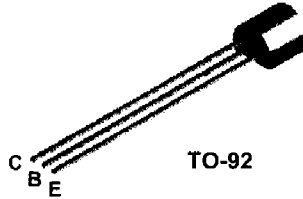


## PN4275



### NPN Switching Transistor

This device is designed for high speed saturated switching applications at currents to 100 mA. Sourced from Process 21. See PN2369A for characteristics.

#### Absolute Maximum Ratings\*

TA = 25°C unless otherwise noted

Symbol	Parameter	Value	Units
V <sub>CEO</sub>	Collector-Emitter Voltage	15	V
V <sub>CBO</sub>	Collector-Base Voltage	40	V
V <sub>EBO</sub>	Emitter-Base Voltage	4.5	V
I <sub>C</sub>	Collector Current - Continuous	200	mA
T <sub>J</sub> , T <sub>stg</sub>	Operating and Storage Junction Temperature Range	-55 to +150	°C

\*These ratings are limiting values above which the serviceability of any semiconductor device may be impaired.

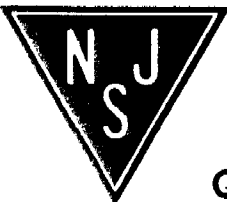
#### NOTES:

- 1) These ratings are based on a maximum junction temperature of 150 degrees C.
- 2) These are steady state limits. The factory should be consulted on applications involving pulsed or low duty cycle operations.

#### Thermal Characteristics

TA = 25°C unless otherwise noted

Symbol	Characteristic	Max	Units
		PN4275	
P <sub>D</sub>	Total Device Dissipation Derate above 25°C	350	mW
		2.8	mW/°C
R <sub>θJC</sub>	Thermal Resistance, Junction to Case	125	°C/W
R <sub>θJA</sub>	Thermal Resistance, Junction to Ambient	357	°C/W



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.

## NPN Switching Transistor

(continued)

### Electrical Characteristics

TA = 25°C unless otherwise noted

Symbol	Parameter	Test Conditions	Min	Max	Units
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#### OFF CHARACTERISTICS

$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage*	$I_C = 10 \text{ mA}, I_B = 0$	15		V
$V_{(BR)CBO}$	Collector-Base Breakdown Voltage	$I_C = 10 \text{ } \mu\text{A}, I_E = 0$	40		V
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage	$I_E = 10 \text{ } \mu\text{A}, I_C = 0$	4.5		V
$V_{(BR)CES}$	Collector-Emitter Breakdown Voltage	$I_C = 10 \text{ } \mu\text{A}, I_B = 0$	40		V
$I_B$	Base Cutoff Current	$V_{CE} = 20 \text{ V}$		0.4	$\mu\text{A}$
$I_{CBO}$	Collector Cutoff Current	$V_{CB} = 20 \text{ V}, I_E = 0,$ $T_A = 65 \text{ }^\circ\text{C}$		10	$\mu\text{A}$

#### ON CHARACTERISTICS\*

$h_{FE}$	DC Current Gain	$I_C = 10 \text{ mA}, V_{CE} = 1.0 \text{ V}$ $I_C = 30 \text{ mA}, V_{CE} = 0.4 \text{ V}$ $I_C = 100 \text{ mA}, V_{CE} = 1.0 \text{ V}$	35 30 18	120	
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C = 10 \text{ mA}, I_B = 1.0 \text{ mA}$ $I_C = 30 \text{ mA}, I_B = 3.0 \text{ mA}$ $I_C = 10 \text{ mA}, I_B = 3.3 \text{ mA}$ $I_C = 100 \text{ mA}, I_B = 10 \text{ mA}$ $I_C = 10 \text{ mA}, I_B = 1.0 \text{ mA},$ $T_A = 65 \text{ }^\circ\text{C}$		0.20 0.25 0.18 0.50	V V V V
$V_{BE(sat)}$	Base-Emitter Saturation Voltage	$I_C = 10 \text{ mA}, I_B = 1.0 \text{ mA}$ $I_C = 30 \text{ mA}, I_B = 3.0 \text{ mA}$ $I_C = 10 \text{ mA}, I_B = 3.3 \text{ mA}$ $I_C = 100 \text{ mA}, I_B = 10 \text{ mA}$	0.72 0.74	0.85 1.15 1.0 1.6	V V V V

#### SMALL SIGNAL CHARACTERISTICS

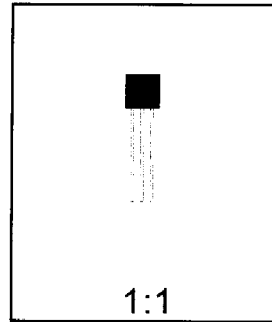
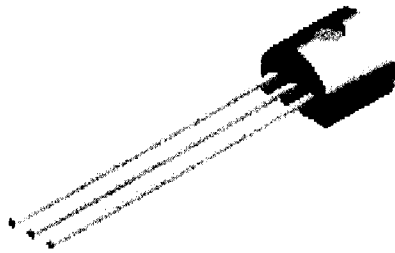
$C_{ob}$	Output Capacitance	$V_{CB} = 5.0 \text{ V}, f = 1.0 \text{ MHz}$		4.0	pF
$h_{re}$	Small-Signal Current Gain	$I_C = 10 \text{ mA}, V_{CE} = 10 \text{ V},$ $f = 100 \text{ MHz}$	4.0		

#### SWITCHING CHARACTERISTICS

$t_{on}$	Turn-on Time	$V_{CC} = 3.0 \text{ V}, I_C = 10 \text{ mA},$ $I_{B1} = 3.3 \text{ mA},$		12	ns
$t_d$	Delay Time			9.0	ns
$t_r$	Rise Time	$V_{BE(off)} = -3.0 \text{ V}$		7.0	ns
$t_{off}$	Turn-off Time	$V_{CC} = 3.0 \text{ V}, I_C = 10 \text{ mA}$ $I_{B1} = I_{B2} = 3.3 \text{ mA}$		12	ns
$t_s$	Storage Time			8.0	ns
$t_f$	Fall Time	$V_{BE(off)} = -3.0 \text{ V}$		8.0	ns
$t_s$	Storage Time	$I_C = I_{B1} = I_{B2} = 10 \text{ mA}$		13	ns

\*Pulse Test: Pulse Width  $\leq 300 \text{ } \mu\text{s}$ , Duty Cycle  $\leq 2.0\%$

# TO-92 (FS PKG Code 92, 94, 96)



Scale 1:1 on letter size paper

Dimensions shown below are in:  
inches [millimeters]

Part Weight per unit (gram): 0.1977

TO-92 (92,94,96)

PIN	92		94		96	
	B	F	B	F	B	F
1	E	D	E	D	B	S
2	B	S	C	G	E	D
3	C	G	B	S	C	G

