



NPN BD136 – BD138 – BD140

SILICON PLANAR EPITAXIAL POWER TRANSISTORS.

The BD136-BD138-BD140 are PNP Transistors
 They are recommended for driver stages in hi-fi amplifiers and television circuits.
 They are mounted in Jedec TO-126 plastic package.
 NPN complements are BD135-BD137-BD139.
 Compliance to RoHS.

ABSOLUTE MAXIMUM RATINGS

Symbol	Ratings	Value	Unit	
$-V_{CBO}$	Collector-Base Voltage ($I_E = 0$)	BD135	45	V
		BD137	60	
		BD139	100	
$-V_{CEO}$	Collector-Emitter Voltage ($I_B = 0$)	BD135	45	V
		BD137	60	
		BD139	80	
$-V_{CER}$	Collector-Emitter Voltage ($R_{BE} = 1\text{ k}\Omega$)	BD135	45	V
		BD137	60	
		BD139	100	
$-V_{EBO}$	Emitter-Base Voltage ($I_E = 0$)	5	V	
$-I_C$	Collector Current	$-I_C$	1.5	A
		$-I_{CM}$	2	
$-I_B$	Base current	0.5	A	
P_T	Total power Dissipation @ $T_{mb} = 70^\circ\text{C}$	8	Watts	
T_J	<i>Junction Temperature</i>	150	$^\circ\text{C}$	
T_{Stg}	Storage Temperature	-65 to +150	$^\circ\text{C}$	

THERMAL CHARACTERISTICS

Symbol	Ratings	Value	Unit
R_{thJ-mb}	Thermal Resistance, Junction to mounting base	10	K/W
R_{thJ-a}	Thermal Resistance, Junction to ambient in free air	100	K/W

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ELECTRICAL CHARACTERISTICS

TC=25°C unless otherwise noted

Symbol	Ratings	Test Condition(s)	Min	Typ	Max	Unit	
$-I_{CBO}$	Collector cut-off current	$I_E=0, -V_{CB}=30\text{ V}$	BD135	-	-	0,1	μA
			BD137	-	-	0,1	
			BD139	-	-	0,1	
		$I_E=0, -V_{CB}=30\text{ V}$ $T_J=125^\circ\text{C}$	BD135	-	-	10	
			BD137	-	-	10	
			BD139	-	-	10	
$-I_{EBO}$	Emitter cut-off current	$I_C=0, -V_{EB}=5\text{ V}$	-	-	10	μA	
$-V_{CEO(SUS)}$	Collector-Emitter sustaining Voltage (*)	$I_B=0, -I_C=30\text{ mA}$	BD135	45	-	-	V
			BD137	60	-	-	
			BD139	80	-	-	
$-V_{CE(SAT)}$	Collector-Emitter saturation Voltage (*)	$-I_C=0.5\text{ A}, -I_B=50\text{ mA}$	-	-	0,5	V	
h_{FE}	DC Current Gain (*)	$-V_{CE}=2\text{ V}, -I_C=5\text{ mA}$	BDxxx	40	-	250	
			BDxxx -10	63	-	160	
			BDxxx -16	100	-	250	
			$-V_{CE}=2\text{ V}, -I_C=500\text{ mA}$	25	-	-	
$-V_{BE}$	Base-Emitter Voltage(*)	$-V_{CE}=2\text{ V}, -I_C=500\text{ mA}$	-	-	1	V	
f_T	Transition frequency	$-V_{CE}=5\text{ V}, -I_C=50\text{ mA}$ $f=35\text{ MHz}$	-	75	-	MHz	

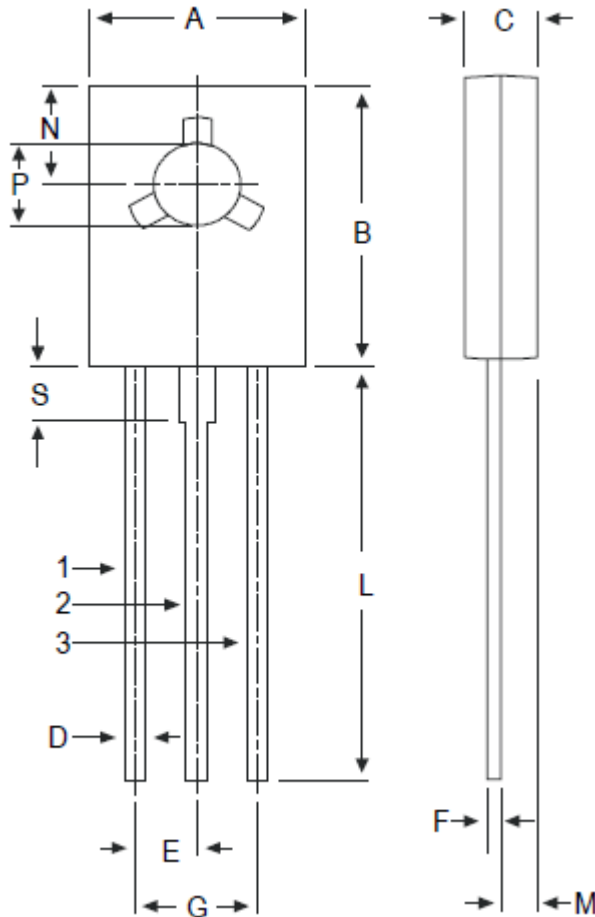
(*) Measured under pulse conditions : $t_p < 300\mu\text{s}$, $\delta < 2\%$.

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MECHANICAL DATA CASE TO-126

	DIMENSIONS	
	min	max
A	7.4	7.8
B	10.5	10.8
C	2.4	2.7
D	0.7	0.9
E	2.25 typ.	
F	0.49	0.75
G	4.4 typ.	
L	15.7 typ.	
M	1.27 typ.	
N	3.75 typ.	
P	3.0	3.2
S	2.54 typ.	

Pin 1 :	Emitter
Pin 2 :	Collector
Pin 3 :	Base



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