

BD135/137/139

Medium Power Linear and Switching Applications

- Complement to BD136, BD138 and BD140 respectively



NPN Epitaxial Silicon Transistor

Absolute Maximum Ratings $T_C=25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	Value	Units
V_{CBO}	Collector-Base Voltage : BD135	45	V
	: BD137	60	V
	: BD139	80	V
V_{CEO}	Collector-Emitter Voltage : BD135	45	V
	: BD137	60	V
	: BD139	80	V
V_{EBO}	Emitter-Base Voltage	5	V
I_C	Collector Current (DC)	1.5	A
I_{CP}	Collector Current (Pulse)	3.0	A
I_B	Base Current	0.5	A
P_C	Collector Dissipation ($T_C=25^\circ\text{C}$)	12.5	W
P_C	Collector Dissipation ($T_a=25^\circ\text{C}$)	1.25	W
T_J	Junction Temperature	150	$^\circ\text{C}$
T_{STG}	Storage Temperature	- 55 ~ 150	$^\circ\text{C}$

Electrical Characteristics $T_C=25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units	
$V_{CEO(sus)}$	Collector-Emitter Sustaining Voltage : BD135	$I_C = 30\text{mA}, I_B = 0$	45			V	
	: BD137		60			V	
	: BD139		80			V	
I_{CBO}	Collector Cut-off Current	$V_{CB} = 30\text{V}, I_E = 0$			0.1	μA	
I_{EBO}	Emitter Cut-off Current	$V_{EB} = 5\text{V}, I_C = 0$			10	μA	
h_{FE1}	DC Current Gain : ALL DEVICE	$V_{CE} = 2\text{V}, I_C = 5\text{mA}$	25				
h_{FE2}		$V_{CE} = 2\text{V}, I_C = 0.5\text{A}$	25				
h_{FE3}		: BD135	$V_{CE} = 2\text{V}, I_C = 150\text{mA}$	40		250	
		: BD137, BD139		40		160	
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C = 500\text{mA}, I_B = 50\text{mA}$			0.5	V	
$V_{BE(on)}$	Base-Emitter ON Voltage	$V_{CE} = 2\text{V}, I_C = 0.5\text{A}$			1	V	

h_{FE} Classification

Classification	6	10	16
h_{FE3}	40 ~ 100	63 ~ 160	100 ~ 250

Typical Characteristics

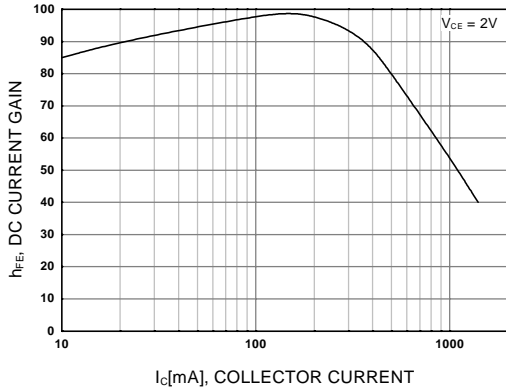


Figure 1. DC current Gain

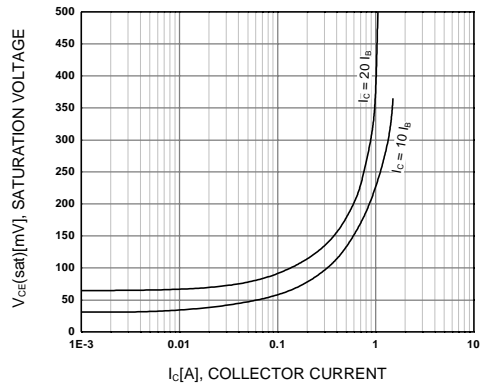


Figure 2. Collector-Emitter Saturation Voltage

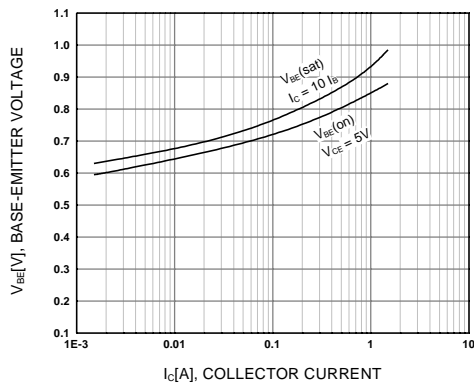


Figure 3. Base-Emitter Voltage

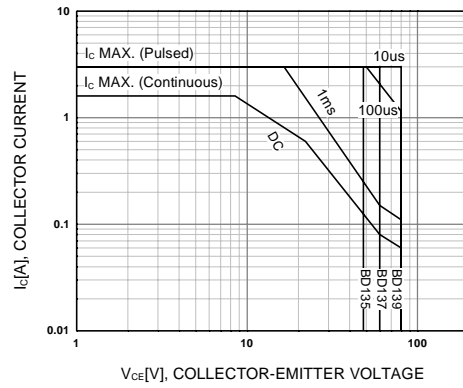


Figure 4. Safe Operating Area

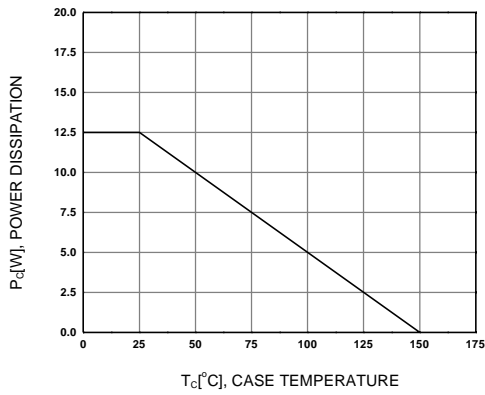


Figure 5. Power Derating

Package Dimensions

TO-126

BD135/137/139



Dimensions in Millimeters

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BD137

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Product	Product status	Pricing*	Package type	Leads	Packing method
BD13716STU	Full Production	\$0.159	TO-126	3	RAIL
BD13710STU	Full Production	\$0.159	TO-126	3	RAIL
BD1376STU	Full Production	\$0.159	TO-126	3	RAIL
BD13716S	Full Production	\$0.159	TO-126	3	BULK
BD1376S	Full Production	\$0.159	TO-126	3	BULK
BD13710S	Full Production	\$0.159	TO-126	3	BULK

* 1,000 piece Budgetary Pricing

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Product status/pricing/packaging

Product	Product status	Pricing*	Package type	Leads	Packing method
BD13910S	Full Production	\$0.191	TO-126	3	BULK
BD1396S	Full Production	\$0.163	TO-126	3	BULK
BD13910STU	Full Production	\$0.191	TO-126	3	RAIL
BD13916S	Full Production	\$0.191	TO-126	3	BULK
BD1396STU	Full Production	\$0.163	TO-126	3	RAIL
BD13916STU	Full Production	\$0.191	TO-126	3	RAIL

* 1,000 piece Budgetary Pricing

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Product	Product status	Pricing*	Package type	Leads	Packing method
BD13510S	Full Production	\$0.19	TO-126	3	BULK
BD1356S	Full Production	\$0.19	TO-126	3	BULK
BD1356STU	Full Production	\$0.19	TO-126	3	RAIL
BD13510STU	Full Production	\$0.19	TO-126	3	RAIL
BD13516STU	Full Production	\$0.19	TO-126	3	RAIL
BD13516S	Full Production	\$0.19	TO-126	3	BULK

* 1,000 piece Budgetary Pricing

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