SGS-THOMSON MICROELECTRONICS

BD235/BD236 BD237/BD238

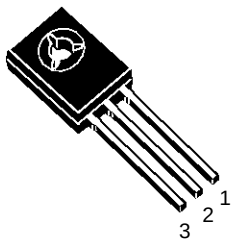
COMPLEMENTARY SILICON POWER TRANSISTORS

- SGS-THOMSON PREFERRED SALESTYPES

DESCRIPTION

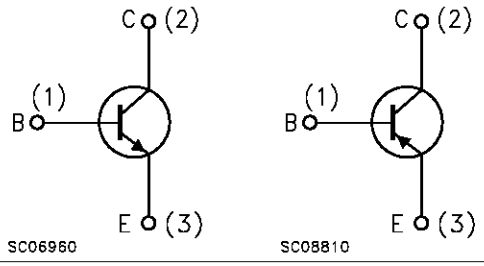
The BD235 and BD237 are silicon epitaxial-base NPN power transistors in Jedec SOT-32 plastic package inteded for use in medium power linear and switching applications.

The complementary PNP types are BD236 and BD238 respectively.



SOT-32

INTERNAL SCHEMATIC DIAGRAM



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter		Value		Unit
		NPN	BD235	BD237	
		PNP	BD236	BD238	
V_{CBO}	Collector-Base Voltage (I_E = 0)		60	100	V
V_{CER}	Collector-Base Voltage (R_{BE} = 1KΩ)		60	100	V
V_{CEO}	Collector-Emitter Voltage (I_B = 0)		60	80	V
V_{EBO}	Emitter-Base Voltage (I_C = 0)		5		V
I_C	Collector Current		2		A
I_{CM}	Collector Peak Current		6		A
P_{tot}	Total Dissipation at T_c = 25 °C		25		W
T_{stg}	Storage Temperature		-65 to 150		°C
T_j	Max. Operating Junction Temperature		150		°C

For PNP types voltage and current values are negative.

THERMAL DATA

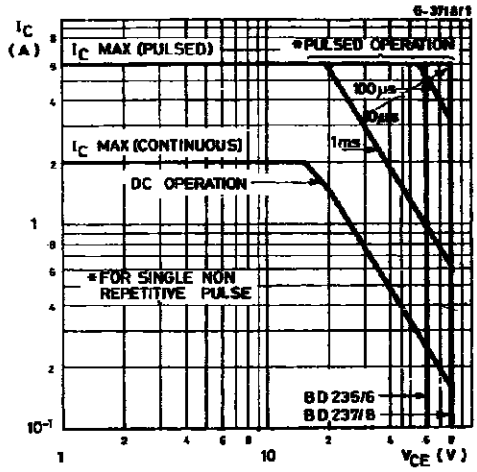
$R_{thj\text{-}case}$	Thermal Resistance Junction-case	Max	5	$^oC/W$

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

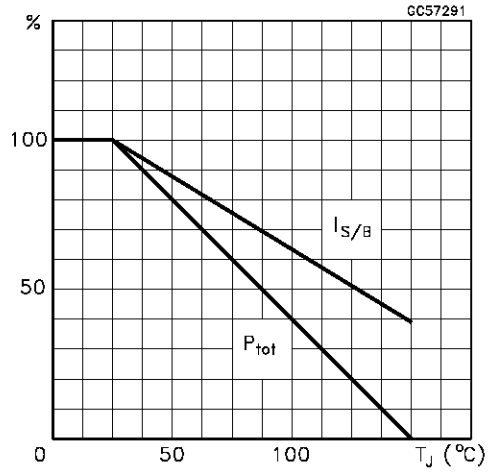
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_{CBO}	Collector Cut-off Current (I_E = 0)	V_{CE} = rated V_{CEO} V_{CE} = rated V_{CEO} T_c = 150 ^oC			0.1 2	mA mA
I_{EBO}	Emitter Cut-off Current (I_C = 0)	V_{EB} = 5 V			1	mA
$V_{CEO(sus)}$*	Collector-Emitter Sustaining Voltage	I_C = 100 mA for **BD235/BD236** for **BD237/BD238**	 60 80			 V V
$V_{CE(sat)}$*	Collector-Emitter Saturation Voltage	I_C = 1 A I_B = 0.1 A			0.6	V
V_{BE}*	Base-Emitter Voltage	I_C = 1 A V_{CE} = 2 V			1.3	V
h_{FE}*	DC Current Gain	I_C = 150 mA V_{CE} = 2 V I_C = 1 A V_{CE} = 2 V	40 25			
f_T	Transition frequency	I_C = 250 mA V_{CE} = 10 V	3			MHz
h_{FE1}/h_{FE2}*	Matched Pairs	I_C = 150 mA V_{CE} = 2 V		1.6		

* Pulsed: Pulse duration = 300 µs, duty cycle 1.5 %

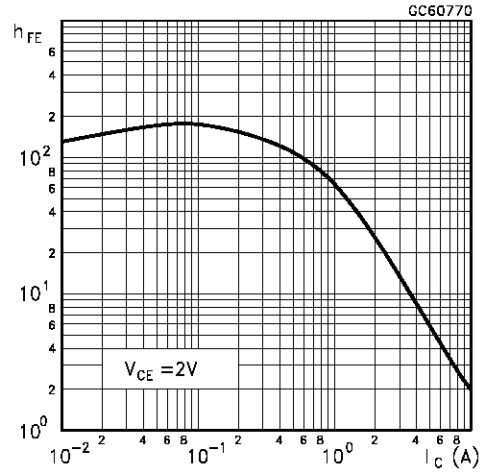
Safe Operating Area



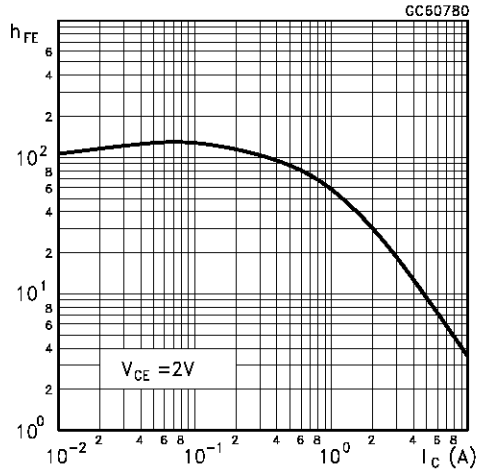
Derating Curves



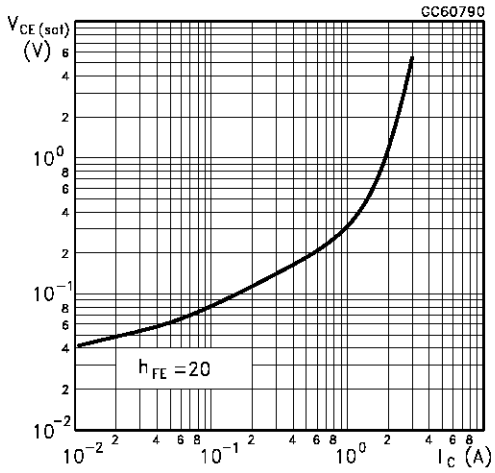
DC Current Gain (NPN type)



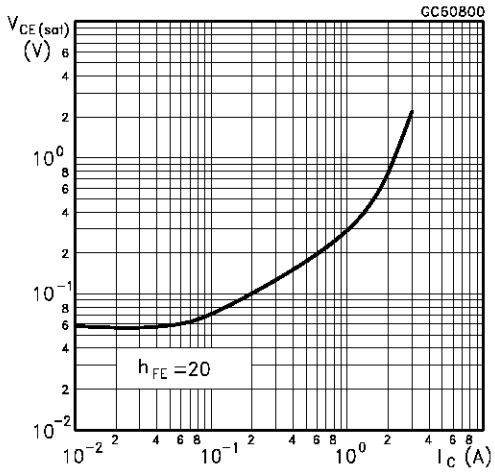
DC Current Gain (PNP type)



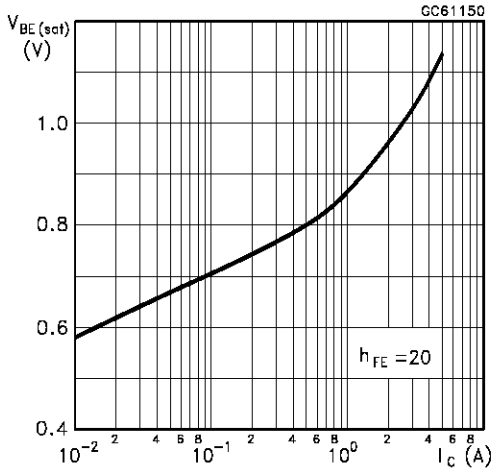
Collector-Emitter Saturation Voltage (NPN type)



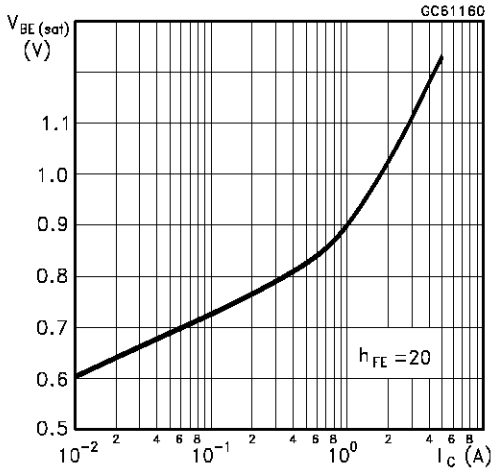
Collector-Emitter Saturation Voltage (PNP type)



Base-Emitter Saturation Voltage (NPN type)



Collector-Base Capacitance (PNP type)



SOT-32 (TO-126) 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	0.040		0.106
c1	1.0		1.3	0.039		0.050
D	15.4		16.0	0.606		0.629
e		2.2			0.087	
e3	4.15		4.65	0.163		0.183
F		3.8			0.150	
G	3		3.2	0.118		0.126
H			2.54			0.100
H2		2.15			0.084