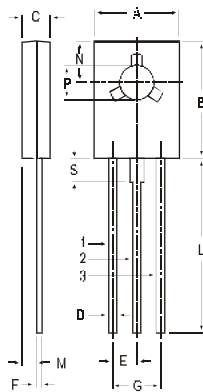
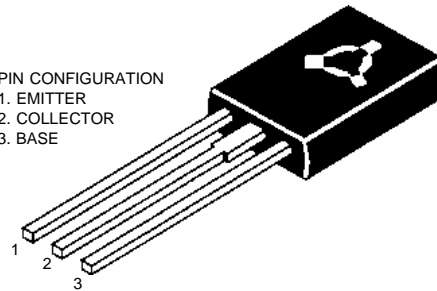




**BD136, 138, 140 PNP PLASTIC POWER TRANSISTORS**  
Complementary BD135, 137, 139  
Medium Power Linear and Switching Applications

PIN CONFIGURATION  
1. EMITTER  
2. COLLECTOR  
3. BASE



DIM	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	4.5 TYP.	
L	15.7 TYP.	
M	1.27 TYP.	
N	3.75 TYP.	
P	3.0	3.2
S	2.5 TYP.	

ALL DIMENSIONS IN MM

**ABSOLUTE MAXIMUM RATINGS**

		<b>136</b>	<b>138</b>	<b>140</b>	
Collector-base voltage (open emitter)	$V_{CB0}$ max.	45	60	100	V
Collector-base voltage (open base)	$V_{CEO}$ max.	45	60	80	V
Collector current	$I_C$ max.		1.5		A
Total power dissipation up to $T_C = 25^\circ\text{C}$	$P_{tot}$ max.		12.5		W
Junction temperature	$T_j$ max.		150		$^\circ\text{C}$
Collector-emitter saturation voltage $I_C = 0.5\text{ A}; I_B = 0.05\text{ A}$	$V_{CEsat}$ max.		0.5		V
D.C. current gain $I_C = 0.15\text{ A}; V_{CE} = 2\text{ V}$	$h_{FE}$ min.		40		
			max.	250	

**RATINGS** (at  $T_A = 25^\circ\text{C}$  unless otherwise specified)

Limiting values		<b>136</b>	<b>138</b>	<b>140</b>	
Collector-base voltage (open emitter)	$V_{CB0}$ max.	45	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

## BD136, BD138, BD140

Collector current	$I_C$	max.	1.5	A
Base current	$I_B$	max.	0.5	A
Total power dissipation up to $T_A = 25^\circ\text{C}$	$P_{tot}$	max.	1.25	W
Derate above $25^\circ\text{C}$		max	10	mW/°C
Total power dissipation up to $T_C = 25^\circ\text{C}$	$P_{tot}$	max.	12.5	W
Derate above $25^\circ\text{C}$		max	100	mW/°C
Junction temperature	$T_j$	max.	150	°C
Storage temperature	$T_{stg}$		-65 to +150	°C

### THERMAL RESISTANCE

From junction to case	$R_{th\ jc}$		10	°CW
From junction to ambient	$R_{th\ ja}$		100	°CW

### CHARACTERISTICS

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

			<b>136</b>	<b>138</b>	<b>140</b>	
Collector cutoff current						
$I_E = 0; V_{CB} = 30\text{ V}$	$I_{CBO}$	max.	0.1			$\mu\text{A}$
$I_E = 0; V_{CB} = 30\text{ V}; T_C = 125^\circ\text{C}$	$I_{CBO}$	max.	10			$\mu\text{A}$
Emitter cut-off current						
$I_C = 0; V_{EB} = 5\text{ V}$	$I_{EBO}$	max.	10			$\mu\text{A}$
Breakdown voltages						
$I_C = 0.03\text{ A}; I_B = 0$	$V_{CEO(sus)}^*$	min.	45	60	80	V
$I_C = 1\text{ mA}; I_E = 0$	$V_{CBO}$	min.	45	60	100	V
$I_E = 1\text{ mA}; I_C = 0$	$V_{EBO}$	min.		5.0		V
Saturation voltage						
$I_C = 0.5\text{ A}; I_B = 0.05\text{ A}$	$V_{CEsat}^*$	max.		0.5		V
Base-emitter on voltage						
$I_C = 0.5\text{ A}; V_{CE} = 2\text{ V}$	$V_{BE(on)}^*$	max.		1.0		V
D.C. current gain						
$I_C = 0.005\text{ A}; V_{CE} = 2\text{ V}^*$	$h_{FE}^*$	min.		25		
$I_C = 0.15\text{ A}; V_{CE} = 2\text{ V}^{**}$	$h_{FE}^*$	min.		40		
		max.		250		
$I_C = 0.5\text{ A}; V_{CE} = 2\text{ V}^*$	$h_{FE}^*$	min.		25		
<b>** <math>h_{FE}</math> classification:</b>	<b>-6</b>	min.	40			
		max.	100			
	<b>-10</b>	min.	63			
		max.	160			
	<b>-16</b>	min.	100			
		max.	250			
	<b>-25</b>	min.	160			
		max.	400			

\* Pulse test: pulse width  $\leq 300\ \mu\text{s}$ , duty cycle  $\leq 2\%$ .