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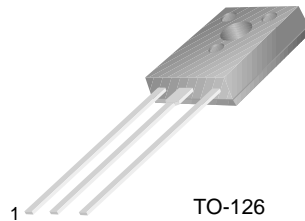
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MJE180/181/182

Low Power Audio Amplifier
Low Current High Speed Switching Applications



TO-126
1. Emitter 2. Collector 3. Base

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 | $I_C = 10\text{mA}, I_B = 0$ | 40 | | V |
| | : MJE180 | | | | |
| | : MJE181 | | | | |
| I_{CBO} | Collector Cut-off Current : MJE180 | $V_{CB} = 60\text{V}, I_B = 0$ | | 0.1 | μA |
| | : MJE181 | $V_{CB} = 80\text{V}, I_E = 0$ | | 0.1 | μA |
| | : MJE182 | $V_{CB} = 100\text{V}, I_E = 0$ | | 0.1 | μA |
| | : MJE180 | $V_{CB} = 60\text{V}, I_E = 0 @ T_C = 150^\circ\text{C}$ | | 0.1 | mA |
| | : MJE181 | $V_{CB} = 80\text{V}, I_E = 0 @ T_C = 150^\circ\text{C}$ | | 0.1 | mA |
| | : MJE182 | $V_{CB} = 100\text{V}, I_E = 0 @ T_C = 150^\circ\text{C}$ | | 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

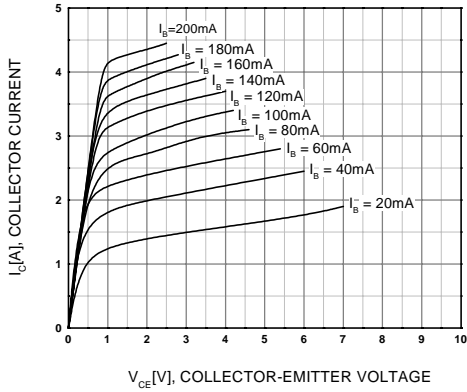


Figure 1. Static Characteristic

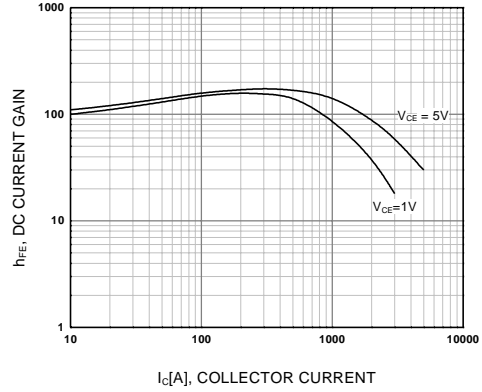


Figure 2. DC current Gain

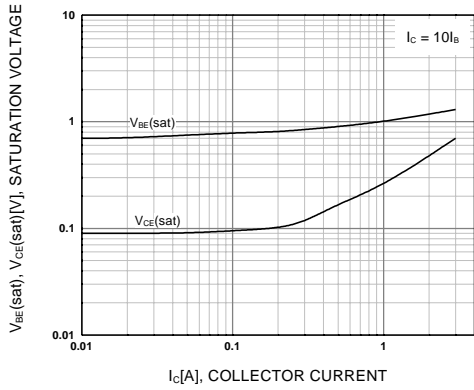


Figure 3. Base-Emitter Saturation Voltage
Collector-Emitter Saturation Voltage

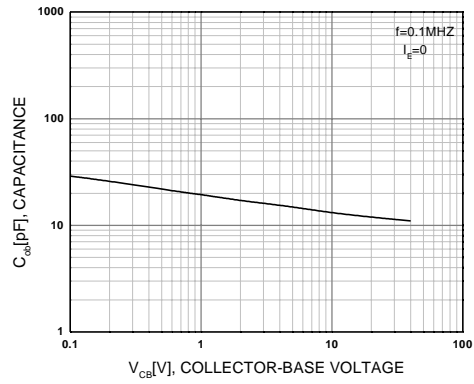


Figure 4. Collector Output Capacitance

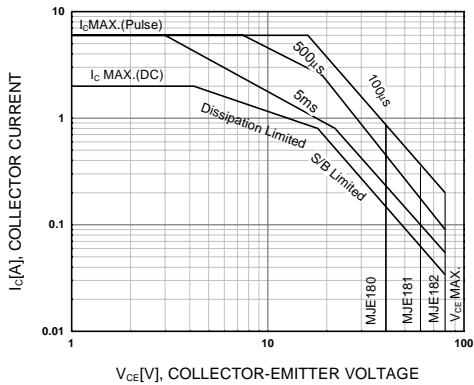


Figure 5. Safe Operating Area

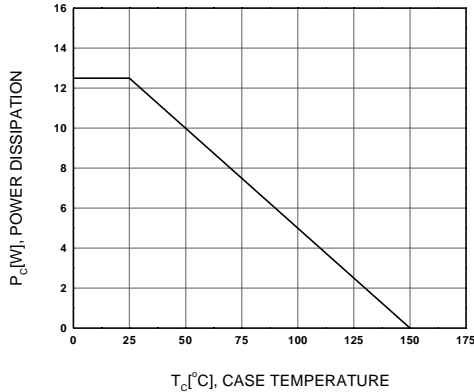


Figure 6. Power Derating

Package Dimensions

TO-126

MJE180/181/182



Dimensions in Millimeters

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