



BD235 BD236 BD237 BD238

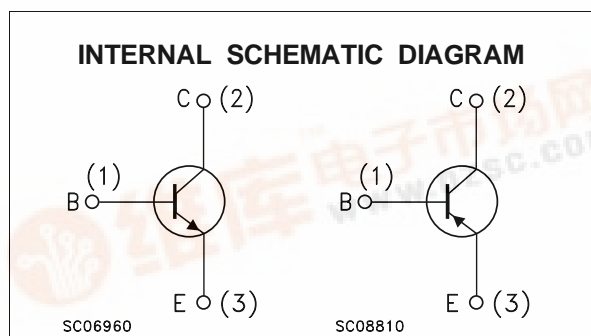
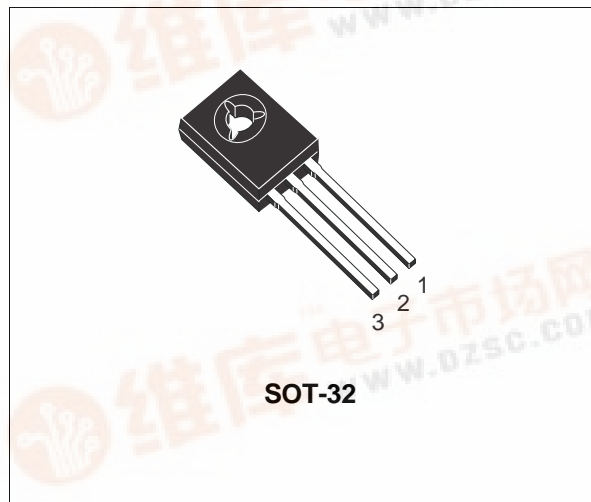
COMPLEMENTARY SILICON POWER TRANSISTORS

- 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	PNP	
V_{CBO}	Collector-Base Voltage ($I_E = 0$)	BD235 60	BD237 100	V
V_{CER}	Collector-Base Voltage ($R_{BE} = 1K\Omega$)	BD235 60	BD237 100	V
V_{CEO}	Collector-Emitter Voltage ($I_B = 0$)	BD235 60	BD237 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

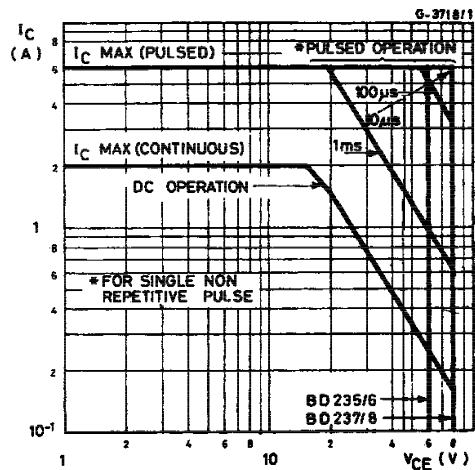
$R_{thj-case}$	Thermal Resistance Junction-case	Max	5	$^{\circ}\text{C}/\text{W}$
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ELECTRICAL CHARACTERISTICS ($T_{case} = 25\text{ }^{\circ}\text{C}$ unless otherwise specified)

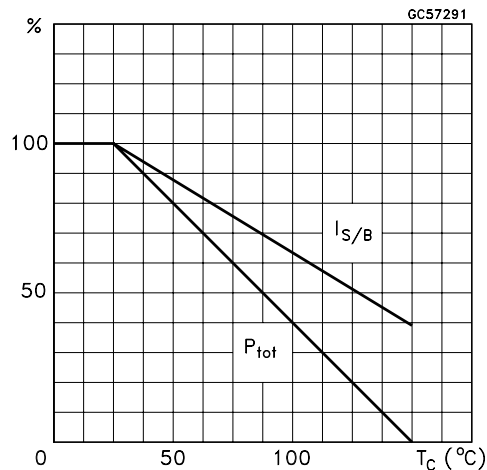
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_{CBO}	Collector Cut-off Current ($I_E = 0$)	$V_{CE} = \text{rated } V_{CEO}$ $V_{CE} = \text{rated } V_{CEO} \quad T_c = 150\text{ }^{\circ}\text{C}$			0.1 2	mA mA
I_{EBO}	Emitter Cut-off Current ($I_C = 0$)	$V_{EB} = 5\text{ V}$			1	mA
$V_{CEO(sus)}^*$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

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

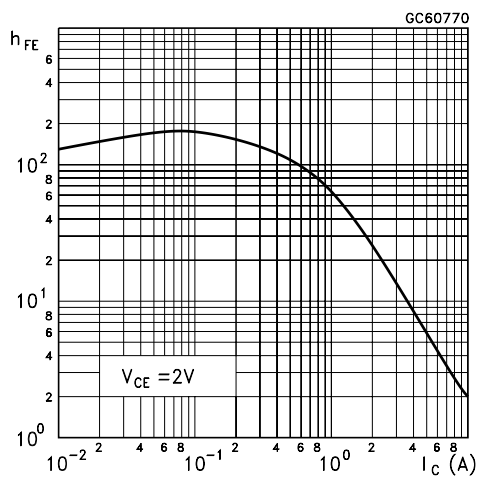
Safe Operating Area



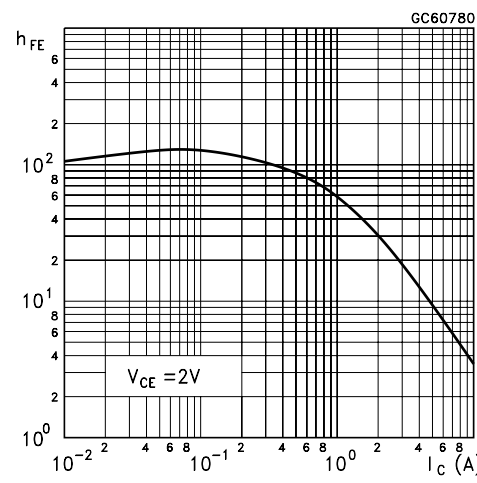
Derating Curve



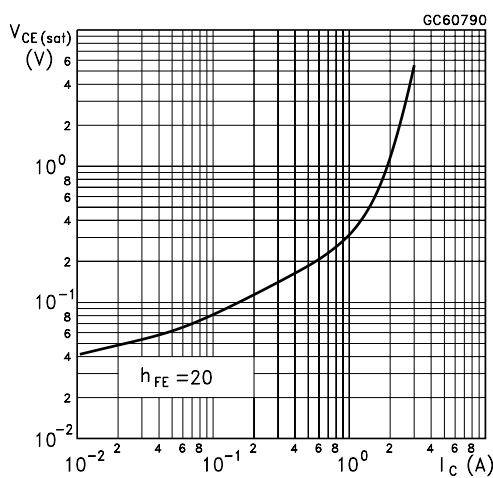
DC Current Gain (NPN type)



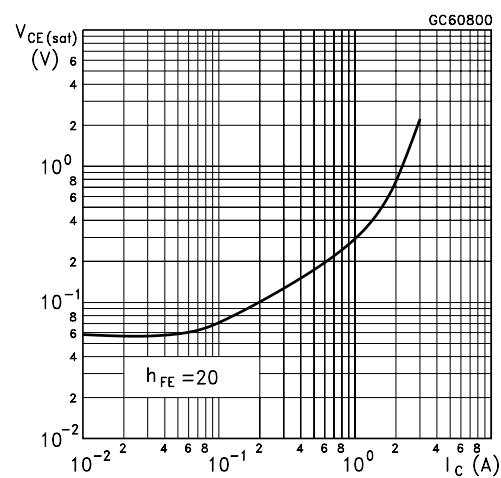
DC Current Gain (PNP type)



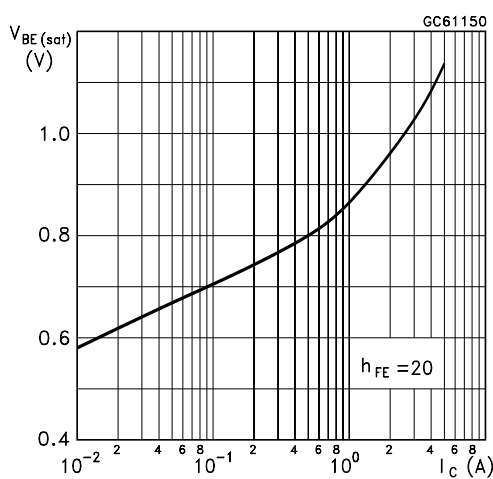
Collector-Emitter Saturation Voltage (NPN type)



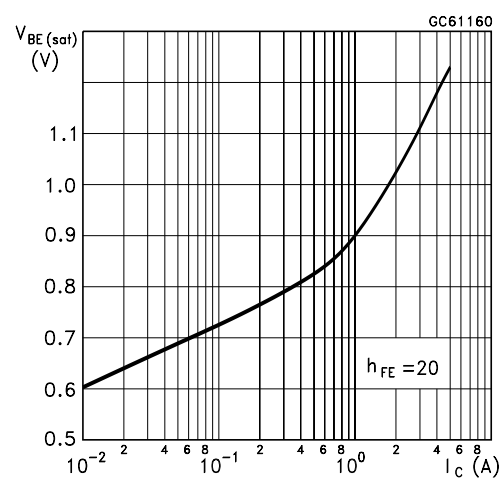
Collector-Emitter Saturation Voltage (PNP type)



Base-Emitter Saturation Voltage (NPN type)

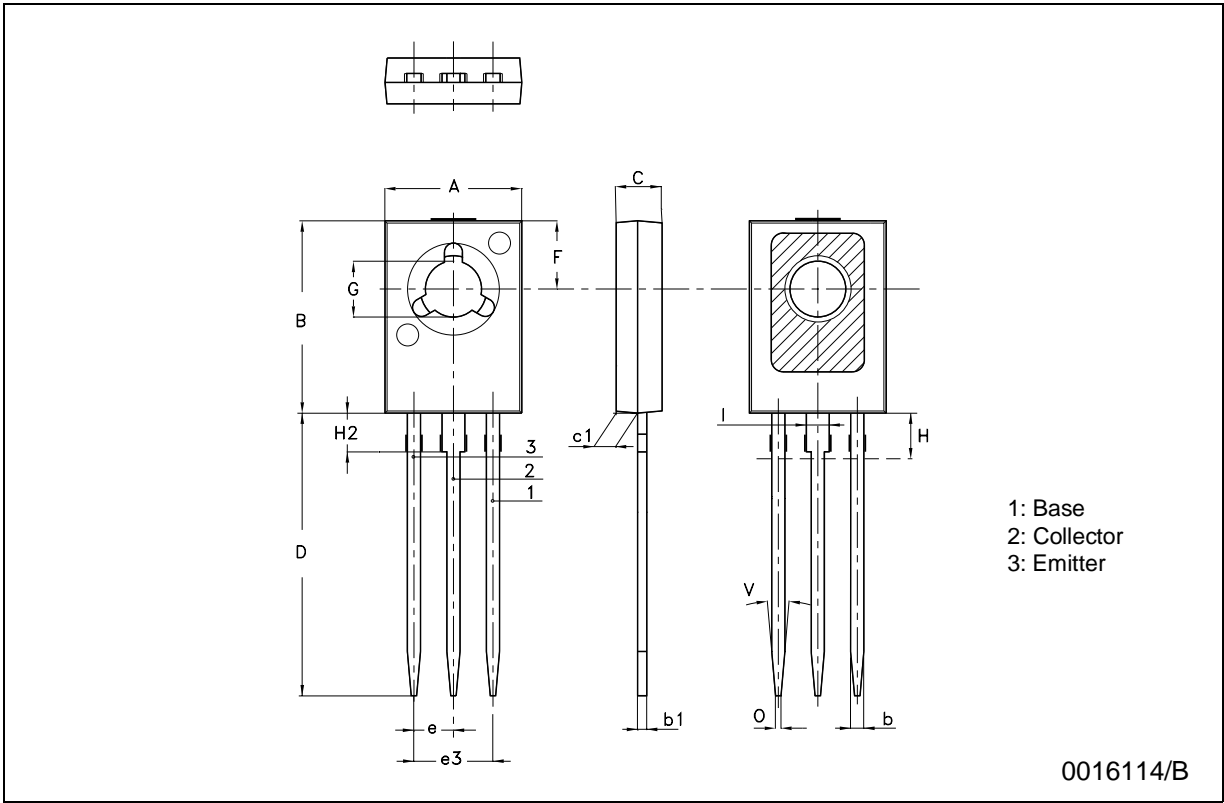


Collector-Base Capacitance (PNP type)



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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