SGS-THOMSON MICROELECTRONICS

BD707/709/711
BD708/710/712

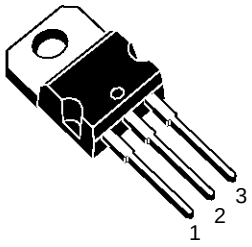
COMPLEMENTARY SILICON POWER TRANSISTORS

- SGS-THOMSON PREFERRED SALESTYPES

DESCRIPTION

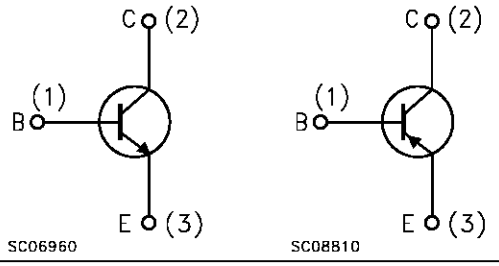
The BD707, BD709, and BD711 are silicon epitaxial-base NPN power transistors in Jedec TO-220 plastic package, intented for use in power linear and switching applications.

The complementary PNP types are BD708, BD710, and BD712 respectively.



TO-220

INTERNAL SCHEMATIC DIAGRAM



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter		Value			Unit
		NPN	BD707	BD709	BD711	
		PNP	BD708	BD710	BD712	
V_{CBO}	Collector-Base Voltage (I_E = 0)		60	80	100	V
V_{CES}	Collector-Emitter Voltage (V_{BE} = 0)		60	80	100	V
V_{CEO}	Collector-Emitter Voltage (I_B = 0)		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 Dissipation at $T_c \leq 25\ ^oC$		75			W
T_{stg}	Storage Temperature		-65 to 150			^oC
T_j	Max. Operating Junction Temperature		150			^oC

For PNP types voltage and current values are negative.

THERMAL DATA

$R_{thj\text{-}case}$	Thermal Resistance Junction-case Max	1.67	$^oC/W$
$R_{thj\text{-}case}$	Thermal Resistance Junction-ambient Max	70	$^oC/W$

ELECTRICAL CHARACTERISTICS (T_{case} = 25 ^oC unless otherwise specified)

Symbol	Parameter	Test Conditions		Min.	Typ.	Max.	Unit
I_{CBO}	Collector Cut-off Current (I_E = 0)	for **BD707/708**	V_{CB} = 60 V			100	µA
		for **BD709/710**	V_{CB} = 80 V			100	µA
		for **BD711/712**	V_{CB} = 100 V			100	µA
		T_{case} = 150 ^oC					
		for **BD707/708**	V_{CB} = 60 V			1	mA
		for **BD709/710**	V_{CB} = 80 V			1	mA
		for **BD711/712**	V_{CB} = 100 V			1	mA
I_{CEO}	Collector Cut-off Current (I_B = 0)	for **BD707/708**	V_{CB} = 30 V			100	mA
		for **BD709/710**	V_{CB} = 40 V			100	mA
		for **BD711/712**	V_{CB} = 50 V			100	mA
I_{EBO}	Emitter Cut-off Current (I_C = 0)	V_{EB} = 5 V				1	mA
$V_{CEO(sus)}$*	Collector-Emitter Sustaining Voltage (I_B = 0)	I_C = 100 mA	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 A	I_B = 0.4 A			1	V
V_{CEK}*	Knee Voltage	I_C = 3 A	I_B = **			0.4	V
V_{BE}*	Base-Emitter Voltage	I_C = 4 A	V_{CE} = 4 V			1.5	V
h_{FE}*	DC Current Gain	I_C = 0.5 A	V_{CE} = 2 V	40	120	400	
		I_C = 2 A	V_{CE} = 2 V				
			for **BD707/708**	30			
			for **BD709/710**	30			
		I_C = 4 A	V_{CE} = 4 V				
			for **BD707/708**	15		150	
			for **BD709/710**	15		150	
			for **BD711/712**	15		150	
		I_C = 10 A	V_{CE} = 4 V				
			for **BD707/708**	5	10		
			for **BD709/710**		8		
			for **BD711/712**		8		
f_T	Transition frequency	I_C = 300 mA	V_{CE} = 3 V	3			MHz

∗ Pulsed: Pulse duration = 300 µs, duty cycle 1.5 %
** Value for which I_C = 3.3 A at V_{CE} = 2V.
For PNP types voltage and current values are negative.

SOT-32 MECHANICAL DATA

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	7.4		7.8	0.291		0.307
B	10.5		10.8	0.413		0.445
b	0.7		0.9	0.028		0.035
b1	0.49		0.75	0.019		0.030
C	2.4		2.7	0.04		0.106
c1		1.2			0.047	
D		15.7			0.618	
e		2.2			0.087	
e3		4.4			0.173	
F		3.8			0.150	
G	3		3.2	0.118		0.126
H			2.54			0.100