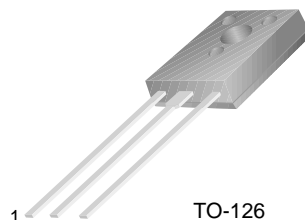


MJE170/171/172

Low Power Audio Amplifier
Low Current, High Speed Switching Applications



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

PNP Epitaxial Silicon Transistor

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

| Symbol | Parameter | Value | Units |
|-----------|--|------------|------------------|
| V_{CBO} | Collector-Base Voltage | : MJE170 | - 60 |
| | | : MJE171 | - 80 |
| | | : MJE172 | - 100 |
| V_{CEO} | Collector-Emitter Voltage | : MJE170 | - 40 |
| | | : MJE171 | - 60 |
| | | : MJE172 | - 80 |
| 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 ($T_C=25^\circ\text{C}$) | 12.5 | W |
| | Collector Dissipation ($T_a=25^\circ\text{C}$) | 1.5 | 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 |
| | | | -60 | | V |
| | | | -80 | | V |
| I_{CBO} | Collector Cut-off Current | : MJE170 : MJE171 : MJE172 : MJE170 : MJE171 : MJE172 | $V_{CB} = -60\text{V}, I_B = 0$ | -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 | $V_{CB} = -10\text{V}, I_E = 0, f = 0.1\text{MHz}$ | | 50 | pF |

Typical Characteristics

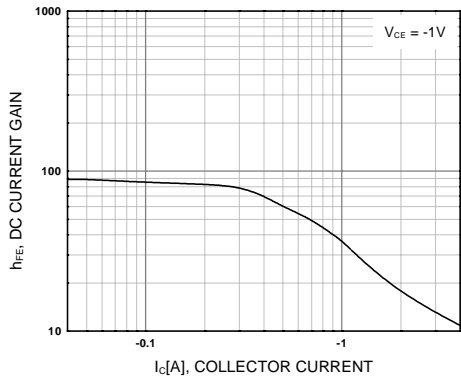


Figure 1. DC current Gain

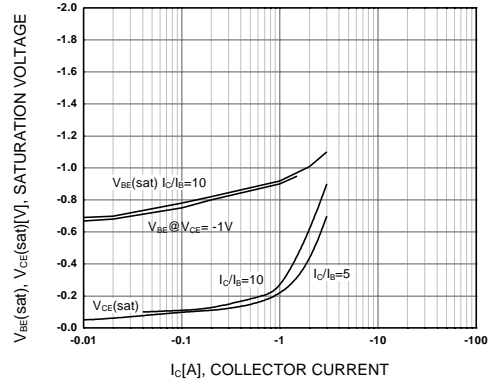


Figure 2. Base-Emitter Saturation Voltage
Collector-Emitter Saturation Voltage

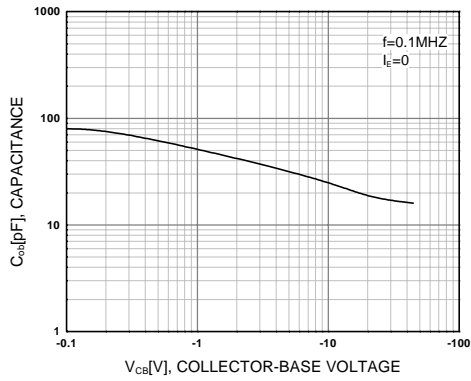


Figure 3. Collector Output Capacitance

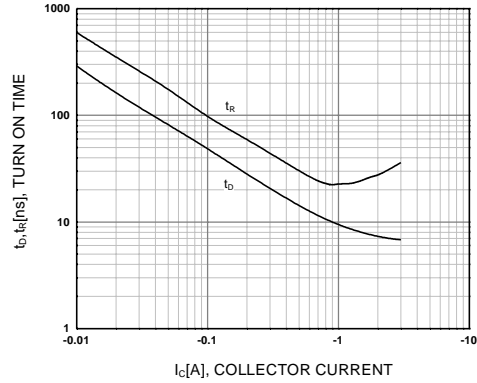


Figure 4. Turn On Time

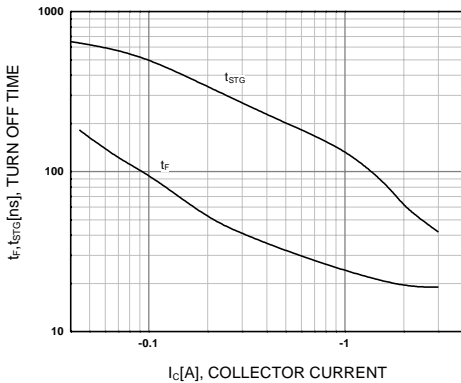


Figure 5. Turn Off Time

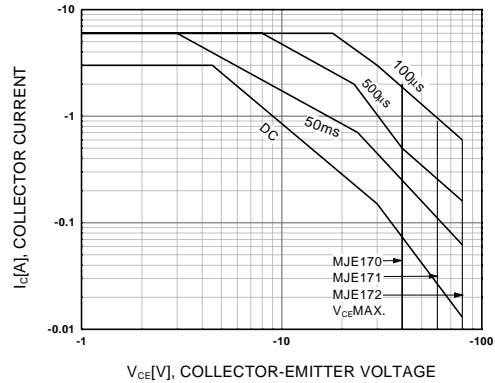


Figure 6. Safe Operating Area

Typical Characteristics (Continued)

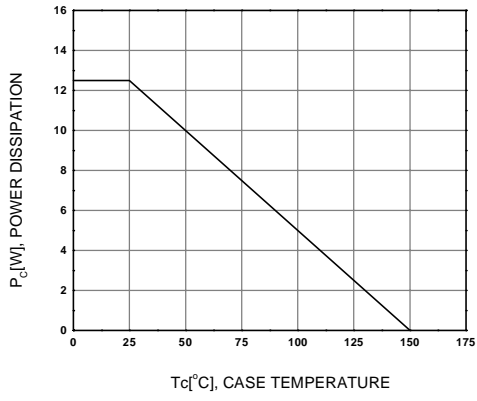


Figure 7. DC current Gain

Package Dimensions

TO-126

MJE170/171/172



Dimensions in Millimeters

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