

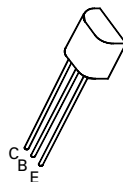
NPN SILICON PLANAR HIGH SPEED SWITCHING TRANSISTOR

MPS2369A

ISSUE 2 – MARCH 94

FEATURES

- * 40 Volt V_{CE0}
- * Very fast switching



E-Line
TO92 Compatible

ABSOLUTE MAXIMUM RATINGS.

| PARAMETER | SYMBOL | VALUE | UNIT |
|--|----------------|-------------|-------------|
| Collector-Base Voltage | V_{CBO} | 40 | V |
| Collector-Emitter Voltage | V_{CES} | 40 | V |
| Collector-Emitter Voltage | V_{CEO} | 15 | V |
| Emitter-Base Voltage | V_{EBO} | 4.5 | V |
| Continuous Collector Current | I_C | 500 | mA |
| Power Dissipation at $T_{amb}=25^{\circ}C$ | P_{tot} | 300 | mW |
| Operating and Storage Temperature Range | $T_j; T_{stg}$ | -55 to +175 | $^{\circ}C$ |

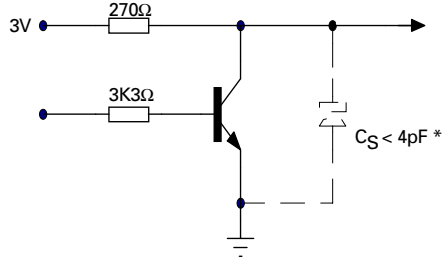
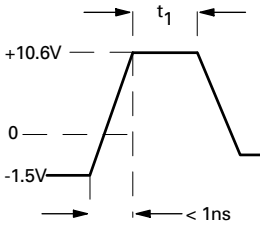
ELECTRICAL CHARACTERISTICS (at $T_{amb} = 25^{\circ}C$ unless otherwise stated).

| PARAMETER | SYMBOL | MIN. | MAX. | UNIT | CONDITIONS. |
|---------------------------------------|---------------|----------------|----------|---------------|--|
| Collector-Base Breakdown Voltage | $V_{(BR)CBO}$ | 40 | | V | $I_C=10\mu A, I_E=0$ |
| Collector-Emitter Breakdown Voltage | $V_{(BR)CEO}$ | 15 | | V | $I_C=10mA, I_B=0^*$ |
| | $V_{(BR)CES}$ | 40 | | V | $I_C=10\mu A, V_{BE}=0$ |
| Emitter-Base Breakdown Voltage | $V_{(BR)EBO}$ | 4.5 | | V | $I_E=10\mu A, I_C=0$ |
| Collector Cut-Off Current | I_{CBO} | | 25 30 | nA μA | $V_{CB}=20V, I_E=0$ $V_{CB}=20V, I_E=0, T_{amb}=150^{\circ}C$ |
| Collector-Emitter Saturation Voltage | $V_{CE(sat)}$ | | 0.2 | V | $I_C=10mA, I_B=1mA^*$ |
| Base-Emitter Saturation Voltage | $V_{BE(sat)}$ | 0.7 | 0.85 | V | $I_C=10mA, I_B=1mA^*$ |
| Static Forward Current Transfer Ratio | h_{FE} | 40 20 20 | 120 | | $I_C=10mA, V_{CE}=1V^*$ $I_C=10mA, V_{CE}=1V, T_{amb}=-55^{\circ}C^*$ $I_C=100mA, V_{CE}=1V^*$ |
| Output Capacitance | C_{obo} | | 4 | pF | $V_{CB}=5V, I_E=0, f=140KHz$ |
| Turn-on Time | t_{on} | | 12 | ns | $V_{CC}=3V, V_{BE(off)}=1.5V, I_C=10mA, I_{B1}=3mA$ (See t_{ON} circuit) |
| Turn-off Time | t_{off} | | 18 | ns | $V_{CC}=3V, I_C=10mA, I_{B1}=3mA, I_{B2}=1.5mA$ (See t_{OFF} circuit) |
| Storage Time | t_s | | 13 | ns | $I_C=I_{B1}=I_{B2}=10mA$ (See Storage test circuit) |

*Measured under pulsed conditions. Pulse width=300 μs . Duty cycle $\leq 2\%$

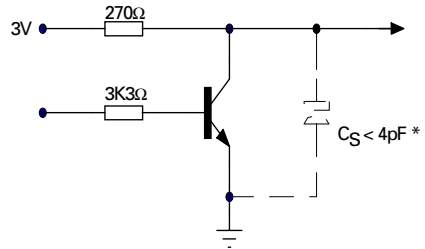
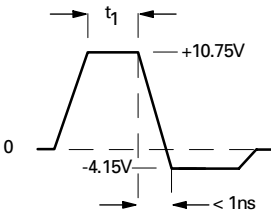
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t_{ON} CIRCUIT



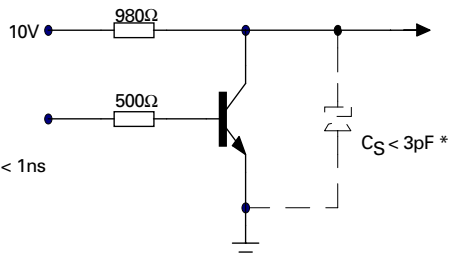
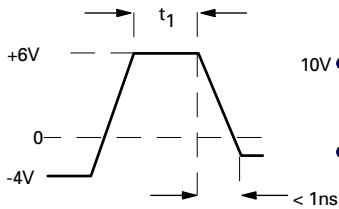
Pulse width (t_1)=300ns
Duty cycle = 2%

t_{OFF} CIRCUIT



Pulse width (t_1)=300ns
Duty cycle = 2%

STORAGE TEST CIRCUIT



Pulse width (t_1)=300ns
Duty cycle = 2%

* Total shunt capacitance of test jig and connectors
3-69