

CentralTM Semiconductor Corp.

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Manufacturers of World Class Discrete Semiconductors

MJE240 THRU MJE244 NPN
MJE250 THRU MJE254 PNP

COMPLEMENTARY SILICON
POWER TRANSISTORS

JEDEC TO-126 GASE

DESCRIPTION

The CENTRAL SEMICONDUCTOR MJE240, MJE250 series types are complementary silicon power transistors designed for audio amplifier and switching applications.

MAXIMUM RATINGS ($T_A=25^\circ\text{C}$ unless otherwise noted)

| | MJE240, MJE241 MJE242, MJE250 MJE251, MJE252 | MJE243, MJE244 MJE253, MJE254 |
|--|--|----------------------------------|
| Collector-Base Voltage | 80 | 100 |
| Collector-Emitter Voltage | 80 | 100 |
| Emitter-Base Voltage | | 7.0 |
| Collector Current | | 4.0 |
| Collector Current (PEAK) | | 8.0 |
| Base Current | | 1.0 |
| Power Dissipation | | 1.5 |
| Power Dissipation ($T_C=25^\circ\text{C}$) | | 15 |
| Junction Temperature | -65 to +150 | |
| Thermal Resistance | 83.4 | |
| Thermal Resistance | 8.34 | |

| | SYMBOL | | | UNIT |
|--|----------------|-------------|-----|--------------------|
| Collector-Base Voltage | V_{CB0} | 80 | 100 | V |
| Collector-Emitter Voltage | V_{CE0} | 80 | 100 | V |
| Emitter-Base Voltage | V_{EB0} | | 7.0 | V |
| Collector Current | I_C | | 4.0 | A |
| Collector Current (PEAK) | I_{CM} | | 8.0 | A |
| Base Current | I_B | | 1.0 | A |
| Power Dissipation | P_D | | 1.5 | W |
| Power Dissipation ($T_C=25^\circ\text{C}$) | P_D | | 15 | W |
| Operating and Storage | | | | |
| Junction Temperature | T_J, T_{STG} | -65 to +150 | | $^\circ\text{C}$ |
| Thermal Resistance | θ_{JA} | 83.4 | | $^\circ\text{C/W}$ |
| Thermal Resistance | θ_{JC} | 8.34 | | $^\circ\text{C/W}$ |

ELECTRICAL CHARACTERISTICS ($T_C=25^\circ\text{C}$ unless otherwise noted)

| SYMBOL | TEST CONDITIONS | MIN | MAX | UNIT |
|----------------------|---|-----|-----|---------------|
| I_{CBO} | $V_{CB}=80\text{V}$, (MJE240, 241, 242, 250, 251, 252) | | 0.1 | μA |
| I_{CBO} | $V_{CB}=100\text{V}$, (MJE243, 244, 253, 254) | | 0.1 | μA |
| I_{CBO} | $V_{CB}=80\text{V}$, $T_C=125^\circ\text{C}$ (MJE240, 241, 242, 250, 251, 252) | | 0.1 | mA |
| I_{CBO} | $V_{CB}=100\text{V}$, $T_C=125^\circ\text{C}$ (MJE243, 244, 253, 254) | | 0.1 | mA |
| I_{EBO} | $V_{BE}=7.0\text{V}$ | | 0.1 | μA |
| BV_{CE0} | $I_C=10\text{mA}$, (MJE240, 241, 242, 250, 251, 252) | 80 | | V |
| BV_{CE0} | $I_C=10\text{mA}$, (MJE243, 244, 253, 254) | 100 | | V |
| $V_{CE}(\text{SAT})$ | $I_C=500\text{mA}$, $I_B=50\text{mA}$ | | 0.3 | V |
| $V_{CE}(\text{SAT})$ | $I_C=1.0\text{A}$, $I_B=100\text{mA}$, (MJE241, 243, 251, 253) | | 0.6 | V |
| $V_{CE}(\text{SAT})$ | $I_C=2.0\text{A}$, $I_B=200\text{mA}$, (MJE240, 250) | | 0.8 | V |
| $V_{BE}(\text{SAT})$ | $I_C=2.0\text{A}$, $I_B=200\text{mA}$ | | 1.8 | V |
| $V_{BE}(\text{ON})$ | $V_{CE}=1.0\text{V}$, $I_C=500\text{mA}$ | | 1.5 | V |
| h_{FE} | $V_{CE}=1.0\text{V}$, $I_C=200\text{mA}$, (MJE240, 250) | 40 | 200 | |
| h_{FE} | $V_{CE}=1.0\text{V}$, $I_C=200\text{mA}$, (MJE241, 251) | 40 | 180 | |
| h_{FE} | $V_{CE}=1.0\text{V}$, $I_C=200\text{mA}$, (MJE243, 253) | 40 | 180 | |
| h_{FE} | $V_{CE}=1.0\text{V}$, $I_C=200\text{mA}$, (MJE242, 244, 252, 254) | 25 | - | |
| h_{FE} | $V_{CE}=1.0\text{V}$, $I_C=1.0\text{A}$, (MJE241, 251) | 20 | - | |
| h_{FE} | $V_{CE}=1.0\text{V}$, $I_C=1.0\text{A}$, (MJE243, 253) | 15 | - | |
| h_{FE} | $V_{CE}=1.0\text{V}$, $I_C=1.0\text{A}$, (MJE242, 244, 252, 254) | 10 | - | |
| h_{FE} | $V_{CE}=1.0\text{V}$, $I_C=2.0\text{A}$, (MJE240, 250) | 15 | - | |
| f_T | $V_{CE}=10\text{V}$, $I_C=1.0\text{A}$ $f=1.0\text{MHz}$ | 2.0 | | MHz |
| C_{ob} | $V_{CB}=10\text{V}$, $I_E=0$, $f=0.1\text{MHz}$, (NPN types) | | 50 | pF |
| C_{ob} | $V_{CB}=10\text{V}$, $I_E=0$, $f=0.1\text{MHz}$, (PNP types) | | 70 | pF |