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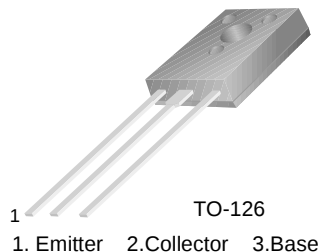
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MJE180/181/182

Low Power Audio Amplifier
Low Current High Speed Switching Applications



NPN Epitaxial Silicon Transistor

Absolute Maximum Ratings $T_C=25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	Value	Units
V_{CBO}	Collector-Base Voltage : MJE180	60	V
	: MJE181	80	V
	: MJE182	100	V
V_{CEO}	Collector-Emitter Voltage : MJE180	40	V
	: MJE181	60	V
	: MJE182	80	V
V_{EBO}	Emitter-Base Voltage	7	V
I_C	Collector Current (DC)	3	A
I_{CP}	Collector Current (Pulse)	6	A
I_B	Base Current	1	A
P_C	Collector Dissipation ($T_a=25^\circ\text{C}$)	1.5	W
P_C	Collector Dissipation ($T_C=25^\circ\text{C}$)	12.5	W
T_J	Junction Temperature	150	$^\circ\text{C}$
T_{STG}	Storage Temperature	- 65 ~ 150	$^\circ\text{C}$

Electrical Characteristics $T_C=25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	Test Condition	Min.	Max.	Units
BV_{CEO}	Collector -Emitter Breakdown Voltage : MJE180	$I_C = 10\text{mA}, I_B = 0$	40		V
	: MJE181		60		V
	: MJE182		80		V
I_{CBO}	Collector Cut-off Current : MJE180 : MJE181 : MJE182 : MJE180 : MJE181 : MJE182	$V_{CB} = 60\text{V}, I_B = 0$		0.1	μA
		$V_{CB} = 80\text{V}, I_E = 0$		0.1	μA
		$V_{CB} = 100\text{V}, I_E = 0$		0.1	μA
		$V_{CB} = 60\text{V}, I_E = 0 @ T_C = 150^\circ\text{C}$		0.1	mA
		$V_{CB} = 80\text{V}, I_E = 0 @ T_C = 150^\circ\text{C}$		0.1	mA
		$V_{CB} = 100\text{V}, I_E = 0 @ T_C = 150^\circ\text{C}$		0.1	mA
I_{EBO}	Emitter Cut-off Current	$V_{BE} = 7\text{V}, I_C = 0$		0.1	μA
h_{FE}	DC Current Gain	$V_{CE} = 1\text{V}, I_C = 100\text{mA}$	50	250	
		$V_{CE} = 1\text{V}, I_C = 500\text{mA}$	30		
		$V_{CE} = 1\text{V}, I_C = 1.5\text{A}$	12		
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C = 500\text{mA}, I_B = 50\text{mA}$		0.3	V
		$I_C = 1.5\text{A}, I_B = 150\text{mA}$		0.9	V
		$I_C = 3\text{A}, I_B = 600\text{mA}$		1.7	V
$V_{BE(sat)}$	Base-Emitter Saturation Voltage	$I_C = 1.5\text{A}, I_B = 150\text{mA}$		1.5	V
		$I_C = 3\text{A}, I_B = 600\text{mA}$		2.0	V
$V_{BE(on)}$	Base-Emitter ON Voltage	$V_{CE} = 1\text{V}, I_C = 500\text{mA}$		1.2	V
f_T	Current Gain Bandwidth Product	$V_{CE} = 10\text{V}, I_C = 100\text{mA}$	50		MHz
C_{ob}	Output Capacitance	$V_{CB} = 10\text{V}, I_E = 0, f = 0.1\text{MHz}$		30	pF

Typical Characteristics

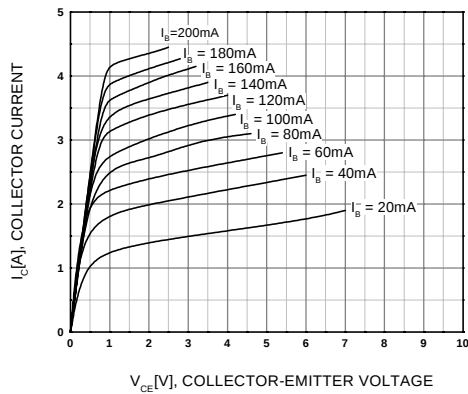


Figure 1. Static Characteristic

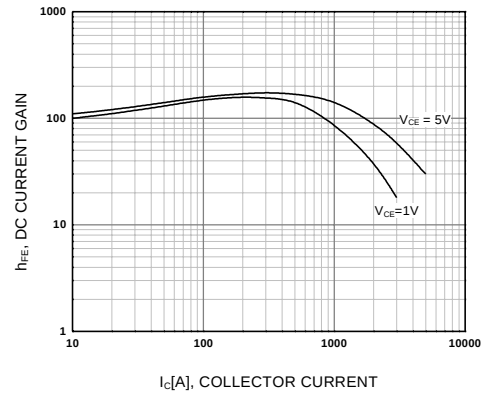


Figure 2. DC current Gain

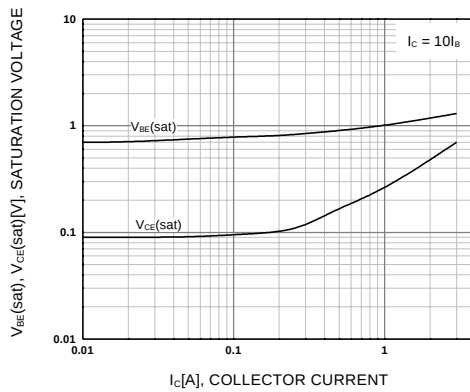


Figure 3. Base-Emitter Saturation Voltage
Collector-Emitter Saturation Voltage

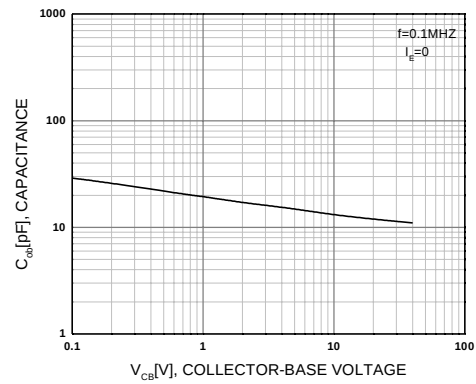


Figure 4. Collector Output Capacitance

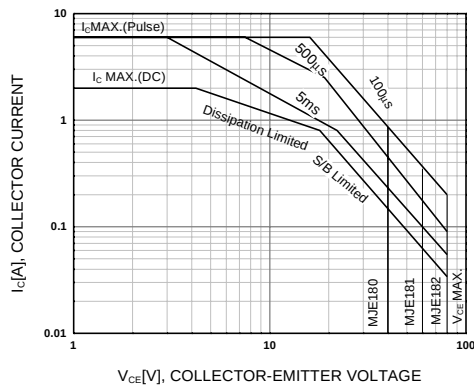


Figure 5. Safe Operating Area

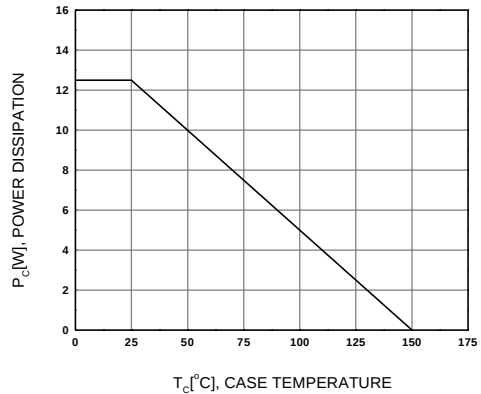


Figure 6. Power Derating

MJE180/181/182

Technical drawing of a mechanical part, showing front, side, and top views with dimensions.

Front View (Left):

- Overall width: 8.00 ± 0.30
- Overall height: 14.20 MAX
- Top flange thickness: 3.90 ± 0.10
- Central hole diameter: $\varnothing 3.20 \pm 0.10$
- Bottom flange thickness: 13.06 ± 0.30
- Internal features (from top to bottom):
 - Slot width: 0.75 ± 0.10
 - Slot width: 1.60 ± 0.10
 - Slot width: 0.75 ± 0.10
- Bottom flange width: 2.28 TYP [2.28 ± 0.20]
- Bottom flange width: 2.28 TYP [2.28 ± 0.20]
- Feature #1 is indicated at the bottom center.

Side View (Right):

- Overall height: 16.10 ± 0.20
- Top flange width: 3.25 ± 0.20
- Internal features (from top to bottom):
 - Slot width: (1.00)
 - Slot width: (0.50)
 - Slot width: 1.75 ± 0.20
- Bottom flange width: $0.50^{+0.10}_{-0.05}$

Top View (Bottom):

- Shows the top surface of the part with three rectangular features.

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