

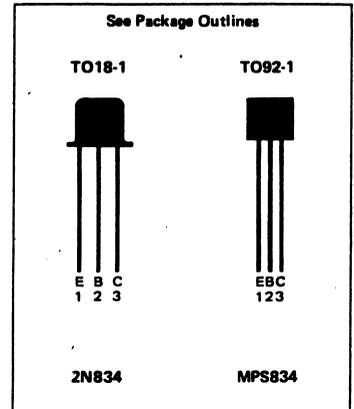
## 2N834 • MPS834

### NPN HIGH SPEED SATURATED LOGIC SWITCHES DIFFUSED SILICON PLANAR\* EPITAXIAL TRANSISTORS

- $P_D$  ... 625 mW @  $T_A = 25^\circ\text{C}$  (MPS834)
- $t_{on}$  ... 16 ns (MAX) @ 10 mA (MPS834)
- $t_{off}$  ... 30 ns (MAX) @ 10 mA (MPS834)
- $t_s$  ... 25 ns (MAX) @ 10 mA
- COMPLEMENTS ... 2N408 (TO18), MPSL08 (TO92)

#### ABSOLUTE MAXIMUM RATINGS (Note 1)

	2N834	MPS834
<b>Maximum Temperatures</b>		
Storage Temperature	-65°C to 175°C	-55°C to 150°C
Operating Junction Temperature	175°C	150°C
Lead Temperature (10 seconds)	240°C	260°C
<b>Maximum Power Dissipation (Notes 2 &amp; 3)</b>		
Total Dissipation at 25°C Ambient Temperature	0.300 W	0.625 W
at 25°C Case Temperature	1.0 W	1.0 W
<b>Maximum Voltages and Current</b>		
V <sub>CB0</sub> Collector to Base Voltage		40 V
V <sub>CE0</sub> Collector to Emitter Voltage		30 V
V <sub>EB0</sub> Emitter to Base Voltage		5.0 V
I <sub>C</sub> Collector Current		200 mA



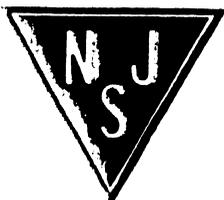
#### ELECTRICAL CHARACTERISTICS (25°C Ambient Temperature unless otherwise noted)

SYMBOL	CHARACTERISTIC	2N834		MPS834		UNITS	TEST CONDITIONS
		MIN.	MAX.	MIN.	MAX.		
BV <sub>CB0</sub>	Collector to Base Breakdown Voltage	40		40		V	I <sub>C</sub> = 100 μA, I <sub>E</sub> = 0
BV <sub>EB0</sub>	Emitter to Base Breakdown Voltage	5.0		5.0		V	I <sub>E</sub> = 100 μA, I <sub>C</sub> = 0
I <sub>CES</sub>	Collector Cutoff Current		10		10	μA	V <sub>CE</sub> = 30 V, V <sub>BE</sub> = 0
I <sub>CB0</sub>	Collector Cutoff Current		500		500	nA	V <sub>CB</sub> = 20 V, I <sub>E</sub> = 0
			30			μA	V <sub>CB</sub> = 20 V, I <sub>E</sub> = 0, T <sub>A</sub> = 150°C
h <sub>FE</sub>	DC Current Gain (Note 4)	25		25			I <sub>C</sub> = 10 mA, V <sub>CE</sub> = 1.0 V
V <sub>CE(sat)</sub>	Collector to Emitter Saturation Voltage (Note 4)		0.25		0.25	V	I <sub>C</sub> = 10 mA, I <sub>B</sub> = 1.0 mA
			0.4		0.4	V	I <sub>C</sub> = 50 mA, I <sub>B</sub> = 5.0 mA
V <sub>BE(sat)</sub>	Base to Emitter Saturation Voltage (Note 4)		0.9		0.9	V	I <sub>C</sub> = 10 mA, I <sub>B</sub> = 1.0 mA
f <sub>T</sub>	Current Gain Bandwidth Product	350			350	MHz	I <sub>C</sub> = 10 mA, V <sub>CE</sub> = 15 V, f = 100 MHz
					350	MHz	I <sub>C</sub> = 10 mA, V <sub>CE</sub> = 20 V, f = 100 MHz
C <sub>ob</sub>	Output Capacitance		4.0		4.0	pF	V <sub>CB</sub> = 10 V, I <sub>E</sub> = 0, f = 100 kHz
t <sub>on</sub>	Turn On Time (see test circuit no. 566)		35		16	ns	I <sub>C</sub> = 10 mA, I <sub>B1</sub> = 3.0 mA, V <sub>CC</sub> = 3.0 V
t <sub>off</sub>	Turn Off Time (see test circuit no. 566)		75		30	ns	I <sub>C</sub> = 10 mA, I <sub>B1</sub> = 3.0 mA, I <sub>B2</sub> = 1.0 mA, V <sub>CC</sub> = 3.0 V
t <sub>s</sub>	Storage Time (see test circuit no. 567)		25		25	ns	I <sub>C</sub> = 10 mA, I <sub>B1</sub> = I <sub>B2</sub> = 10 mA, V <sub>CC</sub> = 10 V

#### NOTES:

1. These ratings are limiting values above which the serviceability of any individual semiconductor device may be impaired.
2. These are steady state limits. The factory should be consulted on applications involving pulsed or low duty cycle operations.
3. These ratings give a maximum junction temperature of 175°C and junction to case thermal resistance of 150°C/W (derating factor of 6.67 mW/°C); junction to ambient thermal resistance of 500°C/W (derating factor of 2.0 mW/°C) for 2N834. These ratings give a maximum junction temperature of 150°C and junction to case thermal resistance of 125°C/W (derating factor of 8.0 mW/°C); junction to ambient thermal resistance of 200°C/W (derating factor of 5.0 mW/°C) for MPS834.
4. Pulse conditions: length = 300 μs; duty cycle = < 2%.
5. For product family characteristic curves, refer to Section 5 - SS28.

\*Planar is a patented Fairchild process.



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