

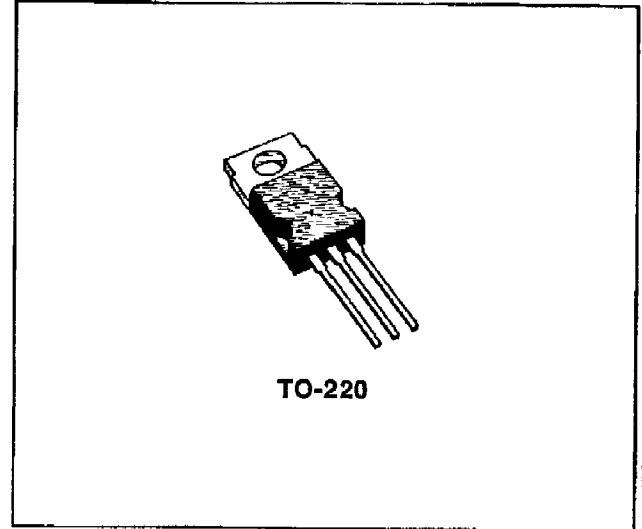
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BD705/706/707/708
BD709/710/711/712

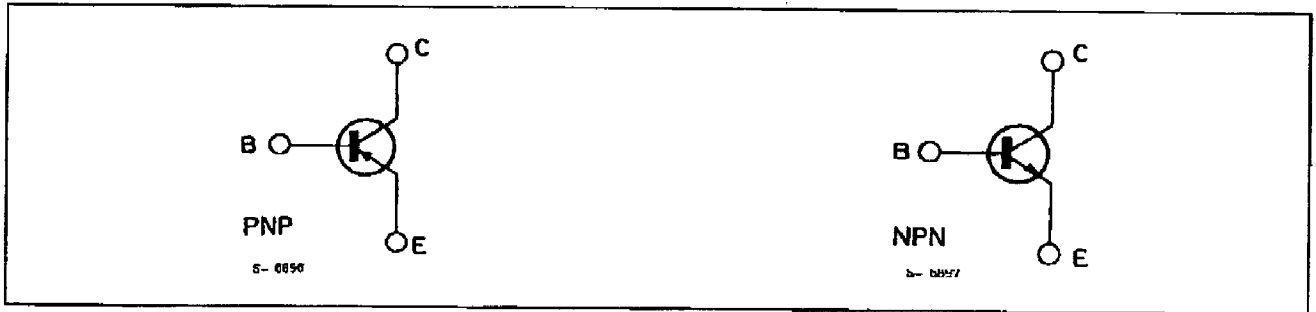
DESCRIPTION

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.



TO-220

INTERNAL SCHEMATIC DIAGRAMS

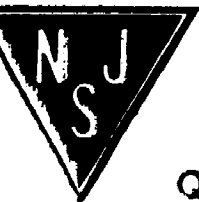


ABSOLUTE MAXIMUM RATINGS

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 BD705/706 $V_{CB} = 45\text{ V}$			100	μA	
		for BD707/708 $V_{CB} = 60\text{ V}$			100	μA	
		for BD709/710 $V_{CB} = 80\text{ V}$			100	μA	
		for BD711/712 $V_{CB} = 100\text{ V}$			100	μA	
		$T_{case} = 150\text{ }^{\circ}\text{C}$					
		for BD705/706 $V_{CB} = 45\text{ V}$			1	mA	
		for BD707/708 $V_{CB} = 60\text{ V}$			1	mA	
		for BD709/710 $V_{CB} = 80\text{ V}$			1	mA	
for BD711/712 $V_{CB} = 100\text{ V}$			1	mA			
I_{CEO}	Collector Cutoff Current ($I_B = 0$)	for BD705/706 $V_{CE} = 22\text{ V}$			1	mA	
		for BD707/708 $V_{CE} = 30\text{ V}$			1	mA	
		for BD709/710 $V_{CE} = 40\text{ V}$			1	mA	
		for BD711/712 $V_{CE} = 50\text{ V}$			1	mA	
I_{EBO}	Emitter Cutoff Current ($I_C = 0$)	$V_{EB} = 5\text{ V}$			1	mA	
$V_{CEO(sus)}^*$	Collector-emitter Sustaining Voltage ($I_B = 0$)	$I_C = 100\text{ mA}$	for BD705/706	45		V	
			for BD707/708	60		V	
			for BD709/710	80		V	
			for BD711/712	100		V	
$V_{CE(sat)}^*$	Collector-emitter Saturation Voltage	$I_C = 4\text{ A}$	$I_B = 0.4\text{ A}$		1	V	
V_{CEK}^*	Knee Voltage	$I_C = 3\text{ A}$	$I_B = **$		0.4	V	
V_{BE}^*	Base-emitter Voltage	$I_C = 4\text{ A}$	$V_{CE} = 4\text{ V}$		1.5	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 BD705/706	30			
		$I_C = 2\text{ A}$	for BD707/708	30			
			for BD709/710	30			
			$V_{CE} = 4\text{ V}$				
		$I_C = 4\text{ A}$	for BD705/706	20	30	150	
			for BD707/708	15		150	
			for BD709/710	15		150	
			for BD711/712	15		150	
$I_C = 10\text{ A}$	$V_{CE} = 4\text{ V}$						
	for BD705/706	5	10				
	for BD707/708	5	10				
	for BD709/710		8				
for BD711/712		8					
f_T	Transition Frequency	$I_C = 300\text{ mA}$	$V_{CE} = 3\text{ V}$	3		MHz	

* Pulsed : pulse duration = 300 μs , 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.