



# BD235 BD236 BD237 BD238

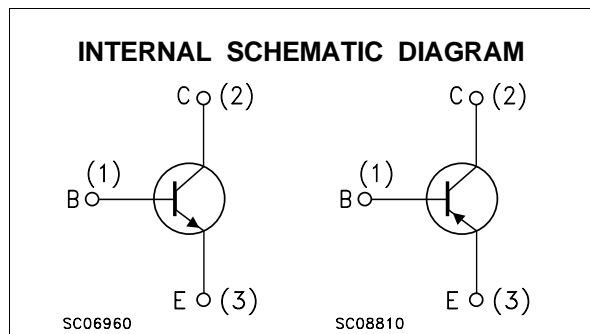
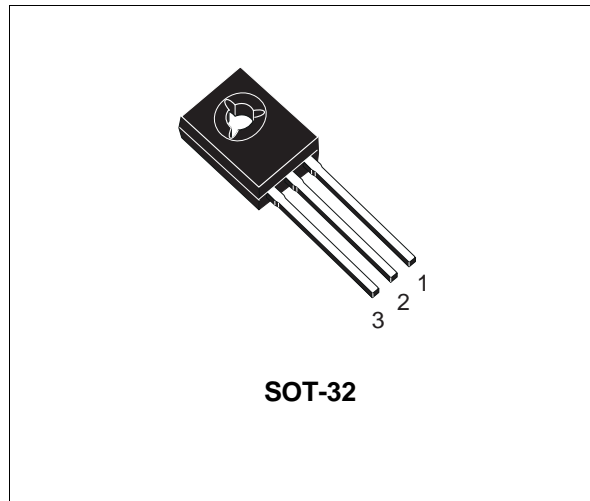
## COMPLEMENTARY SILICON POWER TRANSISTORS

- STMicroelectronics PREFERRED SALESTYPES

### DESCRIPTION

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

The complementary PNP types are BD236 and BD238 respectively.



### 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 ( $R_{BE} = 1K\Omega$ )		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 ( $t_p < 5$ ms)		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.

# BD235 BD236 BD237 BD238

## THERMAL DATA

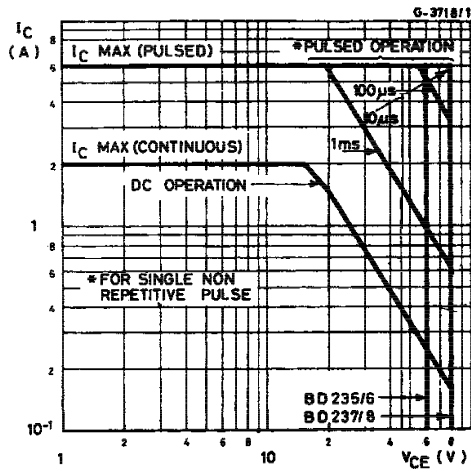
R <sub>thj-case</sub>	Thermal Resistance Junction-case	Max	5	°C/W
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## ELECTRICAL CHARACTERISTICS (T<sub>case</sub> = 25 °C unless otherwise specified)

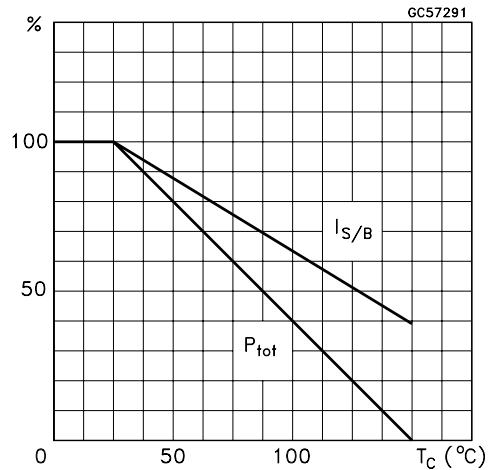
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I <sub>CBO</sub>	Collector Cut-off Current (I <sub>E</sub> = 0)	V <sub>CE</sub> = rated V <sub>CEO</sub> V <sub>CE</sub> = rated V <sub>CEO</sub> T <sub>C</sub> = 150 °C			0.1 2	mA mA
I <sub>EBO</sub>	Emitter Cut-off Current (I <sub>C</sub> = 0)	V <sub>EB</sub> = 5 V			1	mA
V <sub>CEO(sus)*</sub>	Collector-Emitter Sustaining Voltage (I <sub>B</sub> = 0)	I <sub>C</sub> = 100 mA for <b>BD235 / BD236</b> for <b>BD237 / BD238</b>	60 80			V V
V <sub>CE(sat)*</sub>	Collector-Emitter Saturation Voltage	I <sub>C</sub> = 1 A I <sub>B</sub> = 0.1 A			0.6	V
V <sub>BE*</sub>	Base-Emitter Voltage	I <sub>C</sub> = 1 A V <sub>CE</sub> = 2 V			1.3	V
h <sub>FE*</sub>	DC Current Gain	I <sub>C</sub> = 150 mA V <sub>CE</sub> = 2 V I <sub>C</sub> = 1 A V <sub>CE</sub> = 2 V	40 25			
f <sub>T</sub>	Transition frequency	I <sub>C</sub> = 250 mA V <sub>CE</sub> = 10 V	3			MHz
h <sub>FE1</sub> /h <sub>FE2</sub> *	Matched Pairs	I <sub>C</sub> = 150 mA V <sub>CE</sub> = 2 V		1.6		

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

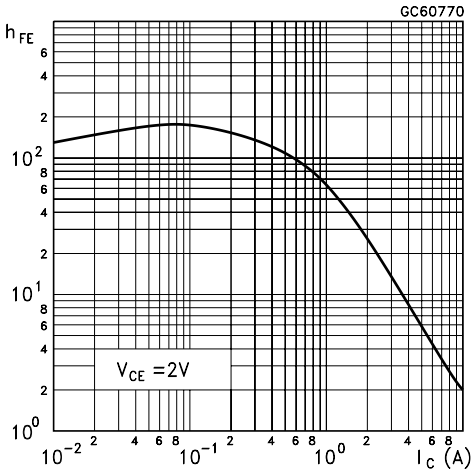
## Safe Operating Area



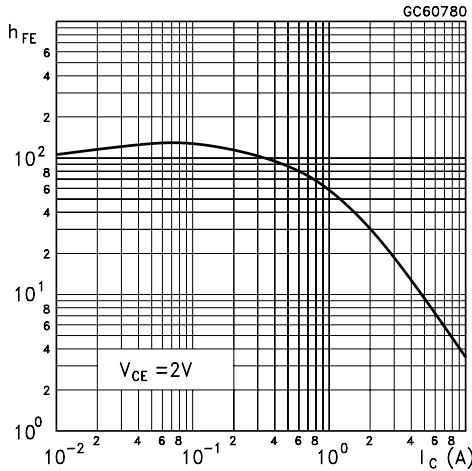
## Derating Curve



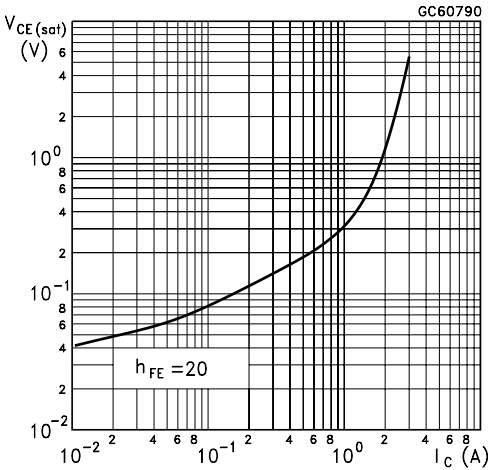
DC Current Gain (NPN type)



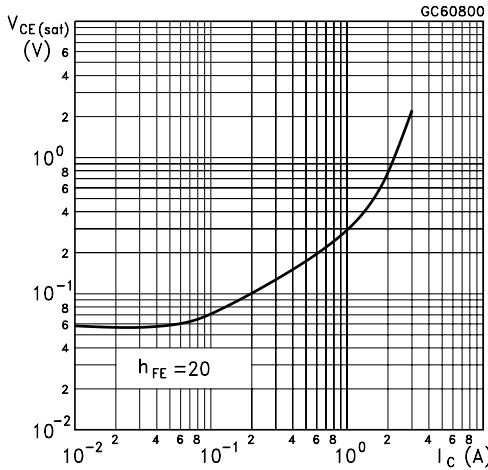
DC Current Gain (PNP type)



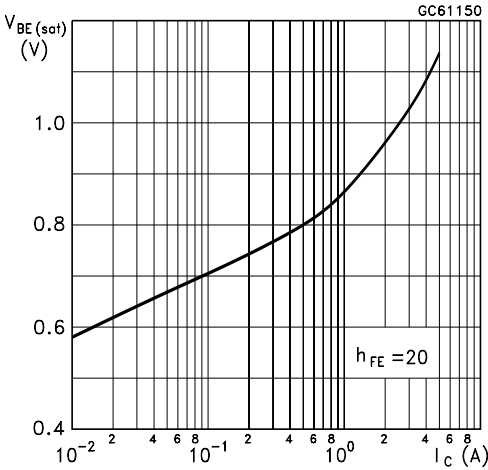
Collector-Emitter Saturation Voltage (NPN type)



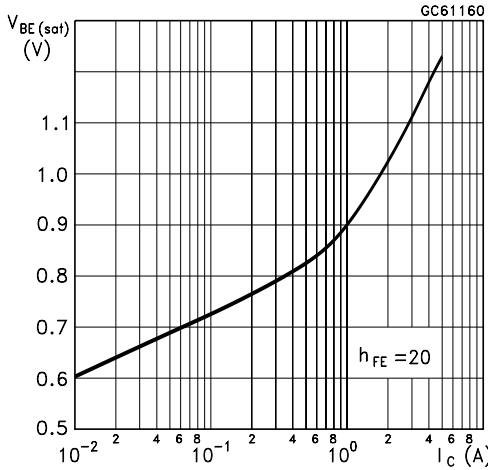
Collector-Emitter Saturation Voltage (PNP type)



Base-Emitter Saturation Voltage (NPN type)

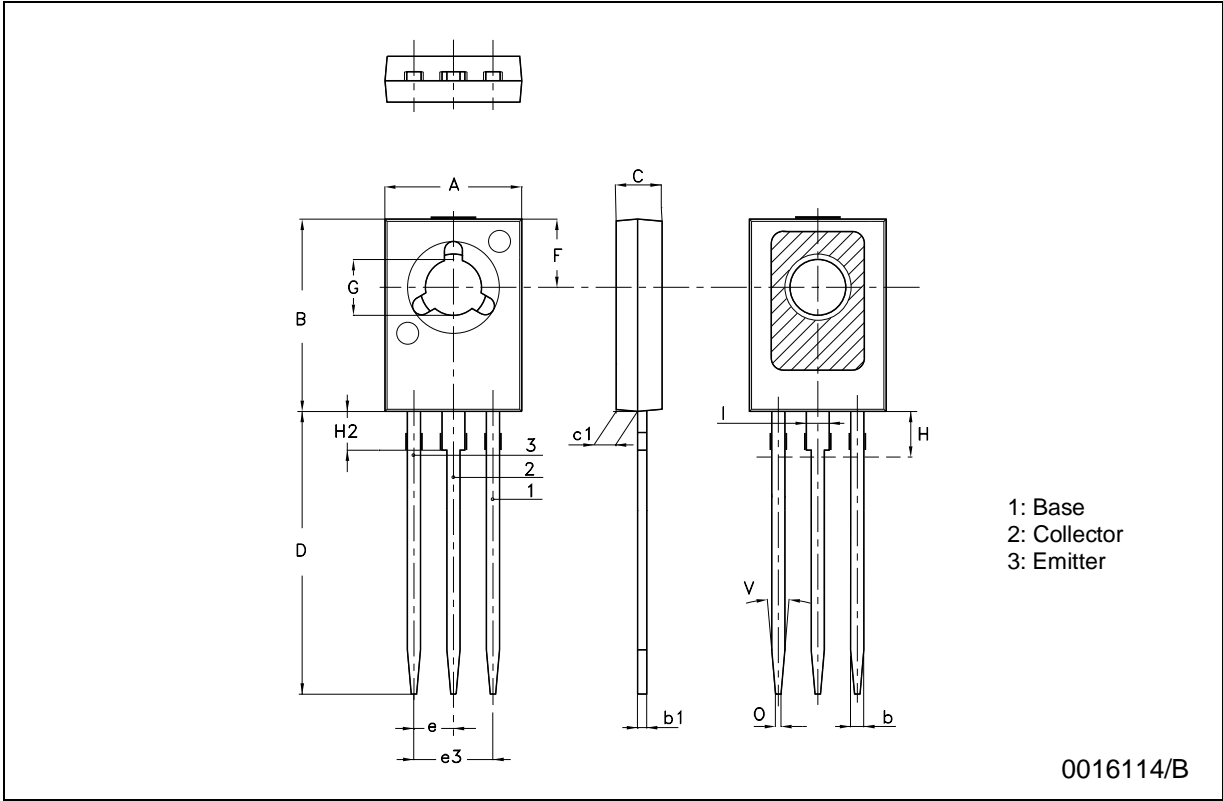


Collector-Base Capacitance (PNP type)



**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		0.425
b	0.7		0.9	0.028		0.035
b1	0.40		0.65	0.015		0.025
C	2.4		2.7	0.094		0.106
c1	1.0		1.3	0.039		0.051
D	15.4		16.0	0.606		0.630
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
H2		2.15			0.084	
I		1.27			0.05	
O		0.3			0.011	
V		10°			10°	



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