

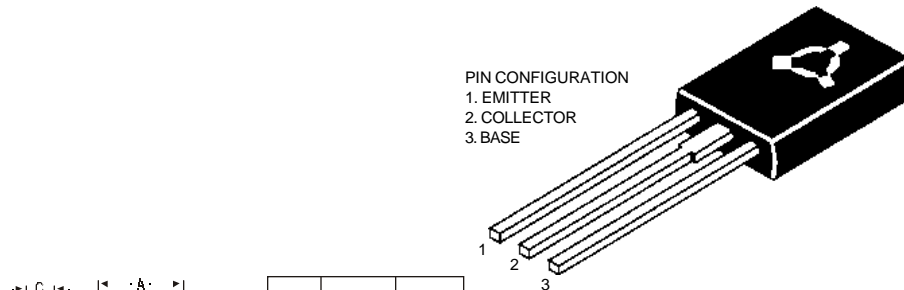
**TO-126 (SOT-32) Plastic Package**

**MJE170, MJE171, MJE172  
MJE180, MJE181, MJE182**

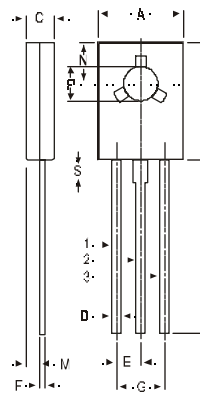
*MJE170, 171, 172 PNP PLASTIC POWER TRANSISTORS*

*MJE180, 181, 182 NPN PLASTIC POWER TRANSISTORS*

*Low Power Audio Amplifier and Low Current, High Speed 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>170</b>	<b>171</b>	<b>172</b>	
		<b>180</b>	<b>181</b>	<b>182</b>	
Collector-base voltage (open emitter)	$V_{CBO}$ max.	60	80	100	V
Collector-emitter voltage (open base)	$V_{CEO}$ max.	40	60	80	V
Collector current	$I_C$ max.	3.0			A
Total power dissipation up to $T_C = 25^\circ C$	$P_{tot}$ max.	12.5			W
Junction temperature	$T_j$ max.	150			$^\circ C$
Collector-emitter saturation voltage $I_C = 500$ mA; $I_B = 50$ mA	$V_{CEsat}$ max.	0.3			V
D.C. current gain $I_C = 100$ mA; $V_{CE} = 1$ V	$h_{FE}$ min.	50			
	max.	250			

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

		<b>170</b>	<b>171</b>	<b>172</b>	
		<b>180</b>	<b>181</b>	<b>182</b>	
Collector-base voltage (open emitter)	$V_{CBO}$ max.	60	80	100	V
Collector-emitter voltage (open base)	$V_{CEO}$ max.	40	60	80	V
Emitter-base voltage (open collector)	$V_{EBO}$ max.	7.0			V

**MJE170, MJE171, MJE172**  
**MJE180, MJE181, MJE182**

Collector current	$I_C$	max.	3.0	A
Collector current (Peak value)	$I_C$	max.	6.0	A
Base current	$I_B$	max.	1.0	A
Total power dissipation up to $T_A = 25^\circ\text{C}$	$P_{tot}$	max.	1.5	W
Derate above $25^\circ\text{C}$		max.	0.012	W/ $^\circ\text{C}$
Total power dissipation up to $T_C = 25^\circ\text{C}$	$P_{tot}$	max.	12.5	W
Derate above $25^\circ\text{C}$		max.	0.1	W/ $^\circ\text{C}$
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	$R_{thj-c}$		10	$^\circ\text{C/W}$
From junction to ambient	$R_{thj-a}$		83.4	$^\circ\text{C/W}$

**CHARACTERISTICS**

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

			<b>170</b>	<b>171</b>	<b>172</b>	
			<b>180</b>	<b>181</b>	<b>182</b>	
Collector cutoff current						
$I_E = 0; V_{CB} = 60\text{ V}$	$I_{CBO}$	max.	0.1	-	-	$\mu\text{A}$
$I_E = 0; V_{CB} = 80\text{ V}$	$I_{CBO}$	max.	-	0.1	-	$\mu\text{A}$
$I_E = 0; V_{CB} = 100\text{ V}$	$I_{CBO}$	max.	-	-	0.1	$\mu\text{A}$
$I_E = 0; V_{CB} = 60\text{ V}; T_C = 150^\circ\text{C}$	$I_{CBO}$	max.	0.1	-	-	mA
$I_E = 0; V_{CB} = 80\text{ V}; T_C = 150^\circ\text{C}$	$I_{CBO}$	max.	-	0.1	-	mA
$I_E = 0; V_{CB} = 100\text{ V}; T_C = 150^\circ\text{C}$	$I_{CBO}$	max.	-	-	0.1	mA
Emitter cut-off current						
$I_C = 0; V_{EB} = 7\text{ V}$	$I_{EBO}$	max.		1.0		$\mu\text{A}$
Breakdown voltages						
$I_C = 10\text{ mA}; I_B = 0$	$V_{CEO(sus)}$	min.	40	60	80	V
$I_C = 1\text{ mA}; I_E = 0$	$V_{CBO}$	min.	60	80	100	V
$I_E = 1\text{ mA}; I_C = 0$	$V_{EBO}$	min.		7.0		V
Saturation voltages						
$I_C = 500\text{ mA}; I_B = 50\text{ mA}$	$V_{CEsat}$	max.		0.3		V
$I_C = 1.5\text{ A}; I_B = 150\text{ mA}$	$V_{CEsat}$	max.		0.9		V
	$V_{BEsat}$	max.		1.5		V
$I_C = 3\text{ A}; I_B = 600\text{ mA}$	$V_{CEsat}$	max.		1.7		V
	$V_{BEsat}$	max.		2.0		V
Base-emitter on voltage						
$I_C = 500\text{ mA}; V_{CE} = 1\text{ V}$	$V_{BE(on)}$	max.		1.2		V
D.C. current gain						
$I_C = 100\text{ mA}; V_{CE} = 1\text{ V}$	$h_{FE}$	min.		50		
		max.		250		
$I_C = 500\text{ mA}; V_{CE} = 1\text{ V}$	$h_{FE}$	min.		30		
$I_C = 1.5\text{ A}; V_{CE} = 1\text{ V}$	$h_{FE}$	min.		12		
Output capacitance at $f = 0.1\text{ MHz}$						
$I_E = 0; V_{CB} = 10\text{ V}$ <b>NPN</b>	$C_o$	max.		40		pF
<b>PNP</b>	$C_o$	max.		60		pF
Transition frequency at $f = 10\text{ MHz}$						
$I_C = 100\text{ mA}; V_{CE} = 10\text{ V}$	$f_T(2)$	min.		50		MHz

(2)  $f_T = |h_{FE}| \cdot f_{test}$

## Disclaimer

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