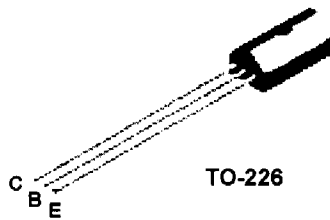
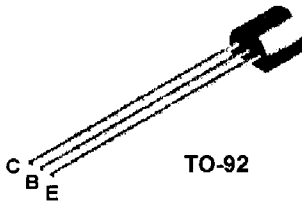


**2N7052**

**2N7053**



**NPN Darlington Transistor**

This device is designed for applications requiring extremely high gain at collector currents to 1.0 A and high breakdown voltage. Sourced from Process 06.

**Absolute Maximum Ratings\***

TA = 25°C unless otherwise noted

Symbol	Parameter	Value	Units
V <sub>CEO</sub>	Collector-Emitter Voltage	100	V
V <sub>CBO</sub>	Collector-Base Voltage	100	V
V <sub>EBO</sub>	Emitter-Base Voltage	12	V
I <sub>C</sub>	Collector Current - Continuous	1.5	A
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
		2N7052	2N7053	*N2T7053	
P <sub>D</sub>	Total Device Dissipation	625	1,000	1,000	mW
	Derate above 25°C	5.0	8.0	8.0	mW/°C
R <sub>θJC</sub>	Thermal Resistance, Junction to Case	83.3	125		°C/W
R <sub>θJA</sub>	Thermal Resistance, Junction to Ambient	200	50	125	°C/W



# NPN Darlington 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*	$I_C = 1.0 \text{ mA}, I_B = 0$	100		V
$V_{(BR)CBO}$	Collector-Base Breakdown Voltage	$I_C = 100 \text{ } \mu\text{A}, I_E = 0$	100		V
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage	$I_E = 1.0 \text{ mA}, I_C = 0$	12		V
$I_{CBO}$	Collector-Cutoff Current	$V_{CB} = 80 \text{ V}, I_E = 0$		0.1	$\mu\text{A}$
$I_{CES}$	Collector-Cutoff Current	$V_{CE} = 80 \text{ V}, I_E = 0$		0.2	$\mu\text{A}$
$I_{EBO}$	Emitter-Cutoff Current	$V_{EB} = 7.0 \text{ V}, I_C = 0$		0.1	$\mu\text{A}$

### ON CHARACTERISTICS\*

$h_{FE}$	DC Current Gain	$I_C = 100 \text{ mA}, V_{CE} = 5.0 \text{ V}$ $I_C = 1.0 \text{ A}, V_{CE} = 5.0 \text{ V}$	10,000 1,000	20,000	
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C = 100 \text{ mA}, I_B = 0.1 \text{ mA}$		1.5	V
$V_{BE(on)}$	Base-Emitter On Voltage	$I_C = 100 \text{ mA}, V_{BE} = 5.0 \text{ V}$		2.0	V

### SMALL SIGNAL CHARACTERISTICS

$F_T$	Transition Frequency	$I_C = 100 \text{ mA}, V_{CE} = 5.0 \text{ V},$	200		MHz
$C_{cb}$	Collector-Base Capacitance	$V_{CB} = 10 \text{ V}, f = 1.0 \text{ MHz}$ 2N7052 2N7053		10 8.0	pF

\* Pulse Test: Pulse Width  $\leq 300 \text{ } \mu\text{s}$ , Duty Cycle  $\leq 1.0\%$

## Typical Characteristics

