



NPN BD239 – A – B – C

MEDIUM POWER LINEAR AND SWITCHING APPLICATIONS.

The BD239, A, B, C are mounted in Jedec TO-220 plastic package.

They are the silicon epitaxial-base Power Transistors for use in medium power linear and switching applications.

The PNP complements are BD240, A, B, C.

Compliance to RoHS.

ABSOLUTE MAXIMUM RATINGS

Symbol	Ratings		Value	Unit
V_{CEO}	Collector-Emitter Voltage	BD239	45	V
		BD239A	60	
		BD239B	80	
		BD239C	100	
V_{CER}	Collector-Emitter Voltage ($R_{BE} = 100 \Omega$)	BD239	55	V
		BD239A	70	
		BD239B	90	
		BD239C	115	
V_{CBO}	Collector-Base Voltage	BD239	45	V
		BD239A	60	
		BD239B	80	
		BD239C	100	
V_{EBO}	Emitter-Base Voltage		5.0	V
I_C	Collector Current	I_C	3	A
		I_{CM}	7	
I_B	Base Current		0.5	A
P_T	Power Dissipation	@ $T_{amb} = 25^\circ C$	30	W
		@ $T_{case} = 25^\circ C$	30	W
T_J	Junction Temperature		150	$^\circ C$
T_S	Storage Temperature		-65 to +150	

THERMAL CHARACTERISTICS

Symbol	Ratings		Value	Unit
$R_{thJ-amb}$	Thermal Resistance, Junction-ambient		70	$^\circ C/W$
$R_{thJ-case}$	Thermal Resistance, Junction-case		4.17	$^\circ C/W$

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ELECTRICAL CHARACTERISTICS

TC=25°C unless otherwise noted

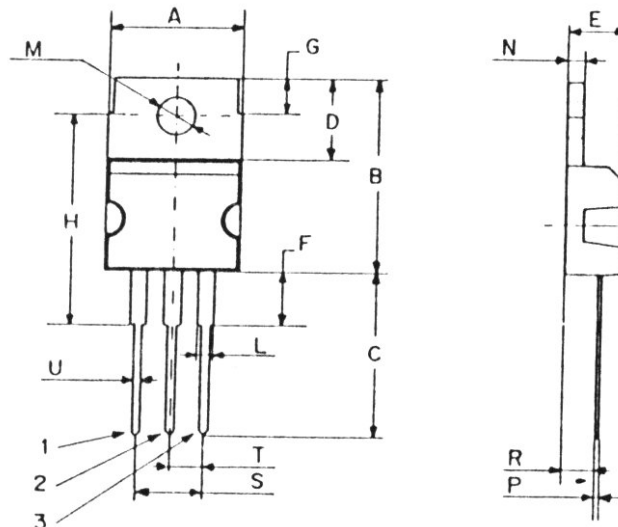
Symbol	Ratings	Test Condition(s)		Min	Typ	Max	Unit	
I _{CEO}	Collector Cutoff Current	V _{CE} =30 V	BD239	-	-	0.3	mA	
		V _{CE} =30 V	BD239A	-	-			
		V _{CE} =60 V	BD239B	-	-			
		V _{CE} =60 V	BD239C	-	-			
I _{EBO}	Emitter Cutoff Current	V _{BE} =5 V	BD239	-	-	1.0	mA	
			BD239A	-	-			
			BD239B	-	-			
			BD239C	-	-			
I _{CES}	Collector Cutoff Current (V _{BE} = 0)	V _{CE} =45 V	BD239	-	-	0.2	mA	
		V _{CE} =60 V	BD239A	-	-			
		V _{CE} =80 V	BD239B	-	-			
		V _{CE} =100 V	BD239C	-	-			
V _{CEO(sus)}	Collector-Emitter Sustaining Voltage (I _B = 0) (*)	I _C =30mA	BD239	45			V	
			BD239A	60				
			BD239B	80				
			BD239C	100				
h _{FE}	DC Current Gain (*)	V _{CE} =4 V I _C =0.2 A	BD239	40	-	-	-	
			BD239A					
			BD239B					
			BD239C					
		V _{CE} =4 V I _C =1 A	BD239	15	-	-		
			BD239A					
			BD239B					
			BD239C					
V _{CE(SAT)}	Collector-Emitter saturation Voltage (*)	I _C =1 A I _B =200 mA	BD239	-	-	0.6	V	
			BD239A					
			BD239B					
			BD239C					
V _{BE(on)}	Base-Emitter Voltage (*)	V _{CE} =4 V I _C =1 A	BD239	-	-	1.3	V	
			BD239A					
			BD239B					
			BD239C					
h _{fe}	Small Signal Current Gain	V _{CE} =10 V I _C =0.2 A f = 1KHz	BD239	20		-	-	
			BD239A					
			BD239B					
			BD239C					
		V _{CE} =10 V I _C =0.2 A f = 1MHz	BD239	3	-	-	-	
			BD239A					
			BD239B					
			BD239C					
f _T	Transistor frequency	V _{CE} =10 V, I _C =0.2 A, f = 1MHz		3	-	-	MHz	

(*) Pulse Width $\approx 300\text{ }\mu\text{s}$, Duty Cycle $\angle 2.0\%$

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MECHANICAL DATA CASE TO-220

DIMENSIONS (mm)		
	Min.	Max.
A	9,90	10,30
B	15,65	15,90
C	13,20	13,40
D	6,45	6,65
E	4,30	4,50
F	2,70	3,15
G	2,60	3,00
H	15,75	17,15
L	1,15	1,40
M	3,50	3,70
N	-	1,37
P	0,46	0,55
R	2,50	2,70
S	4,98	5,08
T	2,49	2,54
U	0,70	0,90



Pin 1 :	Base
Pin 2 :	Collector
Pin 3 :	Emitter
Case :	Collector

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