

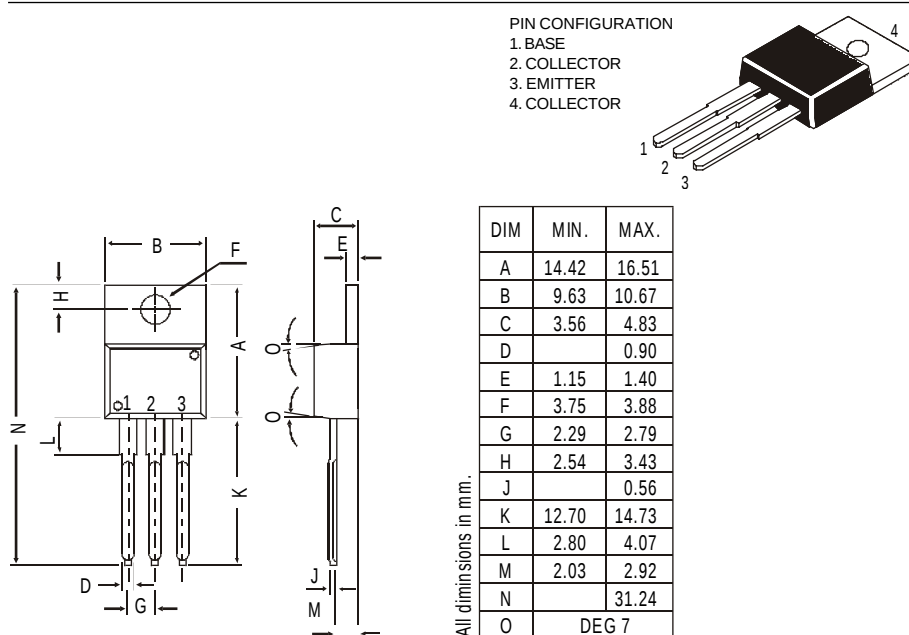
TO-220 Plastic Package

BD202, BD204, BDX78

BD202, BD204, BDX78 PNP PLASTIC POWER TRANSISTORS

Complementary BD201, BD203 and BDX77

Medium Power Switching and Amplifier Applications



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
$I_C = 1\text{ A}; V_{CE} = 2\text{ V}$					
$I_C = 2\text{ A}; V_{CE} = 2\text{ V}$	h_{FE}	min.	—	30	—
$I_C = 3\text{ A}; V_{CE} = 2\text{ V}$	h_{FE}	min.	30	—	—

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 $t_p = 10 \text{ ms}$)	I_{CM}	max.	12	A
Collector current (non-repetitive peak $t_p = 2 \text{ ms}$)	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	$R_{th \text{ j-a}}$		70	K /W
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CHARACTERISTICS

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

			202	204	BDX78	
Collector cutoff current						
$I_B = 0; V_{CE} = 30 \text{ V}$	I_{CEO}	max.	0.2			mA
$I_B = 0; V_{CB} = 40 \text{ V}; T_j = 150^\circ\text{C}$	I_{CBO}	max.	1.0			mA
Emitter cut-off current						
$I_C = 0; V_{EB} = 5 \text{ V}$	I_{EBO}	max.	0.5			mA
Breakdown voltages						
$I_C = 0.2 \text{ A}; I_B = 0$	V_{CEO}	min.	45	60	80	V
$I_C = 1 \text{ mA}; I_E = 0$	V_{CBO}	min.	60	60	100	V
$I_E = 1 \text{ mA}; I_C = 0$	V_{EBO}	min.		5.0		V
Saturation voltages						
$I_C = 3 \text{ A}; I_B = 0.3 \text{ A}$	V_{CEsat}^*	max.	1.0			V
$I_C = 6 \text{ A}; I_B = 0.6 \text{ A}$	V_{CEsat}^*	max.	1.5			V
	V_{BEsat}^*	max.	2.0			V
Base-emitter on voltage						
$I_C = 3 \text{ A}; V_{CE} = 2 \text{ V}$	$V_{BE(on)}^*$	max.	1.5			V
D.C. current gain						
$I_C = 1 \text{ A}; V_{CE} = 2 \text{ V}$	h_{FE}^*	min.	–	–	30	
$I_C = 2 \text{ A}; V_{CE} = 2 \text{ V}$	h_{FE}^*	min.	–	30	–	
$I_C = 3 \text{ A}; V_{CE} = 2 \text{ V}$	h_{FE}^*	min.	30	–	–	
Common emitter small						
$I_C = 0.3 \text{ A}; V_{CE} = 3 \text{ V}$	f_{hfe}	min.	25			KHz
Transition frequency						
$I_C = 0.3 \text{ A}; V_{CE} = 3 \text{ V}; f = 1 \text{ MHz}$	f_T	min.	7.0			MHz
Second breakdown collector current with base forward biased (non-repetitive)						
$V_{CE} = 40 \text{ V}; t_p = 0.1 \text{ s}$	$I_{S/b}$	min.	1.5			A

Switching time

$I_{Con} = 2 \text{ A}; I_{Bon} = I_{Boff} = 0.2 \text{ A}$						
Turn on time	t_{on}	max.	1			μs
Turn off time	t_{off}	max.	2			μs

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

Notes

Disclaimer

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