

MAXIMUM RATINGS

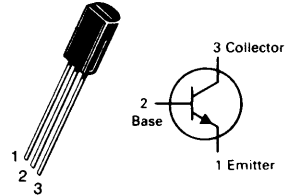
| Rating | Symbol | Value | Unit |
|---|-----------------------------------|-------------|-----------------|
| Collector-Emitter Voltage MPS6714 MPS6715 | V _{CEO} | 30 40 | V _{dc} |
| Collector-Base Voltage MPS6714 MPS6715 | V _{CBO} | 40 50 | V _{dc} |
| Emitter-Base Voltage | V _{EBO} | 5.0 | V _{dc} |
| Collector Current — Continuous | I _C | 1.0 | A _{dc} |
| Total Device Dissipation @ T _A = 25°C Derate above 25°C | P _D | 1.0 8.0 | Watt mW/°C |
| Total Device Dissipation @ T _C = 25°C Derate above 25°C | P _D | 2.5 20 | Watts mW/°C |
| Operating and Storage Junction Temperature Range | T _J , T _{stg} | -55 to +150 | °C |

THERMAL CHARACTERISTICS

| Characteristic | Symbol | Max | Unit |
|---|------------------|-----|------|
| Thermal Resistance, Junction to Case | R _{θJC} | 50 | °C/W |
| Thermal Resistance, Junction to Ambient | R _{θJA} | 125 | °C/W |

**MPS6714
MPS6715**

**CASE 29-03, STYLE 1
TO-92 (TO-226 AE)**



AMPLIFIER TRANSISTOR

NPN SILICON

Refer to MPSW01 for graphs.

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

| Characteristic | Symbol | Min | Max | Unit |
|----------------|--------|-----|-----|------|
|----------------|--------|-----|-----|------|

OFF CHARACTERISTICS

| | | | | |
|--|----------------------|----------|------------|------------------|
| Collector-Emitter Breakdown Voltage(1) (I _C = 10 mA _{dc} , I _B = 0) | V _{(BR)CEO} | 30 40 | — | V _{dc} |
| Collector-Base Breakdown Voltage (I _C = 100 μA _{dc} , I _E = 0) | V _{(BR)CBO} | 40 50 | — | V _{dc} |
| Emitter-Base Breakdown Voltage (I _E = 100 μA _{dc} , I _C = 0) | V _{(BR)EBO} | 5.0 | — | V _{dc} |
| Collector Cutoff Current (V _{CB} = 40 V _{dc} , I _E = 0) (V _{CB} = 50 V _{dc} , I _E = 0) | I _{CBO} | — — | 0.1 0.1 | μA _{dc} |
| Emitter Cutoff Current (V _{EB} = 5.0 V _{dc} , I _C = 0) | I _{EBO} | — | 0.1 | μA _{dc} |

ON CHARACTERISTICS(1)

| | | | | |
|--|----------------------|----------|----------|-----------------|
| DC Current Gain (I _C = 100 mA _{dc} , V _{CE} = 1.0 V _{dc}) (I _C = 1000 mA _{dc} , V _{CE} = 1.0 V _{dc}) | h _{FE} | 60 50 | — 250 | — |
| Collector-Emitter Saturation Voltage (I _C = 1000 mA _{dc} , I _B = 100 mA _{dc}) | V _{CE(sat)} | — | 0.5 | V _{dc} |
| Base-Emitter On Voltage (I _C = 1000 mA _{dc} , V _{CE} = 1.0 V _{dc}) | V _{BE(on)} | — | 1.2 | V _{dc} |

SMALL-SIGNAL CHARACTERISTICS

| | | | | |
|---|-----------------|-----|----|----|
| Collector-Base Capacitance (V _{CB} = 10 V _{dc} , I _E = 0, f = 1.0 MHz) | C _{cb} | — | 30 | pF |
| Small-Signal Current Gain (I _C = 50 mA _{dc} , V _{CE} = 10 V _{dc} , f = 20 MHz) | h _{fe} | 2.5 | 25 | — |

(1) Pulse Test: Pulse Width ≤ 30 μs, Duty Cycle ≤ 2.0%.

MAXIMUM RATINGS

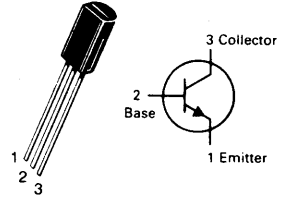
| Rating | Symbol | MPS6516 | MPS6517 | Unit |
|--|----------------|-------------|---------|----------------|
| Collector-Emitter Voltage | V_{CEO} | 60 | 80 | Vdc |
| Collector-Base Voltage | V_{CBO} | 60 | 80 | Vdc |
| Emitter-Base Voltage | V_{EBO} | 5.0 | | Vdc |
| Collector Current — Continuous | I_C | 500 | | mAdc |
| Total Device Dissipation @ $T_A = 25^\circ\text{C}$ Derate above 25°C | P_D | 1.0 | 8.0 | Watt mW/°C |
| Total Device Dissipation @ $T_C = 25^\circ\text{C}$ Derate above 25°C | P_D | 2.5 | 20 | Watts mW/°C |
| Operating and Storage Junction Temperature Range | T_J, T_{stg} | -55 to +150 | | °C |

THERMAL CHARACTERISTICS

| Characteristic | Symbol | Max | Unit |
|---|-----------------|-----|------|
| Thermal Resistance, Junction to Case | $R_{\theta JC}$ | 50 | °C/W |
| Thermal Resistance, Junction to Ambient | $R_{\theta JA}$ | 125 | °C/W |

MPS6716 MPS6717

CASE 29-03, STYLE 1
TO-92 (TO-226 AE)



AMPLIFIER TRANSISTOR

NPN SILICON

Refer to MPSW05 for graphs.

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

| Characteristic | Symbol | Min | Max | Unit |
|--|---------------|----------|------------|-----------|
| OFF CHARACTERISTICS | | | | |
| Collector-Emitter Breakdown Voltage(1) ($I_C = 1.0$ mAdc, $I_E = 0$) | $V_{(BR)CEO}$ | 60 80 | — | Vdc |
| Collector-Base Breakdown Voltage ($I_C = 100$ μ Adc, $I_E = 0$) | $V_{(BR)CBO}$ | 60 80 | — | Vdc |
| Emitter-Base Breakdown Voltage ($I_E = 10$ μ Adc, $I_C = 0$) | $V_{(BR)EBO}$ | 5.0 | — | Vdc |
| Collector Cutoff Current ($V_{CB} = 40$ Vdc, $I_E = 0$) ($V_{CB} = 60$ Vdc, $I_E = 0$) | I_{CBO} | — | 0.1 0.1 | μ Adc |
| Emitter Cutoff Current ($V_{EB} = 5.0$ Vdc, $I_C = 0$) | I_{EBO} | — | 10 | μ Adc |
| ON CHARACTERISTICS(1) | | | | |
| DC Current Gain ($I_C = 50$ mAdc, $V_{CE} = 1.0$ Vdc) ($I_C = 250$ mAdc, $V_{CE} = 1.0$ Vdc) | h_{FE} | 80 50 | — 250 | — |
| Collector-Emitter Saturation Voltage ($I_C = 250$ mAdc, $I_B = 10$ mAdc) | $V_{CE(sat)}$ | — | 0.5 | Vdc |
| Base-Emitter On Voltage ($I_C = 250$ mAdc, $V_{CE} = 1.0$ Vdc) | $V_{BE(on)}$ | — | 1.2 | Vdc |
| SMALL-SIGNAL CHARACTERISTICS | | | | |
| Collector-Base Capacitance ($V_{CB} = 10$ Vdc, $I_E = 0$, $f = 1.0$ MHz) | C_{cb} | — | 30 | pF |
| Small-Signal Current Gain ($I_C = 200$ mAdc, $V_{CE} = 5.0$ Vdc, $f = 20$ MHz) | h_{fe} | 2.5 | 25 | — |

(1) Pulse Test: Pulse Width ≤ 300 μ s, Duty Cycle $\leq 2.0\%$.

MAXIMUM RATINGS

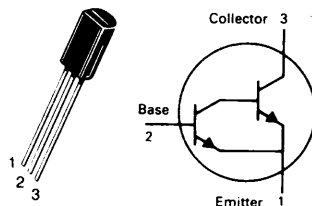
| Rating | Symbol | MPS6724 | MPS6725 | Unit |
|---|-----------------------------------|-------------|---------|----------------|
| Collector-Emitter Voltage | V _{CES} | 40 | 50 | Vdc |
| Collector-Base Voltage | V _{CBO} | 50 | 60 | Vdc |
| Emitter-Base Voltage | V _{EBO} | 12 | | Vdc |
| Collector Current — Continuous | I _C | 1000 | | mAdc |
| Total Device Dissipation @ T _A = 25°C Derate above 25°C | P _D | 1.0 | 8.0 | Watt mW/°C |
| Total Device Dissipation @ T _C = 25°C Derate above 25°C | P _D | 2.5 | 20 | Watts mW/°C |
| Operating and Storage Junction Temperature Range | T _J , T _{stg} | -55 to +150 | | °C |

THERMAL CHARACTERISTICS

| Characteristic | Symbol | Max | Unit |
|---|------------------|-----|------|
| Thermal Resistance, Junction to Case | R _{θJC} | 50 | °C/W |
| Thermal Resistance, Junction to Ambient | R _{θJA} | 125 | °C/W |

**MPS6724
MPS6725**

**CASE 29-03, STYLE 1
(TO-226 AE)**



DARLINGTON TRANSISTOR

NPN SILICON

Refer to 2N6426 for graphs.

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

| Characteristic | Symbol | Min | Max | Unit |
|----------------|--------|-----|-----|------|
|----------------|--------|-----|-----|------|

OFF CHARACTERISTICS

| | | | | |
|--|----------------------|----------|------------|------------|
| Collector-Emitter Breakdown Voltage(1) (I _C = 1.0 mAdc, I _B = 0) | V _{(BR)CES} | 40 50 | — | Vdc |
| | MPS6724 MPS6725 | | | |
| Collector-Base Breakdown Voltage (I _C = 1.0 μAdc, I _E = 0) | V _{(BR)CBO} | 50 60 | — | Vdc Vdc |
| | MPS6724 MPS6725 | | | |
| Emitter-Base Breakdown Voltage (I _E = 10 μAdc, I _C = 0) | V _{(BR)EBO} | 12 | — | Vdc |
| Collector Cutoff Current (V _{CB} = 30 Vdc, I _E = 0) (V _{CB} = 40 Vdc, I _E = 0) | I _{CBO} | — — | 100 100 | nAdc |
| | MPS6724 MPS6725 | | | |
| Emitter Cutoff Current (V _{EB} = 10 Vdc, I _C = 0) | I _{EBO} | — | 100 | nAdc |

ON CHARACTERISTICS(1)

| | | | | |
|--|----------------------|-----------------|-------------|-----|
| DC Current Gain (I _C = 200 mAdc, V _{CE} = 5.0 Vdc) (I _C = 1000 mAdc, V _{CE} = 5.0 Vdc) | h _{FE} | 25,000 4,000 | — 40,000 | — |
| Collector-Emitter Saturation Voltage (I _C = 1000 mAdc, I _B = 2.0 mAdc) | V _{CE(sat)} | — | 1.5 | Vdc |
| Base-Emitter On Voltage (I _C = 1000 mAdc, V _{CE} = 5.0 Vdc) | V _{BE(on)} | — | 2.0 | Vdc |

SMALL-SIGNAL CHARACTERISTICS

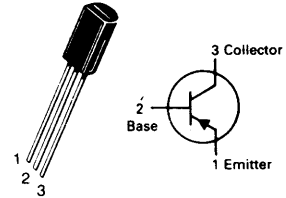
| | | | | |
|---|-----------------|-----|------|-----|
| Current-Gain — Bandwidth Product (I _C = 200 mAdc, V _{CE} = 5.0 Vdc, f = 100 MHz) | f _T | 100 | 1000 | MHz |
| Collector-Base Capacitance (V _{CB} = 10 Vdc, I _E = 0, f = 1.0 MHz) | C _{cb} | — | 10 | pF |

MAXIMUM RATINGS

| Rating | Symbol | Value | Unit |
|--|----------------|-------------|-------------------------------------|
| Collector-Emitter Voltage MPS6726 MPS6727 | V_{CEO} | 30 40 | Vdc |
| Collector-Base Voltage MPS6726 MPS6727 | V_{CBO} | 40 50 | Vdc |
| Emitter-Base Voltage | V_{EBO} | 5.0 | Vdc |
| Collector Current — Continuous | I_C | 1.0 | Adc |
| Total Device Dissipation @ $T_A = 25^\circ\text{C}$ Derate above 25°C | P_D | 1.0 8.0 | Watt $\text{mW}/^\circ\text{C}$ |
| Total Device Dissipation @ $T_C = 25^\circ\text{C}$ Derate above 25°C | P_D | 2.5 20 | Watts $\text{mW}/^\circ\text{C}$ |
| Operating and Storage Junction Temperature Range | T_J, T_{stg} | -55 to +150 | $^\circ\text{C}$ |

THERMAL CHARACTERISTICS

| Characteristic | Symbol | Max | Unit |
|---|-----------------|-----|---------------------------|
| Thermal Resistance, Junction to Case | $R_{\theta JC}$ | 50 | $^\circ\text{C}/\text{W}$ |
| Thermal Resistance, Junction to Ambient | $R_{\theta JA}$ | 125 | $^\circ\text{C}/\text{W}$ |

MPS6726
MPS6727
CASE 29-03, STYLE 1
TO-92 (TO-226 AE)

AMPLIFIER TRANSISTOR
PNP SILICON

Refer to MPSW51 for graphs.

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

| Characteristic | Symbol | Min | Max | Unit |
|--|---------------|----------|------------|-----------------|
| OFF CHARACTERISTICS | | | | |
| Collector-Emitter Breakdown Voltage ($I_C = 10 \text{ mAdc}, I_B = 0$) | $V_{(BR)CEO}$ | 30 40 | — | Vdc |
| Collector-Base Breakdown Voltage ($I_C = 100 \mu\text{Adc}, I_E = 0$) | $V_{(BR)CBO}$ | 40 50 | — | Vdc |
| Emitter-Base Breakdown Voltage ($I_E = 100 \mu\text{Adc}, I_C = 0$) | $V_{(BR)EBO}$ | 5.0 | — | Vdc |
| Collector Cutoff Current ($V_{CB} = 40 \text{ Vdc}, I_E = 0$) ($V_{CB} = 50 \text{ Vdc}, I_E = 0$) | I_{CBO} | — | 0.1 0.1 | μAdc |
| Emitter Cutoff Current ($V_{EB} = 5.0 \text{ Vdc}, I_C = 0$) | I_{EBO} | — | 0.1 | μAdc |
| ON CHARACTERISTICS(1) | | | | |
| DC Current Gain ($I_C = 100 \text{ mAdc}, V_{CE} = 1.0 \text{ Vdc}$) ($I_C = 1000 \text{ mAdc}, V_{CE} = 1.0 \text{ Vdc}$) | h_{FE} | 60 50 | — 250 | — |
| Collector-Emitter Saturation Voltage ($I_C = 1000 \text{ mAdc}, I_B = 100 \text{ mAdc}$) | $V_{CE(sat)}$ | — | 0.5 | Vdc |
| Base-Emitter On Voltage ($I_C = 1000 \text{ mAdc}, V_{CE} = 1.0 \text{ Vdc}$) | $V_{BE(on)}$ | — | 1.2 | Vdc |
| SMALL-SIGNAL CHARACTERISTICS | | | | |
| Collector-Base Capacitance ($V_{CB} = 10 \text{ Vdc}, I_E = 0, f = 1.0 \text{ MHz}$) | C_{cb} | — | 30 | pF |
| Small-Signal Current Gain ($I_C = 50 \text{ mAdc}, V_{CE} = 10 \text{ Vdc}, f = 20 \text{ MHz}$) | h_{fe} | 2.5 | 25 | — |

 (1) Pulse Test: Pulse Width $\leq 300 \mu\text{s}$, Duty Cycle $\leq 2.0\%$.