

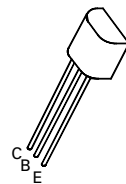
# NPN SILICON PLANAR HIGH SPEED SWITCHING TRANSISTOR

## 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	$^{\circ}C$

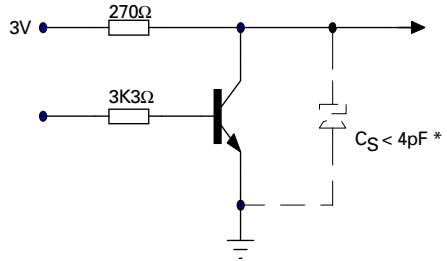
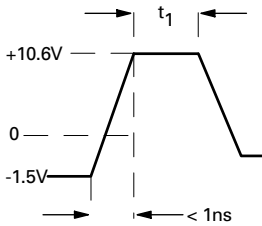
### ELECTRICAL CHARACTERISTICS (at $T_{amb} = 25^{\circ}C$ unless otherwise stated).

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 $\mu A$	$V_{CB}=20V, I_E=0$ $V_{CB}=20V, I_E=0, T_{amb}=150^{\circ}C$
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 $\mu s$ . Duty cycle  $\leq 2\%$

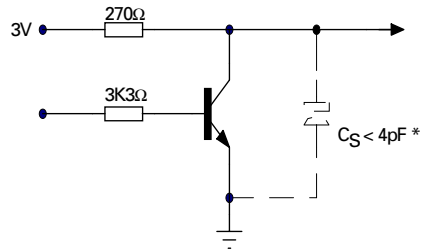
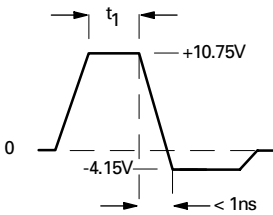
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## $t_{ON}$ CIRCUIT



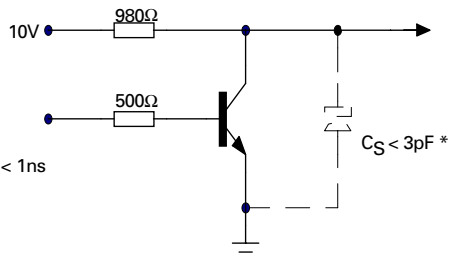
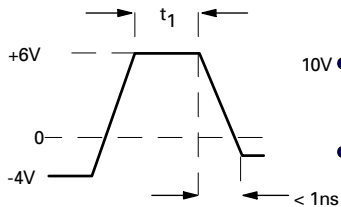
Pulse width ( $t_1$ )=300ns  
Duty cycle = 2%

## $t_{OFF}$ 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  
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