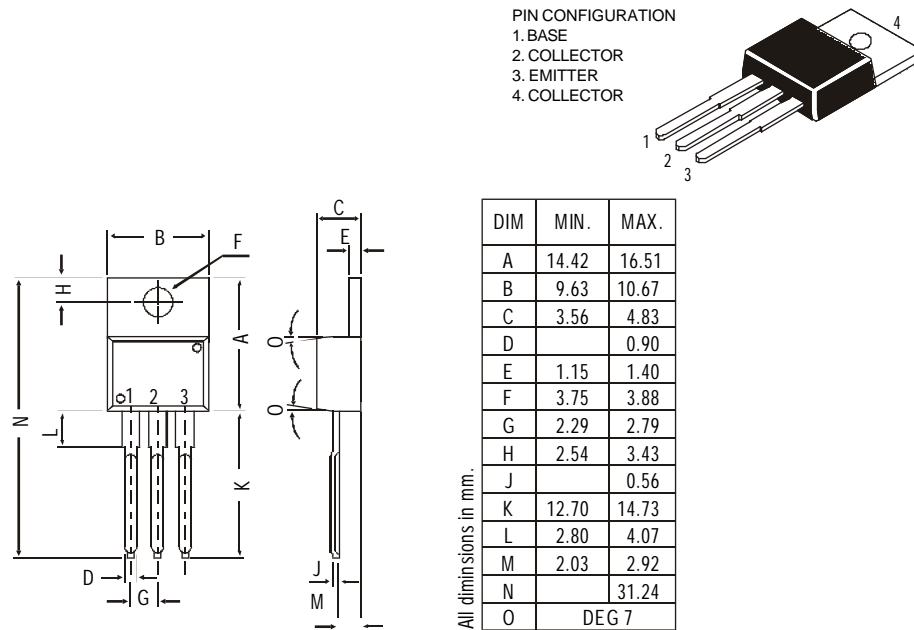


**TO-220 Plastic Package**

**BD239, BD239A, BD239B, BD239C  
BD240, BD240A, BD240B, BD240C**

*BD239, 239A, 239B, 239C NPN PLASTIC POWER TRANSISTORS  
BD240, 240A, 240B, 240C PNP PLASTIC POWER TRANSISTORS  
General Purpose Amplifier and Switching Applications*



**ABSOLUTE MAXIMUM RATINGS**

		<b>239</b>	<b>239A</b>	<b>239B</b>	<b>239C</b>	
		<b>240</b>	<b>240A</b>	<b>240B</b>	<b>240C</b>	
Collector-base voltage (open emitter)	$V_{CBO}$	max. 55	70	90	115	V
Collector-emitter voltage (open base)	$V_{CEO}$	max. 45	60	80	100	V
Collector current	$I_C$	max.		2.0		A
Total power dissipation up to $T_C = 25^\circ\text{C}$	$P_{tot}$	max.		30		W
Junction temperature	$T_j$	max.		150		$^\circ\text{C}$
Collector-emitter saturation voltage $I_C = 1\text{ A}; I_B = 0.2\text{ A}$	$V_{CEsat}$	max.		0.7		V
D.C. current gain $I_C = 0.2\text{ A}; V_{CE} = 4\text{ V}$	$h_{FE}$	min.		40		

**RATINGS** (at  $T_A=25^\circ\text{C}$  unless otherwise specified)

		<b>239</b>	<b>239A</b>	<b>239B</b>	<b>239C</b>	
		<b>240</b>	<b>240A</b>	<b>240B</b>	<b>240C</b>	
<b>Limiting values</b>						
Collector-base voltage (open emitter)	$V_{CBO}$	max. 55	70	90	115	V
Collector-emitter voltage (open base)	$V_{CEO}$	max. 45	60	80	100	V
Emitter-base voltage (open collector)	$V_{EBO}$	max.		5.0		V

**BD239, BD239A, BD239B, BD239C  
BD240, BD240A, BD240B, BD240C**

Collector current	$I_C$	max.	2.0	A
Collector current (Peak value)	$I_{CM}$	max.	4.0	A
Base current	$I_B$	max.	0.6	A
Total power dissipation upto $T_A=25^\circ\text{C}$	$P_{tot}$	max.	2.0	W
Derate above $25^\circ\text{C}$		max.	0.016	W $^\circ\text{C}$
Total power dissipation upto $T_C=25^\circ\text{C}$	$P_{tot}$	max.	30	W
Derate above $25^\circ\text{C}$		max.	0.24	W $^\circ\text{C}$
Junction temperature	$T_j$	max.	150	$^\circ\text{C}$
Storage temperature	$T_{stg}$		-65 to +150	$^\circ\text{C}$

**THERMAL RESISTANCE**

From junction to case	$R_{thj-c}$		4.167	$^\circ\text{C/W}$
From junction to ambient	$R_{thj-a}$		62.5	$^\circ\text{C/W}$

**CHARACTERISTICS**

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

			<b>239</b>	<b>239A</b>	<b>239B</b>	<b>239C</b>	
			<b>240</b>	<b>240A</b>	<b>240B</b>	<b>240C</b>	
Collector cutoff current							
$I_B = 0; V_{CE} = 30\text{ V}$	$I_{CEO}$	max.	0.3	0.3	-	-	mA
$I_B = 0; V_{CE} = 60\text{ V}$	$I_{CEO}$	max.	-	-	0.3	0.3	mA
$V_{BE} = 0; V_{CE} = V_{CEO}$	$I_{CES}$	max.		0.2			mA
Emitter cut-off current							
$I_C = 0; V_{EB} = 5\text{ V}$	$I_{EBO}$	max.		1.0			mA
Breakdown voltages							
$I_C = 30\text{ mA}; I_B = 0$	$V_{CEO(sus)}^*$	min.	45	60	80	100	V
$I_C = 1\text{ mA}; I_E = 0$	$V_{CBO}$	min.	55	70	90	115	V
$I_E = 1\text{ mA}; I_C = 0$	$V_{EBO}$	min.		5.0			V
Saturation voltage							
$I_C = 1\text{ A}; I_B = 0.2\text{ A}$	$V_{CEsat}^*$	max.		0.7			V
Base emitter on voltage							
$I_C = 1\text{ A}; V_{CE} = 4\text{ V}$	$V_{BE(on)}^*$	max.		1.3			V
D.C. current gain							
$I_C = 0.2\text{ A}; V_{CE} = 4\text{ V}$	$h_{FE}^*$	min.		40			
$I_C = 1\text{ A}; V_{CE} = 4\text{ V}$	$h_{FE}^*$	min.		15			
Small signal current gain							
$I_C = 0.2\text{ A}; V_{CE} = 10\text{ V}; f = 1\text{ KHz}$	$h_{fe}$	min.		20			
Transition frequency							
$I_C = 0.2\text{ A}; V_{CE} = 10\text{ V}; f = 1\text{ MHz}$	$f_T(1)$	min.		3			MHz

\* Pulse test: pulse width  $\leq 300\ \mu\text{s}$ ; duty cycle  $\leq 2\%$

(1)  $f_T = |h_{fe}| \cdot f_{test}$

## Notes

### Disclaimer

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