



PNP BD202 – BD204 NPN BD201 – BD203

SILCON 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 if-hi equipment delivering an output of 15 to 25 W into 4Ω or 8Ω load.
NPN complements are BD201 and BD203

ABSOLUTE MAXIMUM RATINGS

Symbol	Ratings			Value	Unit
$-V_{CEO}$	Collector-Emitter Voltage		BD202	45	V
			BD204	60	
$-V_{CBO}$	Collector-Base Voltage		BD202	60	V
			BD204	60	
$-V_{EBO}$	Emitter-Base Voltage		BD202	5.0	V
			BD204		
$-I_C$	Collector Current	$-I_C$	BD202	8	A
			BD204		
		$-I_{CM}$	BD202	12	A
			BD204		
$-I_{CSM}$	Collector Current (non-repetitive peak value, t_p max.2 ms)		BD202	25	A
			BD204		
$-I_B$	Base Current		BD202	3	A
			BD204		
P_D	Total Device Dissipation	@ $T_C = 25^\circ$	BD202	60	Watts
			BD204		
T_J	Junction Temperature		BD202	150	$^\circ\text{C}$
			BD204		
T_{Stg}	Storage Temperature range		BD202	-65 to +200	$^\circ\text{C}$
			BD204		

THERMAL CHARACTERISTICS

Symbol	Ratings		Value	Unit
R_{thJ-a}	Thermal Resistance, Junction to mounting base	BD202	70	K/W
		BD204		
R_{thJ-mb}	Thermal Resistance, Junction to ambient in free air	BD202	2.08	K/W
		BD204		

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ELECTRICAL CHARACTERISTICS

TC=25°C unless otherwise noted

Symbol	Ratings	Test Condition(s)	Min	Typ	Mx	Unit
$-I_{CEO}$	Collector Cutoff Current	$-V_{CE}=30\text{ V}, I_B=0\text{ V}$	-	-	0.2	mA
$-I_{CBO}$	Collector Cutoff Current	$-V_{CB}=40\text{ V}, I_E=0\text{ V}, T_j=150^\circ\text{C}$	-	-	1	mA
$-I_{EBO}$	Emitter Cutoff Current	$-V_{BE}=5.0\text{ V}, I_C=0$	-	-	0.5	mA
$-V_{CEO}$	Collector Emitter Breakdown Voltage	$I_C=0.2\text{ A}, I_B=0\text{ V}$	45 60	- -	- -	V
$-V_{BE}$	Base Emitter Voltage (1)	$-I_C=3\text{ A}, -V_{CE}=2.0\text{ V}$	-	-	1.5	V
$-V_{CEK}$	Knee Voltage (1)	$-I_C=3\text{ A}, -I_B=$ value for which $-I_C=3.3\text{ A}$ at $-V_{CE}=2.0\text{ V}$	-	1	-	V
h_{FE}	DC Current Gain (1)	$-I_C=3\text{ A}, -V_{CE}=2.0\text{ V}$ $-I_C=2\text{ A}, -V_{CE}=20\text{ V}$	30 30	- -	- -	-
$-V_{CE(SAT)}$	Collector-Emitter saturation Voltage (1)	$-I_C=3\text{ A}, -I_B=0.3\text{ A}$ $-I_C=6\text{ A}, -I_B=0.6\text{ A}$	- -	- -	1 1.5	V
$-V_{BE(SAT)}$	Base-Emitter saturation Voltage (1)	$-I_C=6\text{ A}, -I_B=0.6\text{ A}$	-	-	2	

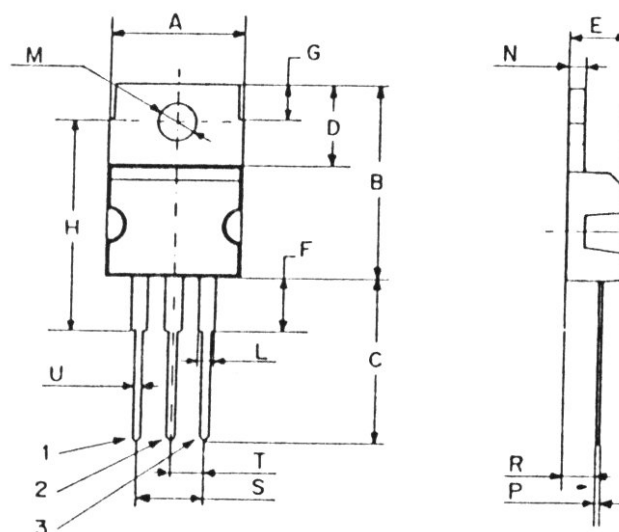
Symbol	Ratings	Test Condition(s)	Min	Typ	Mx	Unit
f_{hfe}	Cut-off frequency	$-I_C=0.3\text{ A}, -V_{CE}=3.0\text{ V}$	25	-	-	KHz
f_T	Transition frequency	$-I_C=0.3\text{ A}, -V_{CE}=3.0\text{ V}$ $f=1\text{ MHz}$	7	-	-	MHz
$I_{s/b}$	Forward bias second breakdown collector current	$V_{CE}=40\text{ V}, t_p=0.1\text{ s}$ $T_{amb}=25^\circ\text{C}$	1.5	-	-	A
h_{FE1}/h_{FE2}	DC current gain ration of matched complementary pairs	$-I_C=1\text{ A}, -V_{CE}=2.0\text{ V}$	2.5	-	-	-
t_{on}	Turn-on time	$-I_{Con}=2\text{ A}$	-	-	1	μs
t_{off}	Turn-off time	$-I_{Bon}=I_{Boff}=0.2\text{ A}$	-	-	2	

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

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MECHANICAL DATA CASE TO-220

DIMENSIONS		
	mm	inches
A	9,86	0,39
B	15,73	0,62
C	13,37	0,52
D	6,67	0,26
E	4,44	0,17
F	4,21	0,16
G	2,99	0,11
H	17,21	0,68
L	1,29	0,05
M	3,6	0,14
N	1,36	0,05
P	0,46	0,02
R	2,1	0,08
S	5	0,19
T	2,52	0,098
U	0,79	0,03



Pin 1 :	base
Pin 2 :	Collector
Pin 3 :	emitter

Information furnished is believed to be accurate and reliable. However, CS assumes no responsibility for the consequences of use of such information nor for errors that could appear.

Data are subject to change without notice.