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# MPSA05 (NPN) & MPSA06 (PNP)
# Silicon Complementary Transistors
# High Voltage, General Purpose Amplifier
# TO–92 Type Package

**Absolute Maximum Ratings:**

Collector–Emitter Voltage, $V_{CEO}$
- MPSA05 . . . . . 60V
- MPSA06 . . . . . 80V

Collector–Base Voltage, $V_{CBO}$
- MPSA05 . . . . . 60V
- MPSA06 . . . . . 80V

Emitter–Base Voltage, $V_{EBO}$ . . . . . 4V
Continuous Collector Current, $I_C$ . . . . . 500mA
Total Device Dissipation @ $T_A$ = +25°C, $P_D$ . . . . . 625mW
- Derate Above +25°C . . . . . 5mW/°C

Total Device Dissipation @ $T_C$ = +25°C, $P_D$ . . . . . 1.5W
- Derate Above +25°C . . . . . 12mW/°C

Operating Junction Temperature Range, $T_J$ . . . . . –55° to +150°C
Storage Temperature Range, $T_{stg}$ . . . . . –55° to +150°C
Thermal Resistance, Junction–to–Ambient (Note 1), $R_{thJA}$ . . . . . 200°C/mW
Thermal Resistance, Junction–to–Case, $R_{thJC}$ . . . . . 83.3°C/mW

Note 1. $R_{thJA}$ is measured with the device soldered into a typical printed circuit board.

**Electrical Characteristics:** ($T_A$ = +25°C unless otherwise specified)

| Parameter | Symbol | Test Conditions | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| **OFF Characteristics** | | | | | | |
| Collector–Emitter Breakdown Voltage<br>MPSA05 | $V_{(BR)CEO}$ | $I_B$ = 1mA, $I_C$ = 0 | 60 | – | – | V |
| MPSA06 | | | 80 | – | – | V |
| Emitter–Base Breakdown Voltage | $V_{(BR)EBO}$ | $I_E$ = 100μA, $I_C$ = 0 | 4 | – | – | V |
| Collector Cutoff Current | $I_{CES}$ | $V_{CE}$ = 60V, $I_B$ = 0 | – | – | 0.1 | μA |
| Collector Cutoff Current<br>MPSA05 | $I_{CBO}$ | $V_{CB}$ = 60V, $I_E$ = 0 | – | – | 0.1 | μA |
| MPSA06 | | $V_{CB}$ = 80V, $I_E$ = 0 | – | – | 0.1 | μA |

Note 2. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.

**Electrical Characteristics (Cont'd):** ($T_A$ = +25°C unless otherwise specified)

| Parameter | Symbol | Test Conditions | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| **ON Characteristics** | | | | | | |
| DC Current Gain | $h_{FE}$ | $I_C$ = 10mA, $V_{CE}$ = 1V | 100 | – | – | |
| | | $I_C$ = 100mA, $V_{CE}$ = 1V | 100 | – | – | |
| Collector–Emitter Saturation Voltage | $V_{CE(sat)}$ | $I_C$ = 100mA, $I_B$ = 10mA | – | – | 0.25 | V |
| Base–Emitter ON Voltage | $V_{BE(on)}$ | $I_C$ = 100mA, $V_{CE}$ = 1V | – | – | 1.2 | V |
| **Small–Signal Characteristics** | | | | | | |
| Current Gain – Bandwidth Product MPSA05 | $f_T$ | $I_C$ = 10mA, $V_{CE}$ = 2V, f = 100MHz, Note 3 | 100 | – | – | MHz |
| MPSA06 | | | 100 | – | – | MHz |

Note 3. $f_T$ is defined as the frequency at which $|h_{fe}|$ extrapolates to unity.