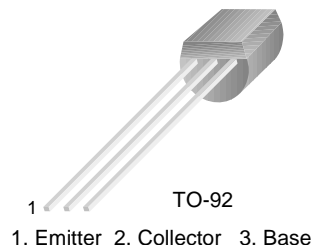


# 2N7051

## NPN Darlington Transistor

- This device designed for applications requiring extremely high gain at collector currents to 1.0A and high breakdown voltage.
- Sourced from Process 06.
- See 2N7052 for Characteristics.



## NPN Epitaxial Silicon Transistor

### Absolute Maximum Ratings\* $T_A=25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	Ratings	Units
$V_{CEO}$	Collector-Emitter Voltage	100	V
$V_{CBO}$	Collector-Base Voltage	100	V
$V_{EBO}$	Emitter-Base Voltage	12	V
$I_C$	Collector Current	1.5	A
$T_J, T_{STG}$	Storage Temperature	-55 ~ 150	$^\circ\text{C}$

\* 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.

### Electrical Characteristics $T_A=25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
<b>Off Characteristics</b>						
$BV_{CEO}$	Collector-Emitter Breakdown Voltage *	$I_C = 1.0\text{mA}, I_B = 0$	100			V
$BV_{CBO}$	Collector-Base Breakdown Voltage	$I_C = 100\mu\text{A}, I_B = 0$	100			V
$BV_{EBO}$	Emitter-Base Breakdown Voltage	$I_E = 1.0\text{mA}, I_C = 0$	12			V
$I_{CBO}$	Collector Cut-off Current	$V_{CB} = 80\text{V}, I_E = 0$			0.1	$\mu\text{A}$
$I_{CES}$		$V_{CE} = 80\text{V}, I_E = 0$			0.2	$\mu\text{A}$
$I_{EBO}$	Emitter Cut-off Current	$V_{EB} = 7.0\text{V}, I_C = 0$			0.1	$\mu\text{A}$
<b>On Characteristics *</b>						
$h_{FE}$	DC Current Gain	$V_{CE} = 5.0\text{V}, I_C = 100\text{mA}$ $V_{CE} = 5.0\text{V}, I_C = 1.0\text{A}$	10,000 1,000		20,000	
$V_{CE}(\text{sat})$	Collector-Emitter Saturation Voltage	$I_C = 100\text{mA}, I_B = 0.1\text{mA}$			1.5	V
$V_{BE}(\text{sat})$	Base-Emitter Saturation Voltage	$I_C = 100\text{mA}, V_{BE} = 5.0\text{V}$			2.0	V
<b>Small Signal Characteristics</b>						
$f_T$	Transition Frequency	$I_C = 100\text{mA}, V_{CE} = 5.0\text{V}$	200			MHz
$h_{fe}$	Small Signal Current Gain	$V_{CE} = 5.0\text{V}, I_C = 100\text{mA},$ $f = 20\text{MHz}$	10		100	

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

**Thermal Characteristics**  $T_A=25^{\circ}\text{C}$  unless otherwise noted

Symbol	Parameter	Max.	Units
$P_D$	Total Device Dissipation	625	mW
	Derate above $25^{\circ}\text{C}$	5.0	mW/ $^{\circ}\text{C}$
$R_{\theta JC}$	Thermal Resistance, Junction to Case	83.3	$^{\circ}\text{C}/\text{W}$
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	200	$^{\circ}\text{C}/\text{W}$

# Package Dimensions

2N7051

## TO-92



Dimensions in Millimeters

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