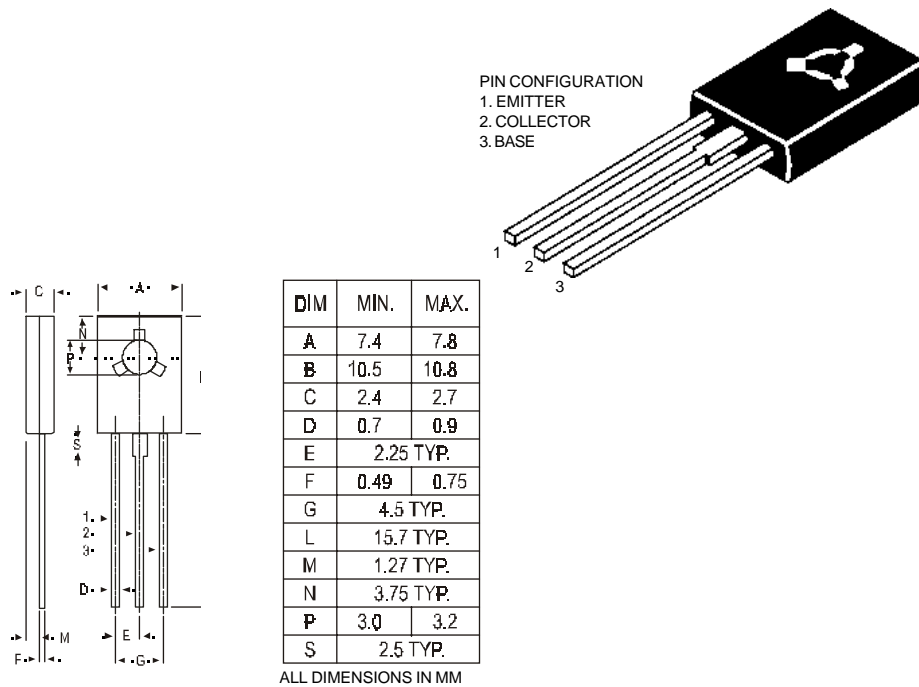


**TO-126 (SOT-32) Plastic Package**

**BD166, BD168, BD170**

**BD166, 168, 170 PNP PLASTIC POWER TRANSISTORS**  
 Complementary BD165, 167, 169  
 Audio Amplifier and Driver Circuit Applications



**ABSOLUTE MAXIMUM RATINGS**

		<b>166</b>	<b>168</b>	<b>170</b>	
Collector-base voltage (open emitter)	$V_{CBO}$	max. 45	60	80	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. 20			W
Junction temperature	$T_j$	max. 150			$^\circ\text{C}$
Collector-emitter saturation voltage	$V_{CEsat}$	max. 0.5			V
$I_C = 0.5\text{ A}; I_B = 0.05\text{ A}$					
D.C. current gain	$h_{FE}$	min. 40			
$I_C = 0.15\text{ A}; V_{CE} = 2\text{ V}$					

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

Limiting values		<b>166</b>	<b>168</b>	<b>170</b>	
Collector-base voltage (open emitter)	$V_{CBO}$	max. 45	60	80	V
Collector-emitter voltage (open base)	$V_{CEO}$	max. 45	60	80	V
Emitter-base voltage (open collector)	$V_{EBO}$	max. 5.0			V

## BD166, BD168, BD170

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.	20	W
Derate above $25^\circ\text{C}$		max	160	mW/°C
Junction temperature	$T_j$	max.	150	°C
Storage temperature	$T_{stg}$		-65 to +150	°C

### THERMAL RESISTANCE

From junction to case	$R_{th\,jc}$	6.25	°C/W
From junction to ambient	$R_{th\,ja}$	100	°C/W

### CHARACTERISTICS

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

		166	168	170	
Collector cutoff current					
$I_E = 0; V_{CB} = 45\text{ V}$	$I_{CBO}$	max. 0.1	-	-	mA
$I_E = 0; V_{CB} = 60\text{ V}$	$I_{CBO}$	max. -	0.1	-	mA
$I_E = 0; V_{CB} = 80\text{ V}$	$I_{CBO}$	max. -	-	0.1	mA
Emitter cut-off current					
$I_C = 0; V_{EB} = 5\text{ V}$	$I_{EBO}$	max.	1.0		mA
Breakdown voltages					
$I_C = 0.1\text{ A}; I_B = 0$	$V_{CEO(sus)}^*$	min. 45	60	80	V
$I_C = 1\text{ mA}; I_E = 0$	$V_{CBO}$	min. 45	60	80	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.	0.95		V
D.C. current gain					
$I_C = 0.15\text{ A}; V_{CE} = 2\text{ V}$	$h_{FE}^*$	min.	40		
$I_C = 0.5\text{ A}; V_{CE} = 2\text{ V}$	$h_{FE}^*$	min.	15		
Transition frequency $f = 1\text{ MHz}$					
$I_C = 500\text{ mA}; V_{CE} = 2\text{ V}$	$f_T$	min.	6.0		MHz

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

## Notes

### Disclaimer

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