



## PNP BD202 – BD204

### SILICON EPITAXIAL-BASE POWER TRANSISTORS

The BD202 and BD204 are PNP 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.

NPN complements are BD201 and BD203

Compliance to RoHS.

#### ABSOLUTE MAXIMUM RATINGS

Symbol	Ratings	Value	Unit
-V <sub>CEO</sub>	Collector-Emitter Voltage	BD202	45
		BD204	60
-V <sub>CBO</sub>	Collector-Base Voltage	BD202	60
		BD204	60
-V <sub>EBO</sub>	Emitter-Base Voltage	5.0	V
-I <sub>C</sub>	Collector Current	-I <sub>C</sub>	8
		-I <sub>CM</sub>	12
-I <sub>CSM</sub>	Collector Current (non-repetitive peak value, t <sub>p</sub> max. 2 ms)	25	A
-I <sub>B</sub>	Base Current	3	A
P <sub>D</sub>	Total Device Dissipation @ T <sub>C</sub> = 25°	60	W
T <sub>J</sub>	Junction Temperature	150	°C
T <sub>Stg</sub>	Storage Temperature range	-65 to +200	°C

#### THERMAL CHARACTERISTICS

Symbol	Ratings	Value	Unit
R <sub>thJ-a</sub>	Thermal Resistance, Junction to mounting base	70	K/W
R <sub>thJ-mb</sub>	Thermal Resistance, Junction to ambient in free air	2.08	K/W

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### ELECTRICAL CHARACTERISTICS

TC=25°C unless otherwise noted

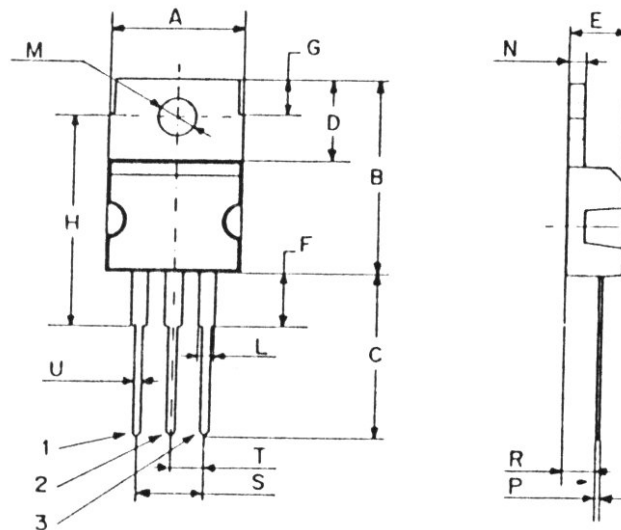
Symbol	Ratings	Test Condition(s)	Min	Typ	Max	Unit	
$-I_{CEO}$	Collector Cutoff Current	$-V_{CE}=30\text{ V}, I_B=0\text{ V}$	BD202	-	-	0.2	mA
			BD204				
$-I_{CBO}$	Collector Cutoff Current	$-V_{CB}=40\text{ V}, I_E=0\text{ V}$ $T_j=150^\circ\text{C}$	BD202	-	-	1	mA
			BD204				
$-I_{EBO}$	Emitter Cutoff Current	$-V_{BE}=5\text{ V}, I_C=0$	BD202	-	-	0.5	mA
			BD204				
$-V_{CBO}$	Collector-Base Breakdown Voltage	$-I_C=1\text{ mA}, I_E=0$	BD202	60	-	-	V
			BD204				
$-V_{CEO}$	Collector Emitter Breakdown Voltage (*)	$-I_C=200\text{ mA}, I_B=0$	BD202	45	-	-	V
			BD204				
$-V_{EBO}$	Emitter Base Breakdown Voltage	$-I_E=1\text{ mA}, I_C=0$	BD202	5	-	-	V
			BD204				
$-V_{CE(SAT)}$	Collector-Emitter saturation Voltage (*)	$-I_C=3\text{ A}, -I_B=300\text{ mA}$	BD202	-	-	1	V
			BD204				
		$-I_C=6\text{ A}, -I_B=600\text{ mA}$	BD202	-	-	1.5	
			BD204				
$-V_{BE(SAT)}$	Base-Emitter saturation Voltage (*)	$-I_C=6\text{ A}, -I_B=600\text{ mA}$	BD202	-	-	2	V
			BD204				
$-V_{BE}$	Base Emitter Voltage (*)	$-I_C=3\text{ A}, -V_{CE}=2\text{ V}$	BD202	-	-	1.5	V
			BD204				
$h_{FE}$	DC Current Gain (*)	$-I_C=3\text{ A}, -V_{CE}=2\text{ V}$	BD202	30	-	-	-
		$-I_C=2\text{ A}, -V_{CE}=2\text{ V}$	BD204				
$f_{hfe}$	Cut-off frequency	$-I_C=300\text{ mA}$ $-V_{CE}=3\text{ V}$	BD202	25	-	-	KHz
			BD204				
$f_T$	Transition frequency	$-I_C=300\text{ mA}$ $-V_{CE}=3\text{ V}$ $f=1\text{ MHz}$	BD202	7	-	-	MHz
			BD204				
$I_{s/b}$	Forward bias second breakdown collector current	$-V_{CE}=40\text{ V}, t_p=0.1\text{ s}$ $T_{amb}=25^\circ\text{C}$	BD202	1.5	-	-	A
			BD204				
$h_{FE1}/h_{FE2}$	DC current gain	$-I_C=1\text{ A}, V_{CE}=2\text{ V}$	BD202	2.5	-	-	-
			BD204				
$t_{on}$	Turn-on time	$-I_{Con}=2\text{ A}$ $-I_{Bon}=I_{Boff}=200\text{ mA}$	BD202	-	-	1	$\mu\text{s}$
$T_{off}$	Turn-off time		BD204				
			BD202				
			BD204				

(\*) 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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