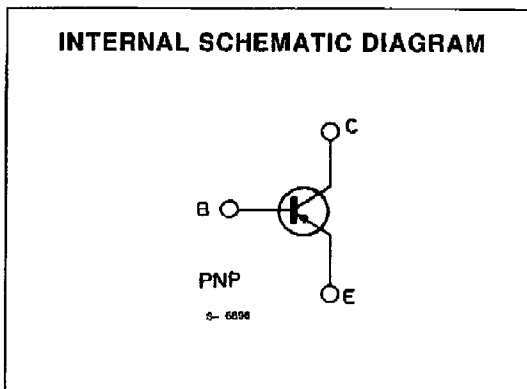
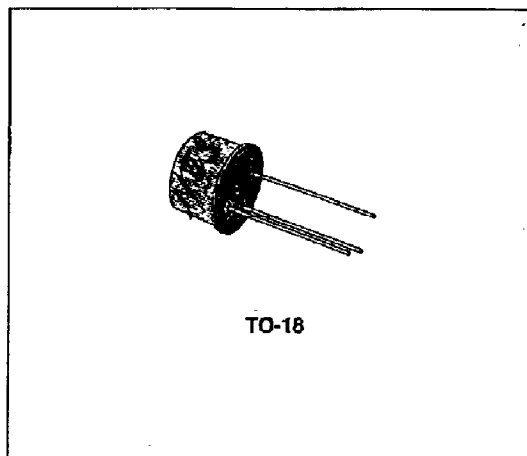


**2N2894**  
**2N3209**

**HIGH-SPEED SATURATED SWITCHES**

**DESCRIPTION**

The 2N2894, and 2N3209 are silicon planar epitaxial PNP transistors in Jedec TO-18 metal case, intended for high speed, low saturation switching applications up to 100 mA.



**ABSOLUTE MAXIMUM RATINGS**

Symbol	Parameter	Value		Unit
		2N2894	2N3209	
$V_{CBO}$	Collector-base Voltage ( $I_E = 0$ )	- 12	- 20	V
$V_{CES}$	Collector-emitter Voltage ( $V_{BE} = 0$ )	- 12	- 20	V
$V_{CEO}$	Collector-emitter Voltage ( $I_B = 0$ )	- 12	- 20	V
$V_{EBO}$	Emitter-base Voltage ( $I_C = 0$ )	- 4		V
$I_C$	Collector Current	- 200		mA
$P_{tot}$	Total Power Dissipation at $T_{amb} \leq 25^\circ C$ at $T_{case} \leq 25^\circ C$	0.36		W
		1.2		W
$T_{stg}, T_J$	Storage and Junction Temperature	- 65 to 200		$^\circ C$



NJ Semi-Conductors reserves the right to change test conditions, parameter limits and package dimensions without notice. Information furnished by NJ Semi-Conductors is believed to be both accurate and reliable at the time of going to press. However NJ Semi-Conductors assumes no responsibility for any errors or omissions discovered in its use. NJ Semi-Conductors encourages customers to verify that datasheets are current before placing orders.

## THERMAL DATA

$R_{th\ j-case}$	Thermal Resistance Junction-case	Max	146	$^{\circ}C/W$
$R_{th\ j-amb}$	Thermal Resistance Junction-ambient	Max	486	$^{\circ}C/W$

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

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$I_{CBO}$	Collector Cutoff Current ( $I_E = 0$ ) (for 2N2894 only)	$V_{CB} = -6\ V$ $T_{amb} = 125^{\circ}C$			-10	$\mu A$
$I_{CES}$	Collector Cutoff Current ( $V_{BE} = 0$ )	for 2N2894 $V_{CE} = -6\ V$ for 2N3209 $V_{CE} = -10\ V$ $V_{CE} = -10\ V$ $T_{amb} = 125^{\circ}C$			-80 -80 -10	nA nA $\mu A$
$V_{(BR)CBO}$	Collector-base Breakdown Voltage ( $I_E = 0$ )	$I_C = -10\ \mu A$ for 2N2894 for 2N3209	-12 -20			V V
$V_{(BR)CES}$	Collector-emitter Breakdown Voltage ( $V_{BE} = 0$ )	$I_C = -10\ \mu A$ for 2N2894 for 2N3209	-12 -20			V V
$V_{(BR)CEO}^*$	Collector-emitter Breakdown Voltage ( $I_B = 0$ )	$I_C = -10\ mA$ for 2N2894 for 2N3209	-12 -20			V V
$V_{(BR)EBO}$	Emitter-base Breakdown Voltage ( $I_C = 0$ )	$I_E = -100\ \mu A$	-4			V
$V_{CE(sat)}^*$	Collector-emitter Saturation Voltage	for 2N2894 $I_C = -10\ mA$ $I_B = -1\ mA$ $I_C = -30\ mA$ $I_B = -3\ mA$ $I_C = -100\ mA$ $I_B = -10\ mA$ for 2N3209 $I_C = -10\ mA$ $I_B = -1\ mA$ $I_C = -30\ mA$ $I_B = -3\ mA$ $I_C = -100\ mA$ $I_B = -10\ mA$			-0.15 -0.2 -0.5 -0.15 -0.2 -0.6	V V V V V V
$V_{BE(sat)}^*$	Base-emitter Saturation Voltage	$I_C = -10\ mA$ $I_B = -1\ mA$ $I_C = -30\ mA$ $I_B = -3\ mA$ $I_C = -100\ mA$ $I_B = -10\ mA$	-0.78 -0.85		-0.98 -1.2 -1.7	V V V
$h_{FE}^*$	DC Current Gain	$I_C = -10\ mA$ $V_{CE} = -0.3\ V$ for 2N2894 for 2N3209 $I_C = -30\ mA$ $V_{CE} = -0.5\ V$ for 2N2894 for 2N3209 $I_C = -100\ mA$ $V_{CE} = -1\ V$ for 2N2894 for 2N3209 $I_C = -30\ mA$ $V_{CE} = -0.5\ V$ $T_{amb} = -55^{\circ}C$ for 2N2894 for 2N3209	30 25 40 30 25 15 17 12		150 120	
$f_T$	Transition Frequency	$I_C = -30\ mA$ $V_{CE} = -10\ V$ $f = 100\ MHz$	400			MHz
$C_{EBO}$	Emitter-base Capacitance	$I_C = 0$ $V_{EB} = -0.5\ V$ $f = 1\ MHz$			6	pF

\* Pulsed : pulse duration = 300  $\mu s$ , duty cycle = 1 %.