

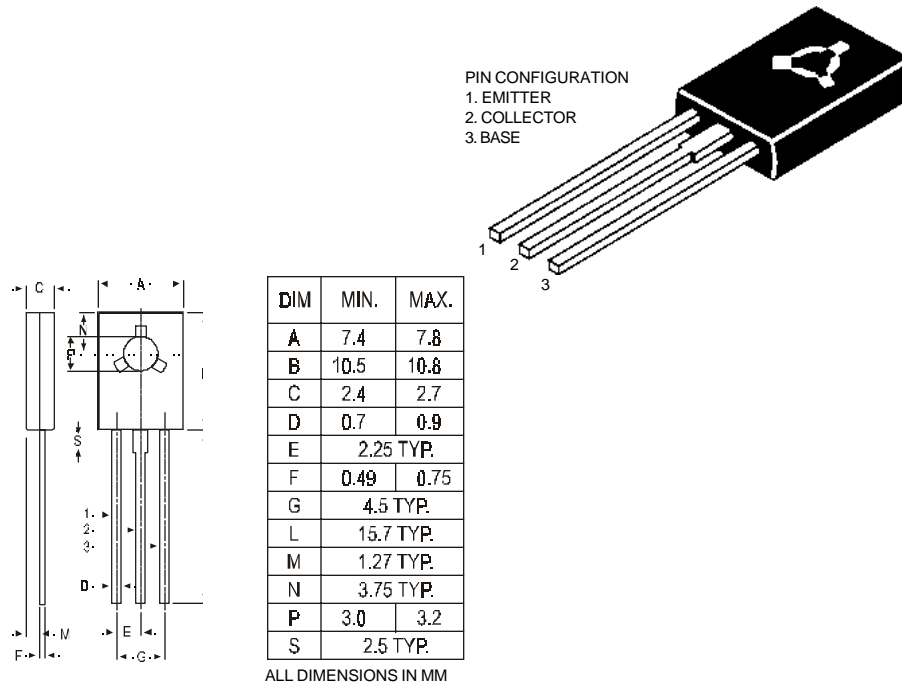
TO-126 (SOT-32) Plastic Package

**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



ABSOLUTE MAXIMUM RATINGS

		170	171	172	
		180	181	182	
Collector-base voltage (open emitter)	V_{CB0} 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)

		170	171	172	
		180	181	182	
Collector-base voltage (open emitter)	V_{CB0} 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

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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°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°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

			170	171	172	
			180	181	182	
Collector cutoff current						
$I_E = 0; V_{CB} = 60\text{ V}$	I_{CBO}	max.	0.1	-	-	μA
$I_E = 0; V_{CB} = 80\text{ V}$	I_{CBO}	max.	-	0.1	-	μA
$I_E = 0; V_{CB} = 100\text{ V}$	I_{CBO}	max.	-	-	0.1	μA
$I_E = 0; V_{CB} = 60\text{ V}; T_C = 150^\circ\text{C}$	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		μA
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 $f = 0.1\text{ MHz}$						
$I_E = 0; V_{CB} = 10\text{ V}$ NPN	C_o	max.		40		pF
PNP	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) $f_T = |h_{FE}| \cdot f_{test}$

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