

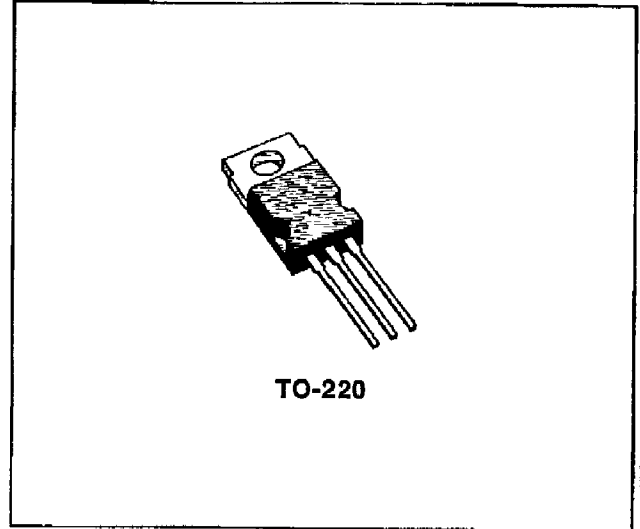
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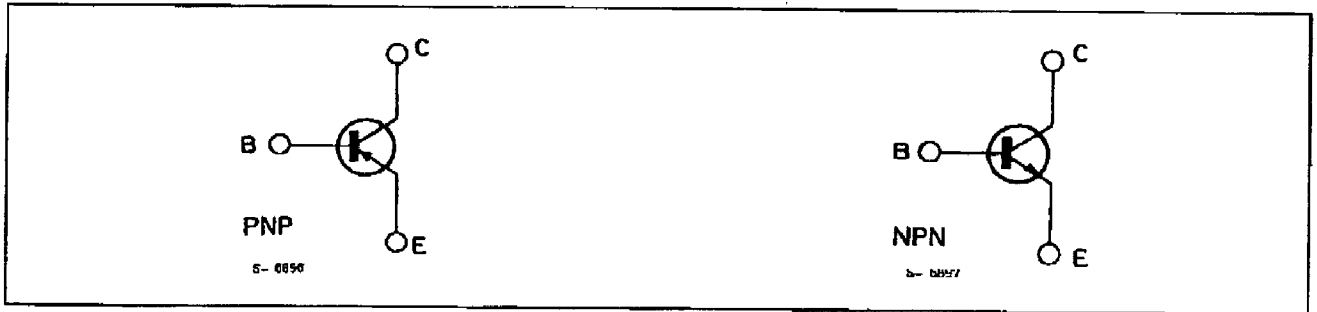
**BD705/706/707/708**  
**BD709/710/711/712**

**DESCRIPTION**

The BD705, BD707, BD709 and BD711 are silicon epitaxial-base NPN power transistors in Jedec TO-220 plastic package intended for use in power linear and switching applications. The complementary PNP types are the BD706, BD708, BD710 and BD712 respectively.



**INTERNAL SCHEMATIC DIAGRAMS**

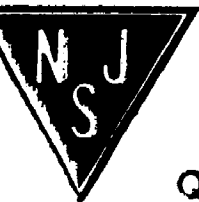


**ABSOLUTE MAXIMUM RATINGS**

Symbol	Parameter	NPN PNP*	Value				Unit
			BD705 BD706	BD707 BD708	BD709 BD710	BD711 BD712	
$V_{CBO}$	Collector-emitter Voltage ( $I_E = 0$ )		45	60	80	100	V
$V_{CES}$	Collector-emitter Voltage ( $V_{BE} = 0$ )		45	60	80	100	V
$V_{CEO}$	Collector-emitter Voltage ( $I_B = 0$ )		45	60	80	100	V
$V_{EBO}$	Emitter-base Voltage ( $I_C = 0$ )		5				V
$I_C$	Collector Current		12				A
$I_B$	Base Current		5				A
$P_{tot}$	Total Power Dissipation at $T_{case} \leq 25^\circ C$		75				W
$T_{stg}$	Storage Temperature		- 65 to 150				$^\circ C$
$T_j$	Junction Temperature		150				$^\circ C$

\* For PNP types voltage and current values are negative.

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**ELECTRICAL CHARACTERISTICS** ( $T_{case} = 25\text{ }^{\circ}\text{C}$  unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit	
$I_{CBO}$	Collector Cutoff Current ( $I_E = 0$ )	for <b>BD705/706</b> $V_{CB} = 45\text{ V}$			100	$\mu\text{A}$	
		for <b>BD707/708</b> $V_{CB} = 60\text{ V}$			100	$\mu\text{A}$	
		for <b>BD709/710</b> $V_{CB} = 80\text{ V}$			100	$\mu\text{A}$	
		for <b>BD711/712</b> $V_{CB} = 100\text{ V}$			100	$\mu\text{A}$	
		$T_{case} = 150\text{ }^{\circ}\text{C}$					
		for <b>BD705/706</b> $V_{CB} = 45\text{ V}$			1	$\text{mA}$	
for <b>BD707/708</b> $V_{CB} = 60\text{ V}$			1	$\text{mA}$			
for <b>BD709/710</b> $V_{CB} = 80\text{ V}$			1	$\text{mA}$			
for <b>BD711/712</b> $V_{CB} = 100\text{ V}$			1	$\text{mA}$			
$I_{CEO}$	Collector Cutoff Current ( $I_B = 0$ )	for <b>BD705/706</b> $V_{OE} = 22\text{ V}$			1	$\text{mA}$	
		for <b>BD707/708</b> $V_{CE} = 30\text{ V}$			1	$\text{mA}$	
		for <b>BD709/710</b> $V_{CE} = 40\text{ V}$			1	$\text{mA}$	
		for <b>BD711/712</b> $V_{CE} = 50\text{ V}$			1	$\text{mA}$	
$I_{EBO}$	Emitter Cutoff Current ( $I_C = 0$ )	$V_{EB} = 5\text{ V}$			1	$\text{mA}$	
$V_{CEO(sus)}^*$	Collector-emitter Sustaining Voltage ( $I_B = 0$ )	$I_C = 100\text{ mA}$	for <b>BD705/706</b>	45		$\text{V}$	
			for <b>BD707/708</b>	60		$\text{V}$	
			for <b>BD709/710</b>	80		$\text{V}$	
			for <b>BD711/712</b>	100		$\text{V}$	
$V_{CE(sat)}^*$	Collector-emitter Saturation Voltage	$I_C = 4\text{ A}$	$I_B = 0.4\text{ A}$		1	$\text{V}$	
$V_{CEK}^*$	Knee Voltage	$I_C = 3\text{ A}$	$I_B = **$		0.4	$\text{V}$	
$V_{BE}^*$	Base-emitter Voltage	$I_C = 4\text{ A}$	$V_{CE} = 4\text{ V}$		1.5	$\text{V}$	
$h_{FE}^*$	DC Current Gain	$I_C = 0.5\text{ A}$	$V_{CE} = 2\text{ V}$	40	120	400	
			$V_{CE} = 2\text{ V}$				
			for <b>BD705/706</b>	30			
		$I_C = 2\text{ A}$	for <b>BD707/708</b>	30			
			for <b>BD709/710</b>	30			
			$V_{CE} = 4\text{ V}$				
		$I_C = 4\text{ A}$	for <b>BD705/706</b>	20	30	150	
			for <b>BD707/708</b>	15		150	
			for <b>BD709/710</b>	15		150	
			for <b>BD711/712</b>	15		150	
$I_C = 10\text{ A}$	$V_{CE} = 4\text{ V}$						
	for <b>BD705/706</b>	5	10				
	for <b>BD707/708</b>	5	10				
	for <b>BD709/710</b>		8				
for <b>BD711/712</b>		8					
$f_T$	Transition Frequency	$I_C = 300\text{ mA}$	$V_{CE} = 3\text{ V}$	3		$\text{MHz}$	

\* Pulsed : pulse duration = 300  $\mu\text{s}$ , duty cycle = 1.5 %.

\*\* Value for which  $I_C = 3.3\text{ A}$  at  $V_{CE} = 2\text{ V}$ .

For PNP types voltage and current values are negative.