

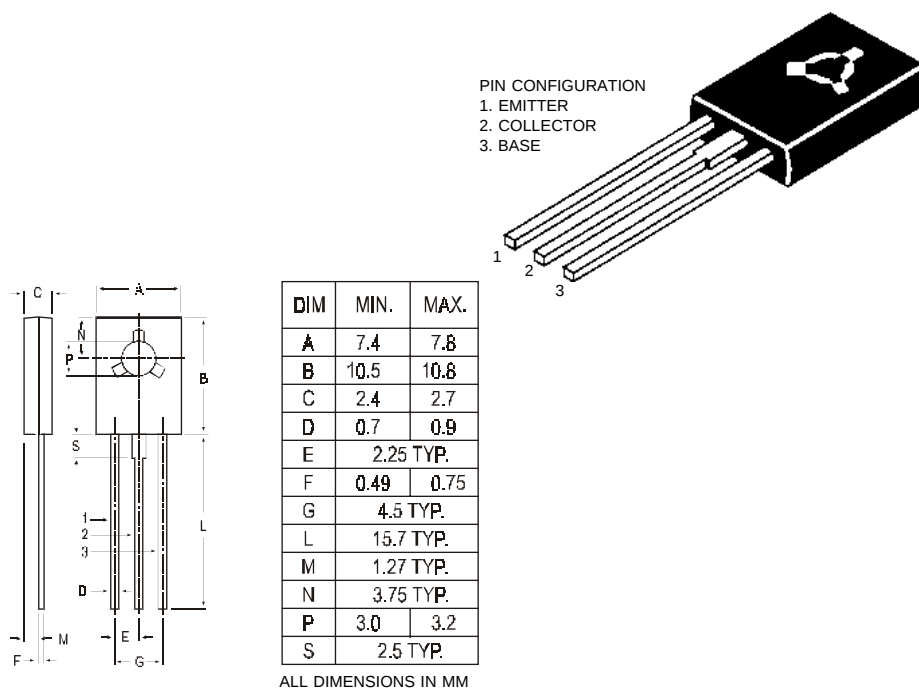
TO-126 (SOT-32) Plastic Package

BD136, BD138, BD140

BD136, 138, 140 PNP PLASTIC POWER TRANSISTORS

Complementary BD135, 137, 139

Medium Power Linear and Switching Applications



ABSOLUTE MAXIMUM RATINGS

		136	138	140	
Collector-base voltage (open emitter)	V_{CBO} max.	45	60	100	V
Collector-emitter 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. max.		40 250		

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

Limiting values		136	138	140	
Collector-base voltage (open emitter)	V_{CBO} 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°C		max	10	mW/ $^\circ\text{C}$
Total power dissipation up to $T_C = 25^\circ\text{C}$	P_{tot}	max.	12.5	W
Derate above 25°C		max	100	mW/ $^\circ\text{C}$
Junction temperature	T_j	max.	150	$^\circ\text{C}$
Storage temperature	T_{stg}		-65 to +150	$^\circ\text{C}$

THERMAL RESISTANCE

From junction to case	$R_{th\ jc}$		10	$^\circ\text{C/W}$
From junction to ambient	$R_{th\ ja}$		100	$^\circ\text{C/W}$

CHARACTERISTICS

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

			136	138	140
Collector cutoff current					
$I_E = 0$; $V_{CB} = 30\text{ V}$	I_{CBO}	max.	0.1		μA
$I_E = 0$; $V_{CB} = 30\text{ V}$; $T_C = 125^\circ\text{C}$	I_{CBO}	max.	10		μA
Emitter cut-off current					
$I_C = 0$; $V_{EB} = 5\text{ V}$	I_{EBO}	max.	10		μA
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	
** h_{FE} classification:	-6	min.	40		
		max.	100		
	-10	min.	63		
		max.	160		
	-16	min.	100		
		max.	250		
	-25	min.	160		
		max.	400		

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