



## BD201 – BD203

### NPN SILICON EPITAXIAL-BASE POWER TRANSISTORS

The BD201 and BD203 are NPN transistors mounted in Jedec TO-220 plastic package. They are primarily intended for use in hi-fi equipment delivering an output of 15 to 25 W into 4Ω or 8Ω load.

PNP complements are BD202 and BD204

Compliance to RoHS.

#### ABSOLUTE MAXIMUM RATINGS

Symbol	Ratings		Value	Unit
$V_{CEO}$	Collector-Emitter Voltage	BD201	45	V
		BD203	60	
$V_{CBO}$	Collector-Base Voltage	BD201	60	V
		BD203	60	
$V_{EBO}$	Emitter-Base Voltage		5.0	V
$I_C$	Collector Current	$I_C$	8	A
		$I_{CM}$	12	A
$I_{CSM}$	Collector Current (non-repetitive peak value, $t_p$ max. 2 ms)		25	A
$I_B$	Base Current		3	A
$P_D$	Total Device Dissipation	@ $T_C = 25^\circ$	60	W
$T_J$	Junction Temperature		150	$^\circ\text{C}$
$T_{Stg}$	Storage Temperature range		-65 to +200	$^\circ\text{C}$

#### THERMAL CHARACTERISTICS

Symbol	Ratings	Value	Unit
$R_{thJ-a}$	Thermal Resistance, Junction to mounting base	70	K/W
$R_{thJ-mb}$	Thermal Resistance, Junction to ambient in free air	2.08	K/W

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### ELECTRICAL CHARACTERISTICS

TC=25°C unless otherwise noted

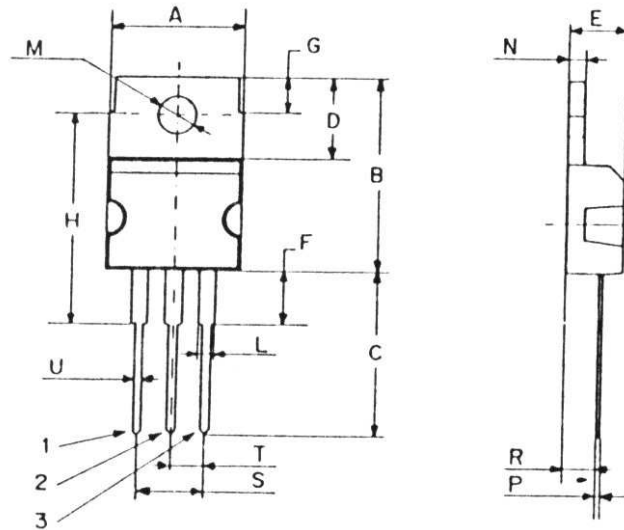
Symbol	Ratings	Test Condition(s)	Min	Typ	Max	Unit	
$I_{CEO}$	Collector Cutoff Current	$V_{CE}=30\text{ V}, I_B=0$	BD201	-	-	0.2	mA
			BD203				
$I_{CBO}$	Collector Cutoff Current	$V_{CB}=40\text{ V}, I_E=0$ $T_j=150^\circ\text{C}$	BD201	-	-	1	mA
			BD203				
$I_{EBO}$	Emitter Cutoff Current	$V_{BE}=5\text{ V}, I_C=0$	BD201	-	-	0.5	mA
			BD203				
$V_{CBO}$	Collector-Base Breakdown Voltage	$I_C=1\text{ mA}, I_E=0$	BD201	60	-	-	V
			BD203				
$V_{CEO}$	Collector Emitter Breakdown Voltage (*)	$I_C=200\text{ mA}, I_B=0$	BD201	45	-	-	V
			BD203				
$V_{EBO}$	Emitter Base Breakdown Voltage	$I_E=1\text{ mA}, I_C=0$	BD201	5	-	-	V
			BD203				
$V_{CE(SAT)}$	Collector-Emitter saturation Voltage (*)	$I_C=3\text{ A}, I_B=300\text{ mA}$	BD201	-	-	1	V
			BD203				
		$I_C=6\text{ A}, I_B=600\text{ mA}$	BD201	-	-	1.5	
			BD203				
$V_{BE(SAT)}$	Base-Emitter saturation Voltage (*)	$I_C=6\text{ A}, I_B=600\text{ mA}$	BD201	-	-	2	V
			BD203				
$V_{BE}$	Base Emitter Voltage (*)	$I_C=3\text{ A}, V_{CE}=2\text{ V}$	BD201	-	-	1.5	V
			BD203				
$h_{FE}$	DC Current Gain (*)	$I_C=3\text{ A}, V_{CE}=2\text{ V}$	BD201	30	-	-	-
		$I_C=2\text{ A}, V_{CE}=2\text{ V}$	BD203				
$f_{hfe}$	Cut-off frequency	$I_C=300\text{ mA}, V_{CE}=3\text{ V}$	BD201	25	-	-	KHz
			BD203				
$f_T$	Transition frequency	$I_C=300\text{ mA}, V_{CE}=3\text{ V}$ $f=1\text{ MHz}$	BD201	7	-	-	MHz
			BD203				
$I_{s/b}$	Forward bias second breakdown collector current	$V_{CE}=40\text{ V}, t_p=0.1\text{ s}$ $T_{amb}=25^\circ\text{C}$	BD201	1.5	-	-	A
			BD203				
$h_{FE1}/h_{FE2}$	DC current gain	$I_C=1\text{ A}, V_{CE}=2\text{ V}$	BD201	2.5	-	-	-
			BD203				
$t_{on}$	Turn-on time	$I_{Con}=2\text{ A}$	BD201	-	-	1	$\mu\text{s}$
			BD203				
$T_{off}$	Turn-off time	$I_{Bon} = -I_{Boff} = 200\text{ mA}$	BD201	-	-	4	
			BD203				

(\*) Pulse conditions :  $t_p < 300\ \mu\text{s}, \delta = 2\%$

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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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