

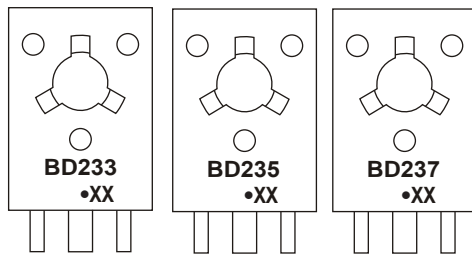
# TO-126 Plastic-Encapsulate Transistors

## BD233 / BD235 / BD237 TRANSISTOR (NPN)

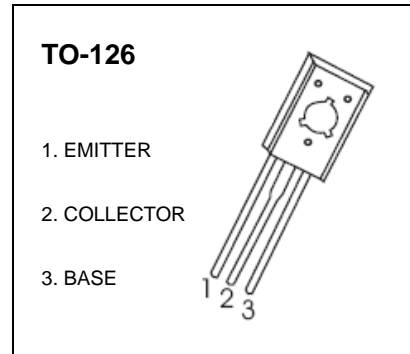
### FEATURES

- Complement to BD234/BD236/BD238 respectively

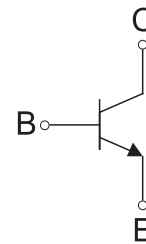
### MARKING



BD233, BD235, BD237 = Device code  
 Solid dot = Green molding compound device,  
 if none, the normal device  
 XX = Code



### Equivalent Circuit



### ORDERING INFORMATION

Part Number	Package	Packing Method	Pack Quantity
BD233	TO-126	Bulk	200pcs/Bag
BD235	TO-126	Bulk	200pcs/Bag
BD237	TO-126	Bulk	200pcs/Bag
BD233-TU	TO-126	Tube	60pcs/Tube
BD235-TU	TO-126	Tube	60pcs/Tube
BD237-TU	TO-126	Tube	60pcs/Tube

### MAXIMUM RATINGS (T<sub>a</sub>=25°C unless otherwise noted)

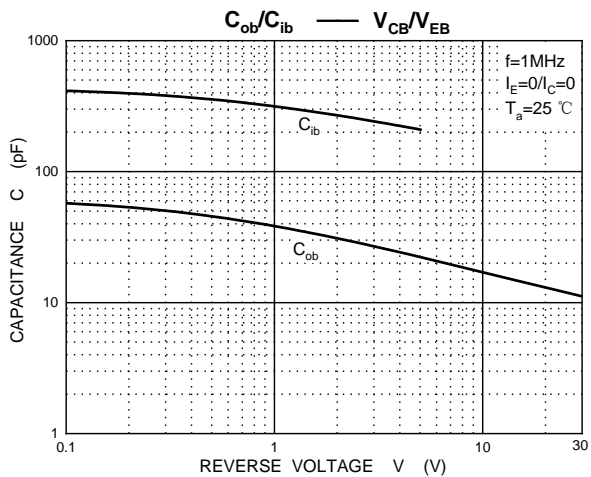
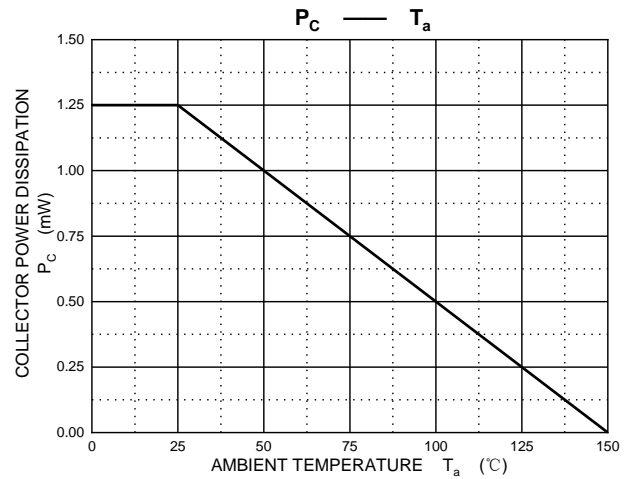
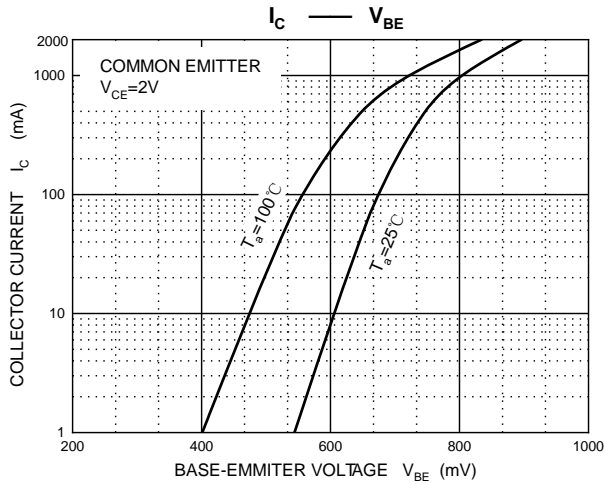
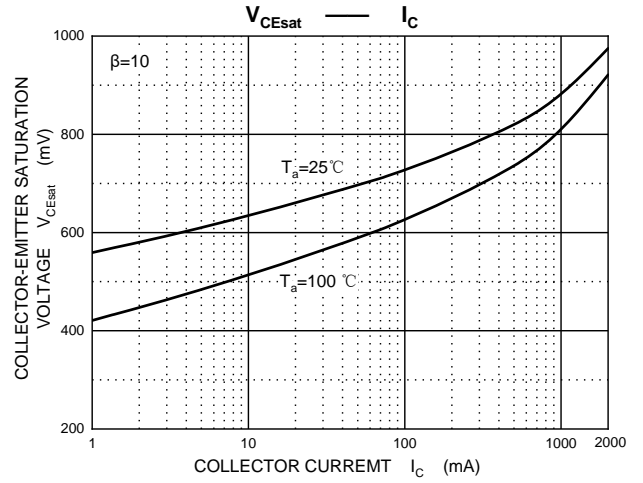
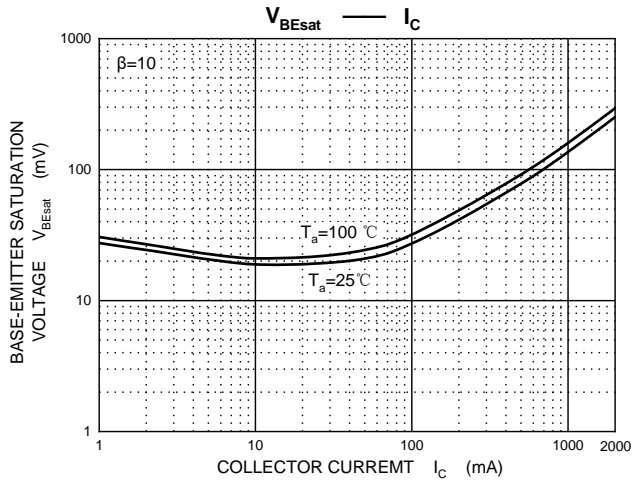
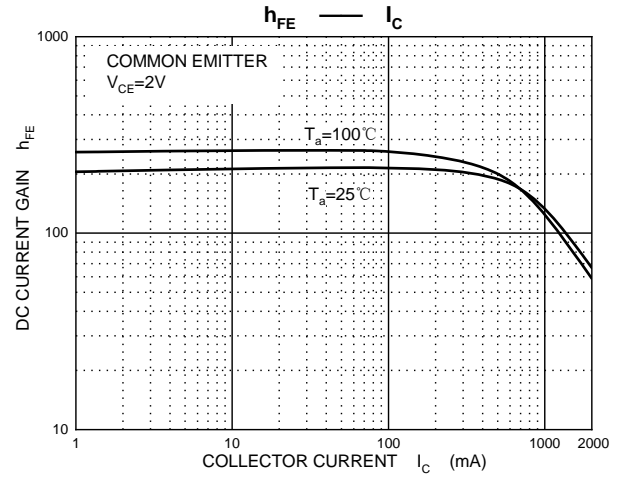
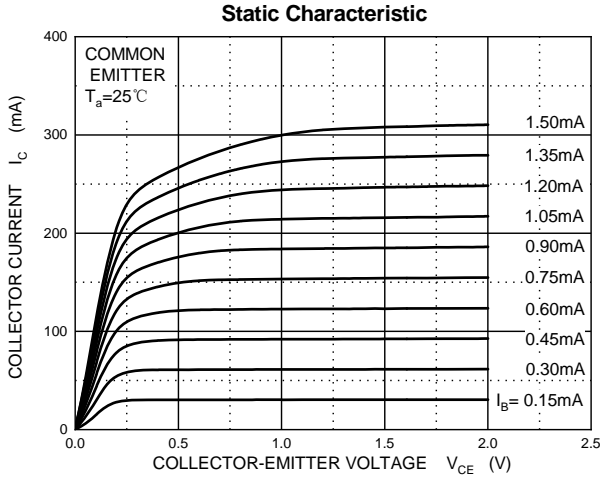
Symbol	Parameter		Value	Unit
V <sub>CBO</sub>	Collector-Base Voltage	BD233	45	V
		BD235	60	
		BD237	100	
V <sub>CEO</sub>	Collector-Emitter Voltage	BD233	45	V
		BD235	60	
		BD237	80	
V <sub>EBO</sub>	Emitter-Base Voltage		5	V
I <sub>C</sub>	Collector Current –Continuous		2	A
P <sub>C</sub>	Collector Dissipation		1.5	W
P <sub>C</sub>	Collector Dissipation (T <sub>C</sub> =25°C)		25	W
R <sub>θJA</sub>	Thermal Resistance from Junction to Ambient		83	°C/W
R <sub>θJC</sub>	Thermal Resistance from Junction to Case		5	°C/W
T <sub>J</sub> , T <sub>stg</sub>	Operation Junction and Storage Temperature Range		-55~+150	°C

## ELECTRICAL CHARACTERISTICS

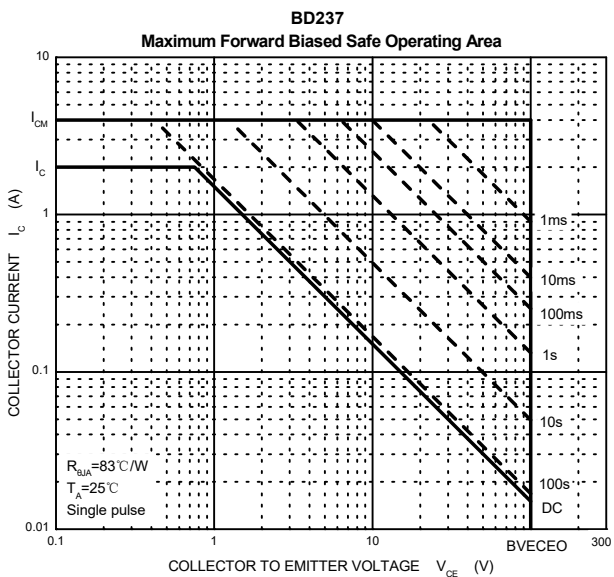
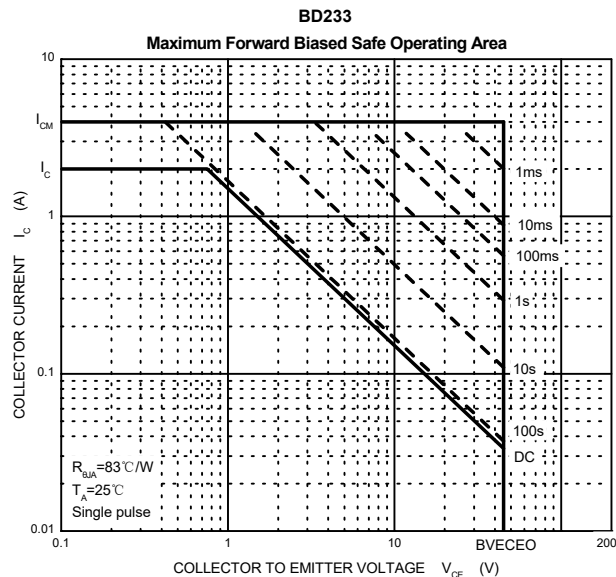
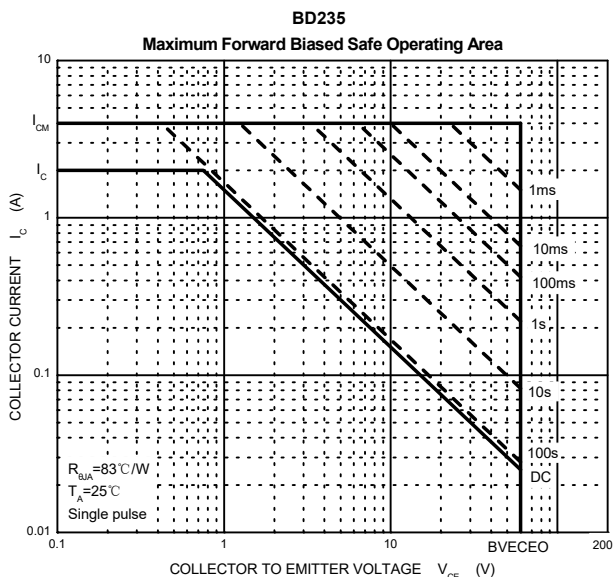
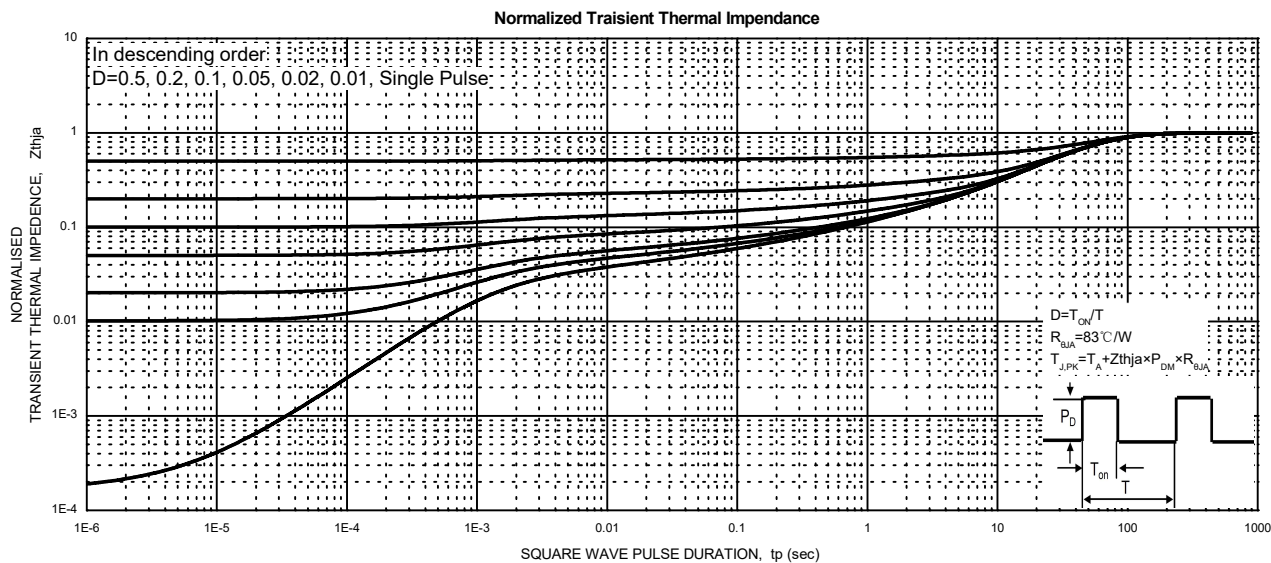
$T_a=25\text{ }^\circ\text{C}$  unless otherwise specified

Parameter	Symbol	Test conditions	Min	Max	Unit	
Collector-base breakdown voltage	BD233	$V_{(BR)CBO}$	$I_C=1\text{mA}, I_E=0$	45	V	
	BD235			60		
	BD237			100		
Collector-emitter breakdown voltage	BD233	$V_{(BR)CEO}$	$I_C=100\text{mA}, I_B=0$	45	V	
	BD235			60		
	BD237			80		
Emitter-base breakdown voltage		$V_{(BR)EBO}$	$I_E=1\text{mA}, I_C=0$	5	V	
Collector cut-off current	BD233	$I_{CBO}$	$V_{CB}=45\text{V}, I_E=0$	100	$\mu\text{A}$	
	BD235					$V_{CB}=60\text{V}, I_E=0$
	BD237					$V_{CB}=100\text{V}, I_E=0$
Emitter cut-off current		$I_{EBO}$	$V_{EB}=5\text{V}, I_C=0$	1	mA	
DC current gain		$H_{FE(1)}$	$V_{CE}=2\text{V}, I_C=150\text{mA}$	40		
		$H_{FE(2)}$	$V_{CE}=2\text{V}, I_C=1\text{A}$	25		
Collector-emitter saturation voltage		$V_{CE(sat)}$	$I_C=1\text{A}, I_B=100\text{mA}$	0.6	V	
Transition frequency		$f_T$	$V_{CE}=10\text{V}, I_C=250\text{mA}$ $f=10\text{MHz}$	3	MHz	

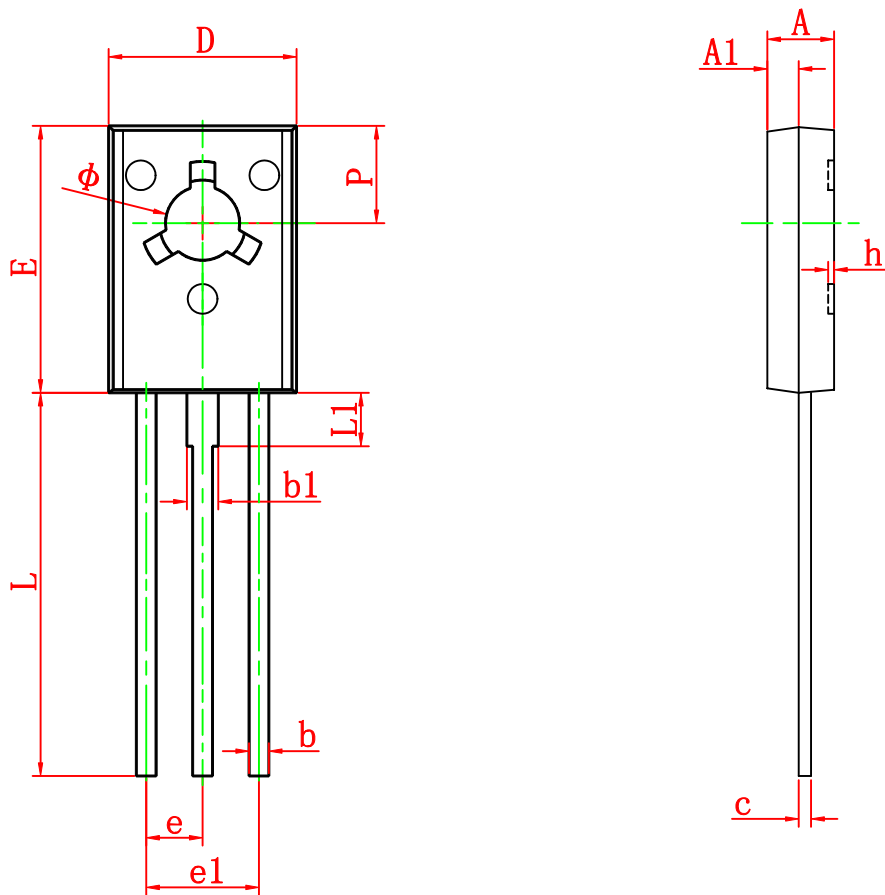
# TYPICAL CHARACTERISTICS



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# TO-126 Package Outline Dimensions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	2.500	2.900	0.098	0.114
A1	1.100	1.500	0.043	0.059
b	0.660	0.860	0.026	0.034
b1	1.170	1.370	0.046	0.054
c	0.450	0.600	0.018	0.024
D	7.400	7.800	0.291	0.307
E	10.600	11.000	0.417	0.433
e	2.290 TYP		0.090 TYP	
e1	4.480	4.680	0.176	0.184
h	0.000	0.300	0.000	0.012
L	15.300	15.700	0.602	0.618
L1	2.100	2.300	0.083	0.091
P	3.900	4.100	0.154	0.161
Φ	3.000	3.200	0.118	0.126