.	
$I_{CBO}$ $T_J = 150^\circ\text{C}$	40					—	1	—	1	mA
$I_{CEO}$	40					—	1	—	1	
$I_{EBO}$			-5			—	5	—	5	mA
$V_{CEO}(\text{sus})^b$				0.2 <sup>b</sup>		45	—	60	—	
$h_{FE}$		2		1 <sup>b</sup>		30	—	30	—	V
		2		2 <sup>b</sup>		—	—	30	—	
		2		3 <sup>b</sup>		30	—	—	—	
$V_{BE}$		2		3 <sup>b</sup>		—	1.5	—	1.5	V
$V_{CE}(\text{sat})$				3 <sup>b</sup>	0.3	—	1	—	1	
$I_S/b$		20		3		0.5	—	0.5	—	$\mu\text{s}$
$ h_{fe} $ ( $f=1\text{ kHz}$ )		3		0.3		3	—	3	—	
$h_{fe}$ ( $f=1\text{ kHz}$ )		3		0.3		25	—	25	—	
$R_{\theta JC}$						—	2.08	—	2.08	$^\circ\text{C/W}$
$R_{\theta JA}$						—	70	—	70	$^\circ\text{C/W}$

<sup>a</sup>CAUTION: The sustaining voltage  $V_{CEO}(\text{sus})$  MUST NOT be measured on a curve tracer.

<sup>b</sup>Pulsed: pulse duration = 300  $\mu\text{s}$ , duty factor = 0.018.

<sup>c</sup>For p-n-p devices, voltage and current values are negative.

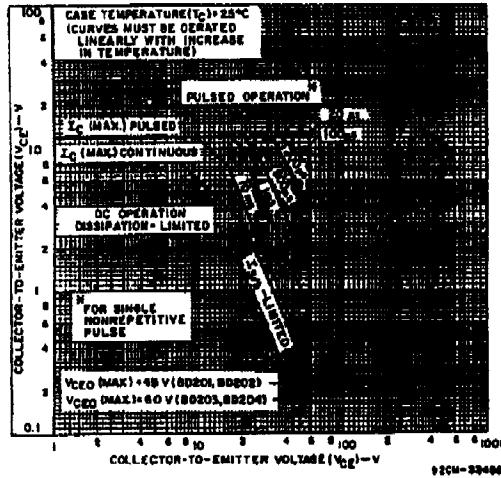


Fig. 1 — Maximum operating areas for all types ( $T_C = 25^\circ\text{C}$ ).