SGS-THOMSON MICROELECTRONICS

BD909/911
BD910/912

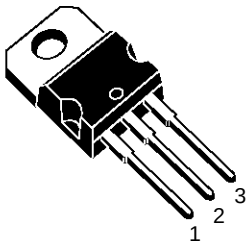
COMPLEMENTARY SILICON POWER TRANSISTORS

- SGS-THOMSON PREFERRED SALESTYPES

DESCRIPTION

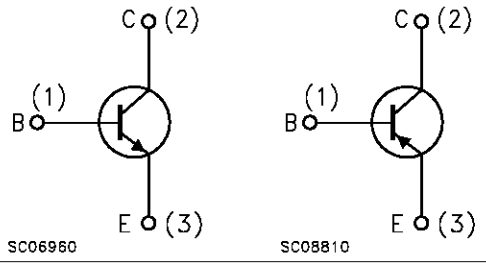
The BD909 and BD911 are silicon epitaxial-base NPN power transistors in Jedec TO-220 plastic package, intented for use in power linear and switching applications.

The complementary PNP types are BD910 and BD912 respectively.



TO-220

INTERNAL SCHEMATIC DIAGRAM



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter		Value		Unit
		NPN	BD909	BD911	
		PNP	BD910	BD912	
V_{CBO}	Collector-Base Voltage (I_E = 0)		80	100	V
V_{CEO}	Collector-Emitter Voltage (I_B = 0)		80	100	V
V_{EBO}	Emitter-Base Voltage (I_C = 0)		5		V
I_E,I_C	Collector Current		15		A
I_B	Base Current		5		A
P_{tot}	Total Dissipation at $T_c \leq 25\ ^oC$		90		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

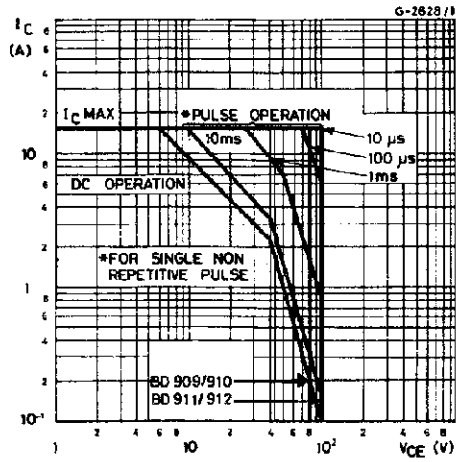
$R_{thj\text{-}case}$	Thermal Resistance Junction-case	Max	1.4	$^oC/W$

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

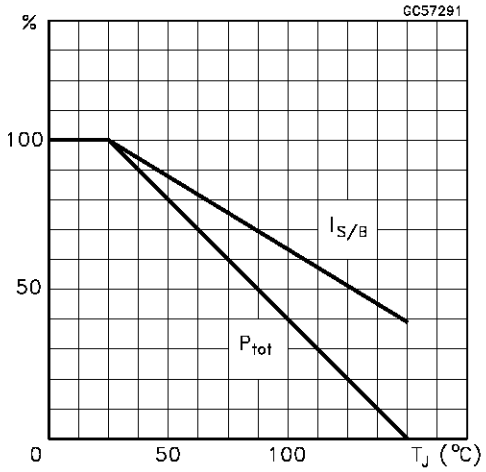
Symbol	Parameter	Test Conditions		Min.	Typ.	Max.	Unit
I_{CBO}	Collector Cut-off Current (I_E = 0)	for **BD909/910**	V_{CB} = 80 V			500	µA
		for **BD911/912**	V_{CB} = 100 V			500	µA
		T_{case} = 150 ^oC					
		for **BD909/910**	V_{CB} = 80 V			5	mA
		for **BD911/912**	V_{CB} = 100 V			5	mA
I_{CEO}	Collector Cut-off Current (I_B = 0)	for **BD909/910**	V_{CB} = 40 V			1	mA
		for **BD911/912**	V_{CB} = 50 V			1	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 **BD909/910**	80			V
			for **BD911/912**	100			V
$V_{CE(sat)}$*	Collector-Emitter Saturation Voltage	I_C = 5 A	I_B = 0.5 A			1	V
		I_C = 10 A	I_B = 2.5 A			3	V
$V_{BE(sat)}$*	Base-Emitter Saturation Voltage	I_C = 10 A	I_B = 2.5 A			2.5	V
V_{BE}*	Base-Emitter Voltage	I_C = 5 A	V_{CE} = 4 V			1.5	V
h_{FE}*	DC Current Gain	I_C = 0.5 A	V_{CE} = 4 V	40		250	
		I_C = 5 A	V_{CE} = 4 V	15		150	
		I_C = 10 A	V_{CE} = 4 V	5			
f_T	Transition frequency	I_C = 0.5 A	V_{CE} = 4 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.

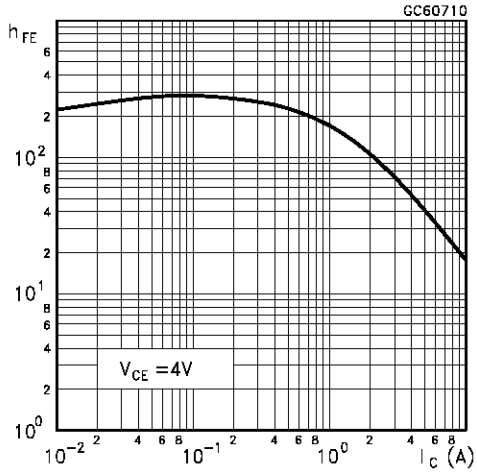
Safe Operating Area



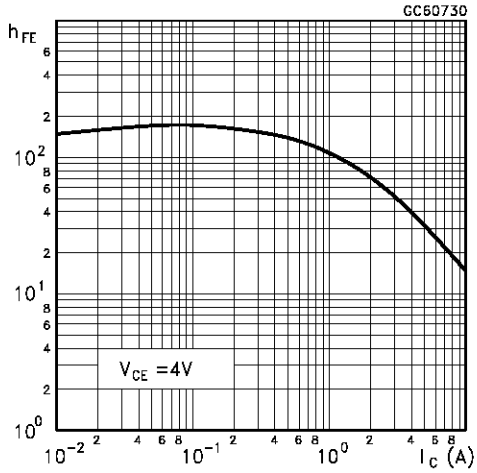
Derating Curves



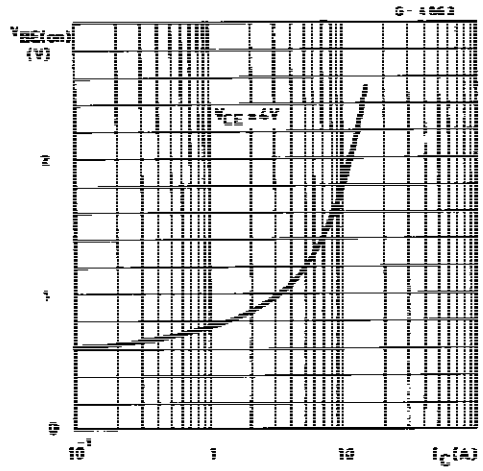
DC Current Gain (NPN type)



DC Current Gain (PNP type)



DC Transconductance (NPN type)



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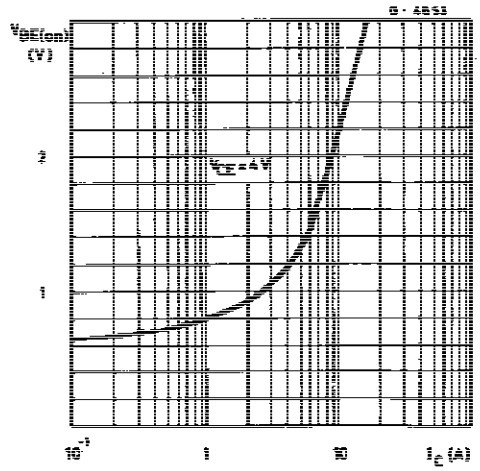
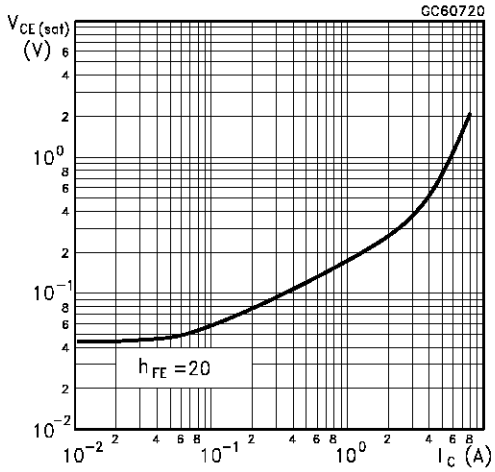


Collector-Emitter Saturation Voltage (NPN type)



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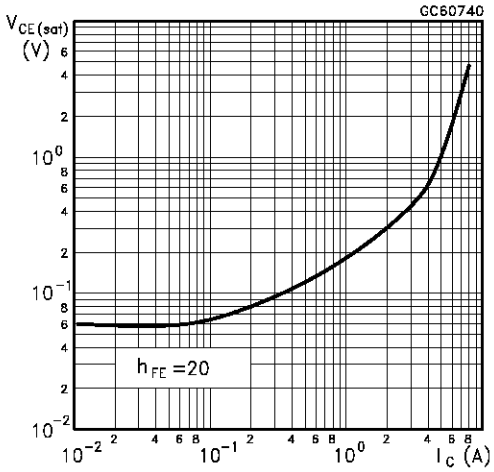
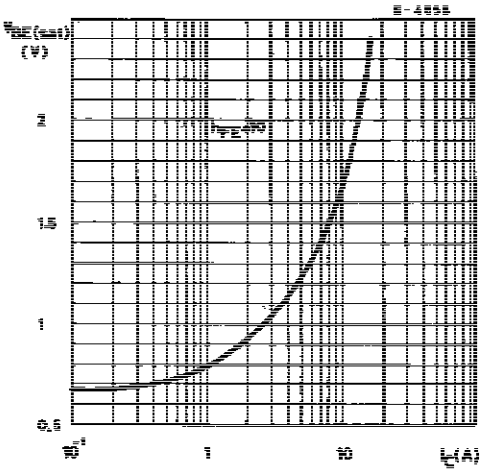


Base-Emitter Saturation Voltage (NPN type)



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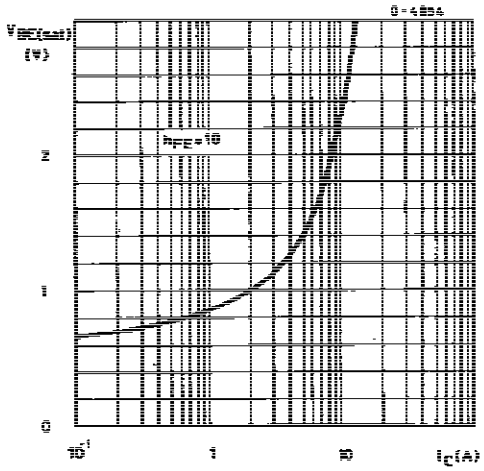
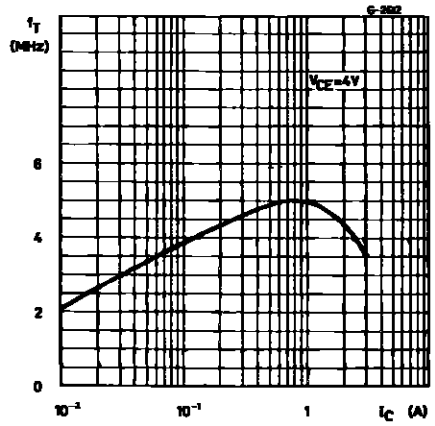


Transition Frequency (NPN type)



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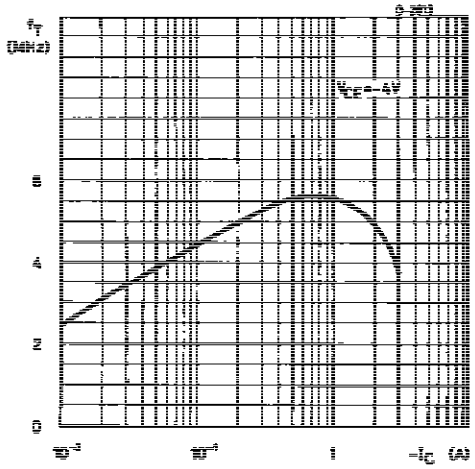
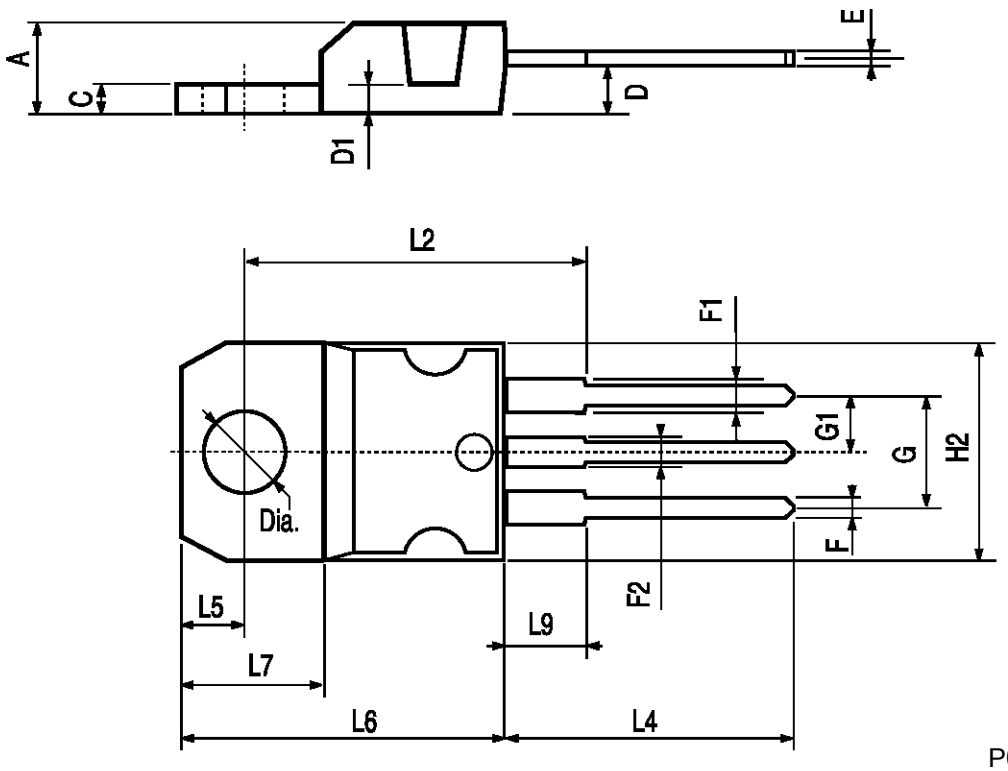


TO-220 MECHANICAL DATA

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	4.40		4.60	0.173		0.181
C	1.23		1.32	0.048		0.051
D	2.40		2.72	0.094		0.107
D1		1.27			0.050	
E	0.49		0.70	0.019		0.027
F	0.61		0.88	0.024		0.034
F1	1.14		1.70	0.044		0.067
F2	1.14		1.70	0.044		0.067
G	4.95		5.15	0.194		0.203
G1	2.4		2.7	0.094		0.106
H2	10.0		10.40	0.393		0.409
L2		16.4			0.645	
L4	13.0		14.0	0.511		0.551
L5	2.65		2.95	0.104		0.116
L6	15.25		15.75	0.600		0.620
L7	6.2		6.6	0.244		0.260
L9	3.5		3.93	0.137		0.154
DIA.	3.75		3.85	0.147		0.151



P011C