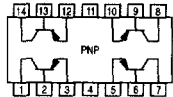


Quad Memory Driver  
Transistor  
PNP Silicon



MAXIMUM RATINGS

| Rating  | Symbol                            | Value           |                              | Unit            |
|---|-----------------------------------|-----------------|------------------------------|-----------------|
| Collector–Emitter Voltage   | V <sub>CEO</sub>                  | –40             |                              | V <sub>dc</sub> |
| Collector–Base Voltage  | V <sub>CBO</sub>                  | –40             |                              | V <sub>dc</sub> |
| Emitter–Base Voltage  | V <sub>EBO</sub>                  | –5.0            |                              | V <sub>dc</sub> |
| Collector Current — Continuous  | I <sub>C</sub>                    | –1.0            |                              | A <sub>dc</sub> |
|   |                                   | Each Transistor | Four Transistors Equal Power |                 |
| Total Device Dissipation<br>@ T <sub>A</sub> = 25°C(1)<br>Derate above 25°C | P <sub>D</sub>                    | 650<br>5.2      | 1500<br>12                   | mW<br>mW/°C     |
| Total Device Dissipation<br>@ T <sub>C</sub> = 25°C<br>Derate above 25°C    | P <sub>D</sub>                    | 1.25<br>10      | 3.2<br>25.6                  | Watts<br>mW/°C  |
| Operating and Storage Junction Temperature Range                            | T <sub>J</sub> , T <sub>stg</sub> | –55 to +150     |                              | °C              |

THERMAL CHARACTERISTICS

| Characteristic     |                  | R <sub>θJC</sub><br>Junction to Case | R <sub>θJA</sub><br>Junction to Ambient | Unit |
|--------------------|------------------|--------------------------------------|---|------|
| Thermal Resistance | Each Die         | 100                                  | 193                                     | °C/W |
|                    | Effective, 4 Die | 39                                   | 83.2                                    | °C/W |
| Coupling Factors   | Q1–Q4 or Q2–Q3   | 45                                   | 55                                      | %    |
|                    | Q1–Q2 or Q3–Q4   | 5.0                                  | 10                                      | %    |

ELECTRICAL CHARACTERISTICS (T<sub>A</sub> = 25°C unless otherwise noted)

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

OFF CHARACTERISTICS

|  |                      |      |   |      |                  |
|--|----------------------|------|---|------|------------------|
| Collector–Emitter Breakdown Voltage(2)<br>(I <sub>C</sub> = –10 mA <sub>dc</sub> , I <sub>B</sub> = 0) | V <sub>(BR)CEO</sub> | –40  | — | —    | V <sub>dc</sub>  |
| Collector–Base Breakdown Voltage<br>(I <sub>C</sub> = –10 μA <sub>dc</sub> , I <sub>E</sub> = 0)       | V <sub>(BR)CBO</sub> | –40  | — | —    | V <sub>dc</sub>  |
| Emitter–Base Breakdown Voltage<br>(I <sub>E</sub> = –10 μA <sub>dc</sub> , I <sub>C</sub> = 0)         | V <sub>(BR)EBO</sub> | –5.0 | — | —    | V <sub>dc</sub>  |
| Collector Cutoff Current<br>(V <sub>CB</sub> = –30 V <sub>dc</sub> , I <sub>E</sub> = 0)               | I <sub>CBO</sub>     | —    | — | –200 | nA <sub>dc</sub> |
| Emitter Cutoff Current<br>(V <sub>EB</sub> = –3.0 V <sub>dc</sub> , I <sub>C</sub> = 0)                | I <sub>EBO</sub>     | —    | — | –200 | nA <sub>dc</sub> |

1. Second Breakdown occurs at power levels greater than 2 times the power dissipation rating.
2. Pulse Test: Pulse Width ≤ 300 μs; Duty Cycle ≤ 2.0%.

Preferred devices are Motorola recommended choices for future use and best overall value.

MPQ3467

Motorola Preferred Device



CASE 646–06, STYLE 1  
TO–116

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

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

**ON CHARACTERISTICS**

|   |               |     |       |      |     |
|---|---------------|-----|-------|------|-----|
| DC Current Gain <sup>(2)</sup><br>( $I_C = -500\text{ mAdc}$ , $V_{CE} = -1.0\text{ Vdc}$ )                   | $h_{FE}$      | -20 | —     | —    | —   |
| Collector–Emitter Saturation Voltage <sup>(2)</sup><br>( $I_C = -500\text{ mAdc}$ , $I_B = -50\text{ mAdc}$ ) | $V_{CE(sat)}$ | —   | -0.23 | -0.5 | Vdc |
| Base–Emitter Saturation Voltage <sup>(2)</sup><br>( $I_C = -500\text{ mAdc}$ , $I_B = -50\text{ mAdc}$ )      | $V_{BE(sat)}$ | —   | -0.90 | -1.2 | Vdc |

**SMALL–SIGNAL CHARACTERISTICS**

|  |           |     |     |    |     |
|--|-----------|-----|-----|----|-----|
| Current–Gain — Bandwidth Product<br>( $I_C = -50\text{ mAdc}$ , $V_{CE} = -10\text{ Vdc}$ , $f = 100\text{ MHz}$ ) | $f_T$     | 125 | 190 | —  | MHz |
| Output Capacitance ( $V_{CB} = -10\text{ Vdc}$ , $I_E = 0$ , $f = 1.0\text{ MHz}$ )                                | $C_{obo}$ | —   | 10  | 25 | pF  |
| Input Capacitance ( $V_{EB} = -0.5\text{ Vdc}$ , $I_C = 0$ , $f = 1.0\text{ MHz}$ )                                | $C_{ibo}$ | —   | 55  | 80 | pF  |

**SWITCHING CHARACTERISTICS**

|   |           |   |   |    |    |
|---|-----------|---|---|----|----|
| Turn–On Time<br>( $I_C = -500\text{ mAdc}$ , $I_{B1} = -50\text{ mAdc}$ )           | $t_{on}$  | — | — | 40 | ns |
| Turn–Off Time<br>( $I_C = -500\text{ mAdc}$ , $I_{B1} = I_{B2} = -50\text{ mAdc}$ ) | $t_{off}$ | — | — | 90 | ns |

2. Pulse Test: Pulse Width  $\leq 300\text{ }\mu\text{s}$ ; Duty Cycle  $\leq 2.0\%$ .

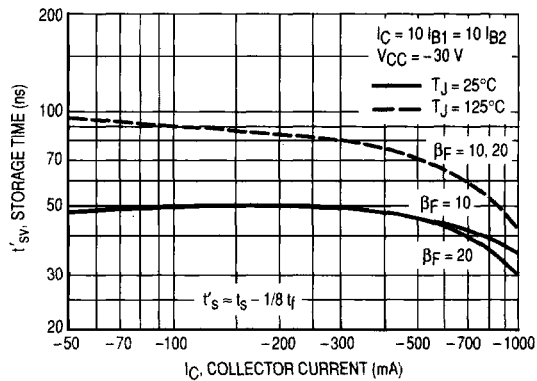


Figure 1. Storage Time Variation with Temperature

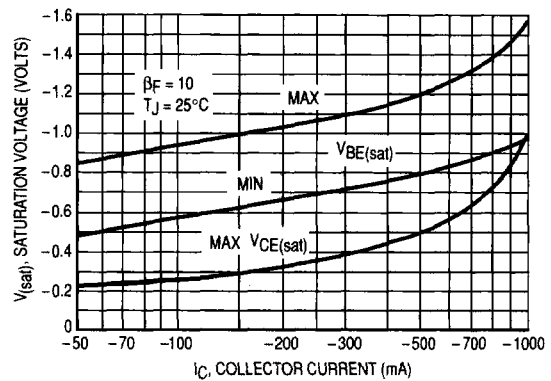


Figure 2. Limits of Saturation Voltage

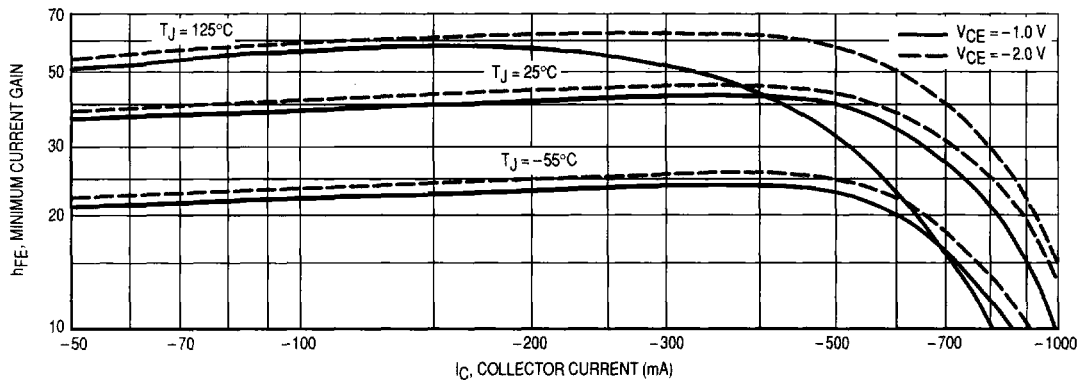


Figure 3. Minimum Current Gain Characteristics