



Micro Commercial Components

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**BD233**  
**BD235**  
**BD237**

## Features

- Power Dissipation:  $P_{CM}=1.25W$ ,  $T_a=25^\circ C$
- Collector Current :  $I_C=2A$
- Complement to BD234/236/238 respectively

**NPN**  
**Plastic-Encapsulate**  
**Transistors**

## Maximum Ratings\*

Symbol	Rating	Rating	Unit
$V_{CEO}$	Collector-Emitter Voltage	BD233	45
		BD235	60
		BD237	80
$V_{CBO}$	Collector-Base Voltage	BD233	45
		BD235	60
		BD237	100
$V_{CER}$	Collector-Emitter Voltage	BD233	45
		BD235	60
		BD237	100
$V_{EBO}$	Emitter-Base Voltage	5	V
$I_C$	Collector Current (DC)	2	A
$I_{CP}$	Collector Current (Pulse)	6	A
$P_C$	Collector Dissipation ( $T_C=25^\circ C$ )	25	W
$T_J$	Operating Junction Temperature	150	$^\circ C$
$T_{STG}$	Storage Temperature	-65 to +150	$^\circ C$

## Electrical Characteristics @ 25°C Unless Otherwise Specified

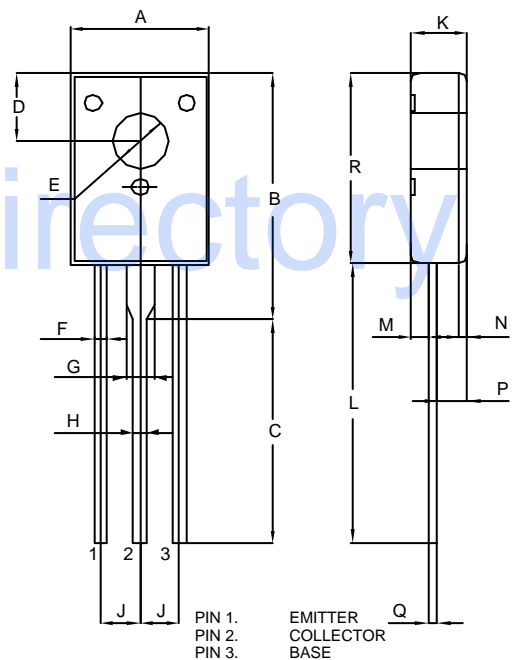
Symbol	Parameter	Min	Max	Units
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### OFF CHARACTERISTICS

$V_{CEO(sus)}$	Collector-Emitter Breakdown Voltage	45	---	V
	BD233 ( $I_C=0.1A_{dc}$ , $I_B=0$ )	60	---	V
	BD237 ( $I_C=0.1A_{dc}$ , $I_B=0$ )	80	---	V
$I_{CBO}$	Collector Cutoff Current	---	100	$\mu A$
	BD233 ( $V_{CB}=45V_{dc}$ , $I_E=0$ )	---	100	$\mu A$
	BD237 ( $V_{CB}=100V_{dc}$ , $I_E=0$ )	---	100	$\mu A$
$I_{EBO}$	Emitter Cutoff Current ( $V_{BE}=5.0V_{dc}$ , $I_C=0$ )	---	1.0	mA
$h_{FE}$	DC Current Gain	40	---	
	( $V_{CE}=2V$ , $I_C=150mA$ ) ( $V_{CE}=2V$ , $I_C=1A$ )	25	---	
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage ( $I_C=1A$ , $I_B=0.1A$ )	---	0.6	V
$V_{BE(on)}$	Base-Emitter ON Voltage ( $V_{CE}=2V$ , $I_C=1A$ )	---	1.3	V
$f_T$	Current Gain Bandwidth Product ( $V_{CE}=10V$ , $I_C=0.25A$ )	3	---	MHz

\*Pulse Test:  $PW=300\mu s$ , Duty Cycle=1.5% Pulsed

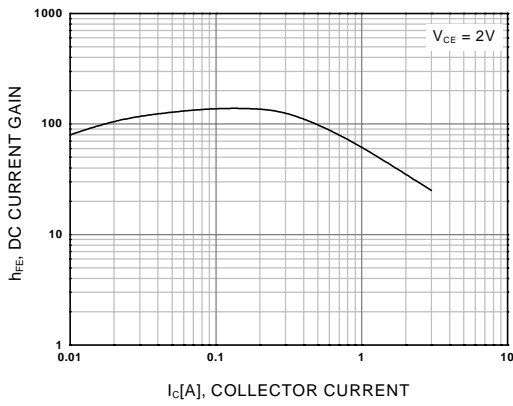
TO-18



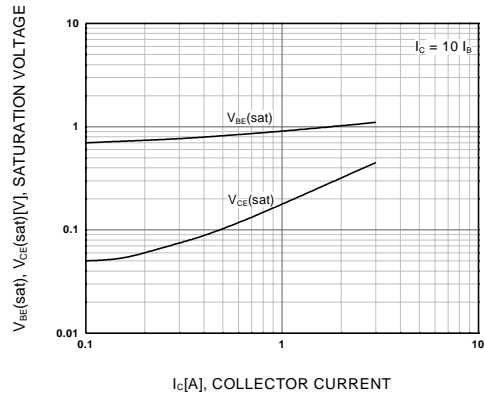
DIMENSIONS

DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	0.30	0.33	7.70	8.30	
B		0.56		14.20	
C	0.50	0.53	12.76	13.36	
D	0.15	0.16	3.80	4.0	
E	0.12	0.13	3.10	3.30	
F	0.025	0.033	0.65	0.85	
G	0.06	0.07	1.50	1.70	
H	0.025	0.033	0.65	0.85	
J	0.08	0.10	2.08	2.48	
K	0.12	0.14	3.05	3.45	
L	0.63	0.64	15.90	16.30	
M		0.04		1.0	
N		0.02		0.5	
P	0.06	0.08	1.55	1.95	
Q	0.018	0.023	0.45	0.60	
R	0.43	0.44	10.80	11.20	

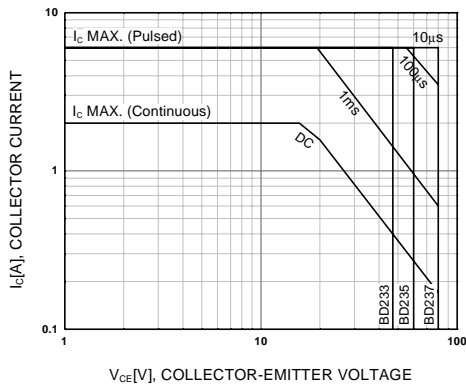
# BD233/235/237



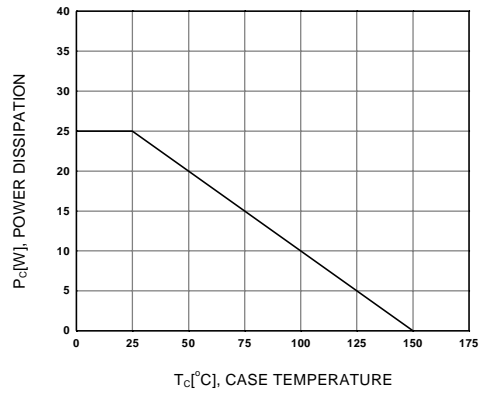
**Figure 1. DC current Gain**



**Figure 2. Base-Emitter Saturation Voltage  
Collector-Emitter Saturation Voltage**



**Figure 3. Safe Operating Area**



**Figure 4. Power Derating**