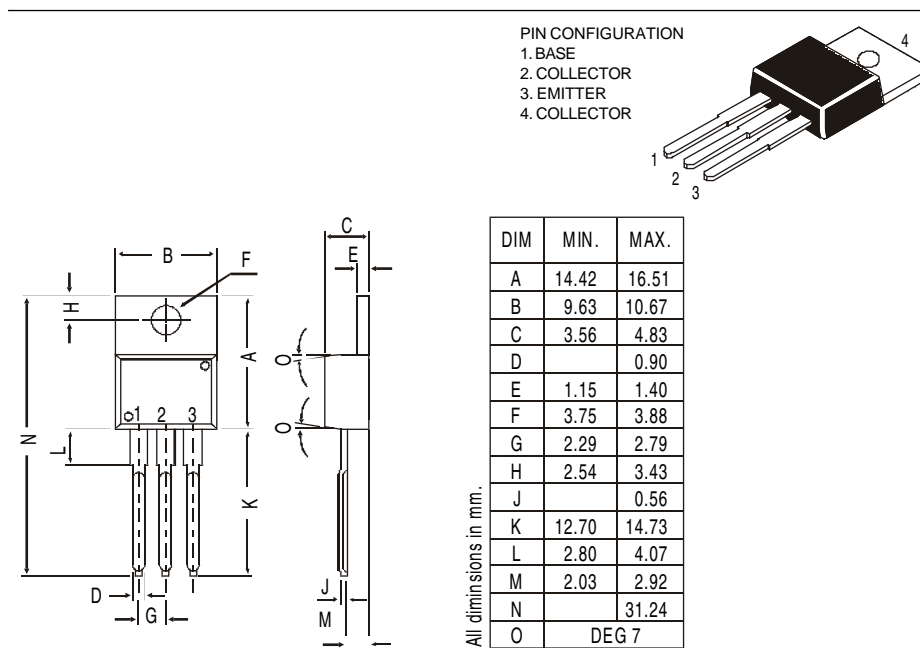


TO-220 Plastic Package

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

		239	239A	239B	239C	
		240	240A	240B	240C	
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)

Limiting values

		239	239A	239B	239C	
		240	240A	240B	240C	
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°C		max.	0.016	W/°C
Total power dissipation upto $T_C=25^\circ\text{C}$	P_{tot}	max.	30	W
Derate above 25°C		max.	0.24	W/°C
Junction temperature	T_j	max.	150	°C
Storage temperature	T_{stg}		-65 to +150	°C

THERMAL RESISTANCE

From junction to case	$R_{th\ j-c}$		4.167	°C/W
From junction to ambient	$R_{th\ j-a}$		62.5	°C/W

CHARACTERISTICS

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

			239	239A	239B	239C	
			240	240A	240B	240C	
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 $\leq 300\text{ }\mu\text{s}$; duty cycle $\leq 2\%$

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

Notes

Disclaimer

The product information and the selection guides facilitate selection of the CDIL's Discrete Semiconductor Device(s) best suited for application in your product(s) as per your requirement. It is recommended that you completely review our Data Sheet(s) so as to confirm that the Device(s) meet functionality parameters for your application. The information furnished on the CDIL Web Site/ CD is believed to be accurate and reliable. CDIL however, does not assume responsibility for inaccuracies or incomplete information. Furthermore, CDIL does not assume liability whatsoever, arising out of the application or use of any CDIL product; neither does it convey any license under its patent rights nor rights of others. These products are not designed for use in life saving/support appliances or systems. CDIL customers selling these products (either as individual Discrete Semiconductor Devices or incorporated in their end products), in any life saving/support appliances or systems or applications do so at their own risk and CDIL will not be responsible for any damages resulting from such sale(s).

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