New Jersey Semi-Conductor Products, Inc.

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NPN - MPSA05, MPSA06*; PNP - MPSA55, MPSA56*

*Preferred Devices

Amplifier Transistors

Voltage and Current are Negative for PNP Transistors

| MAXIMUM RATINGS | | | | | | | | |
|---|-----------------------------------|-------------|------------|--|--|--|--|--|
| Rating | Symbol | Value | Unit | | | | | |
| Collector – Emitter Voltage MPSA05, MPSA55 MPSA06, MPSA56 | V _{ÇEO} | 60 80 | Vdc | | | | | |
| Collector - Base Voltage MPSA05, MPSA55 MPSA06, MPSA56 | V _{CBO} | 60 80 | Vdc | | | | | |
| Emitter-Base Voltage | V _{EBO} | 4.0 | Vdc | | | | | |
| Collector Current - Continuous | Ιc | 500 | mAdc | | | | | |
| Total Device Dissipation @ T _A = 25°C Derate above 25°C | PD | 625 5.0 | W mW/°C | | | | | |
| Total Device Dissipation @ T _C = 25°C Derate above 25°C | PD | 1.5 12 | W mW/°C | | | | | |
| Operating and Storage Junction Temperature Range | Т _Ј , Ť _{stg} | -55 to +150 | °C | | | | | |

THERMAL CHARACTERISTICS

| Characteristic | Symbol | Max | Unit |
|--|------------------|------|------|
| Thermal Resistance, Junction-to-Ambient (Note 1) | R _{θJA} | 200 | °C/W |
| Thermal Resistance, Junction-to-Case | R _{0JC} | 83.3 | °C/W |

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

1. $R_{\theta JA}$ is measured with the device soldered into a typical printed circuit board.



NJ Semi-Conductors reserves the right to change test conditions, parameter limits and package dimensions without notice. Information furnished by NJ Semi-Conductors is believed to be both accurate and reliable at the time of going to press. However, NJ Semi-Conductors assumes no responsibility for any errors or omissions discovered in its use. NJ Semi-Conductors encourages customers to verify that datasheets are current before placing orders.

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ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted)

| Characteristic | | Symbol | Min | Max | Unit |
|--|----------------------------------|----------------------|------------|------------|------|
| OFF CHARACTERISTICS | | | - | | |
| Collector – Emitter Breakdown Voltage (Note 2) (I _C = 1.0 mAdc, I _B = 0) | MPSA05, MPSA55 MPSA06, MPSA56 | V _{(BR)CEO} | 60 80 | | Vdc |
| Emitter-Base Breakdown Voltage (I _E = 100 μAdc, I _C = 0) | | V _{(BR)EBÖ} | 4.0 | - | Vdc |
| Collector Cutoff Current (V _{CE} = 60 Vdc, I _B = 0) | | ICES | - | 0.1 | μAdc |
| Collector Cutoff Current $(V_{CB} = 60 \text{ Vdc}, I_E = 0)$ $(V_{CB} = 80 \text{ Vdc}, I_E = 0)$ | MPSA05, MPSA55 MPSA06, MPSA56 | I _{СВО} | | 0.1 0.1 | μAdc |
| ON CHARACTERISTICS | | | | | |
| DC Current Gain (I _C = 10 mAdc, V _{CE} = 1.0 Vdc) (I _C = 100 mAdc, V _{CE} = 1.0 Vdc) | | h _{FE} | 100 100 | - | - |
| Collector – Emitter Saturation Voltage (I _C = 100 mAdc, I _B = 10 mAdc) | | V _{CE(sat)} | - | 0.25 | Vdc |
| Base−Emitter On Voltage (I _C ≖ 100 mAdc, V _{CE} = 1.0 Vdc) | | V _{BE(on)} | - | 1.2 | Vdc |
| SMALL-SIGNAL CHARACTERISTICS | | | • | | |
| Current-Gain - Bandwidth Product (Note 3) (I _C = 10 mA, V _{CE} = 2.0 V, f = 100 MHz) | MPSA05 | f _T | 100 | - | MHz |
| (I _C = 100 mAdc, V _{CE} = 1.0 Vdc, f = 100 MHz) | MPSA06 MPSA55 MPSA56 | | 50 | - | |

2. Pulse Test: Pulse Width \leq 300 µs, Duty Cycle \leq 2%. 3. f_T is defined as the frequency at which |h_{fe}| extrapolates to unity.



*Total Shunt Capacitance of Test Jig and Connectors For PNP Test Circuits, Reverse All Voltage Polarities

Figure 1. Switching Time Test Circuits