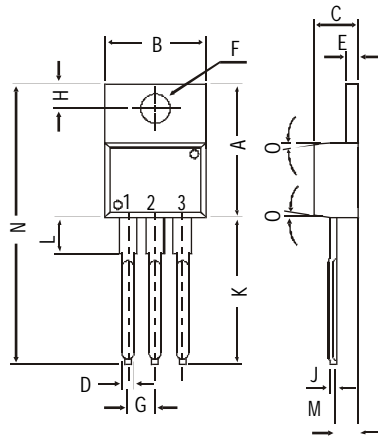
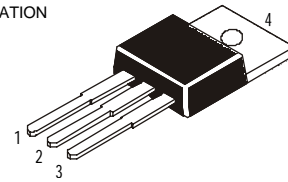


TO-220 Plastic Package

BD202, BD204, BDX78

BD202, BD204, BDX78 PNP PLASTIC POWER TRANSISTORS
Complementary BD201, BD203 and BDX77
Medium Power Switching and Amplifier Applications

PIN CONFIGURATION
1. BASE
2. COLLECTOR
3. EMITTER
4. COLLECTOR



All dimensions in mm.

DIM	MIN.	MAX.
A	14.42	16.51
B	9.63	10.67
C	3.56	4.83
D		0.90
E	1.15	1.40
F	3.75	3.88
G	2.29	2.79
H	2.54	3.43
J		0.56
K	12.70	14.73
L	2.80	4.07
M	2.03	2.92
N		31.24
O		DEG 7

ABSOLUTE MAXIMUM RATINGS

		202	204	BDX78	
Collector-base voltage (open emitter)	V_{CBO} max.	60	60	100	V
Collector-emitter voltage (open base)	V_{CEO} max.	45	60	80	V
Collector current (DC)	I_C max.		8.0		A
Total power dissipation up to $T_{mb} = 25^\circ\text{C}$	P_{tot} max.		60		W
Junction temperature	T_j max.		150		$^\circ\text{C}$
Collector-emitter saturation voltage	V_{CEsat} max.		1.0		V
$I_C = 3\text{ A}; I_B = 0.3\text{ A}$					
D.C. current gain	h_{FE} min.	-	-	30	
$I_C = 1\text{ A}; V_{CE} = 2\text{ V}$					
$I_C = 2\text{ A}; V_{CE} = 2\text{ V}$					
$I_C = 3\text{ A}; V_{CE} = 2\text{ V}$					

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

Limiting values		202	204	BDX78	
Collector-base voltage (open emitter)	V_{CBO} max.	60	60	100	V
Collector-emitter voltage (open base)	V_{CEO} max.	45	60	80	V
Emitter-base voltage (open collector)	V_{EBO} max.		5.0		V
Collector current (DC)	I_C max.		8.0		A

BD202, BD204, BDX78

Collector current (peak $t_p = 10$ ms)	I_{CM}	max.	12	A
Collector current (non-repetitive peak $t_p = 2$ ms)	I_{CSM}	max.	25	A
Base current	I_B	max.	3.0	A
Total power dissipation up to $T_{mb} = 25^\circ\text{C}$	P_{tot}	max.	60	W
Junction temperature	T_j	max.	150	$^\circ\text{C}$
Storage temperature	T_{stg}		-65 to +150	$^\circ\text{C}$

THERMAL RESISTANCE

From junction to ambient	$R_{th\ j-a}$		70	K/W
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CHARACTERISTICS

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

202 204 BDX78

Collector cutoff current					
$I_B = 0$; $V_{CE} = 30$ V	I_{CEO}	max.	0.2		mA
$I_B = 0$; $V_{CB} = 40$ V; $T_j = 150^\circ\text{C}$	I_{CBO}	max.	1.0		mA
Emitter cut-off current					
$I_C = 0$; $V_{EB} = 5$ V	I_{EBO}	max.	0.5		mA
Breakdown voltages					
$I_C = 0.2$ A; $I_B = 0$	V_{CEO}	min.	45	60	80
$I_C = 1$ mA; $I_E = 0$	V_{CBO}	min.	60	60	100
$I_E = 1$ mA; $I_C = 0$	V_{EBO}	min.	5.0		V
Saturation voltages					
$I_C = 3$ A; $I_B = 0.3$ A	V_{CEsat}^*	max.	1.0		V
$I_C = 6$ A; $I_B = 0.6$ A	V_{CEsat}^*	max.	1.5		V
	V_{BEsat}^*	max.	2.0		V
Base-emitter on voltage					
$I_C = 3$ A; $V_{CE} = 2$ V	$V_{BE(on)}^*$	max.	1.5		V
D.C. current gain					
$I_C = 1$ A; $V_{CE} = 2$ V	h_{FE}^*	min.	-	-	30
$I_C = 2$ A; $V_{CE} = 2$ V	h_{FE}^*	min.	-	30	-
$I_C = 3$ A; $V_{CE} = 2$ V	h_{FE}^*	min.	30	-	-
Common emitter small					
$I_C = 0.3$ A; $V_{CE} = 3$ V	f_{hfe}	min.	25		KHz
Transition frequency					
$I_C = 0.3$ A; $V_{CE} = 3$ V; $f = 1$ MHz	f_T	min.	7.0		MHz
Second breakdown collector current with base forward biased (non-repetitive)					
$V_{CE} = 40$ V; $t_p = 0.1$ s	$I_{S/b}$	min.	1.5		A

Switching time

$I_{Con} = 2$ A; $I_{Bon} = I_{Boff} = 0.2$ A

Turn on time	t_{on}	max.	1	μs
Turn off time	t_{off}	max.	2	μs

* Pulse test: $t_p \leq 300$ μs ; duty cycle $\leq 2\%$.

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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