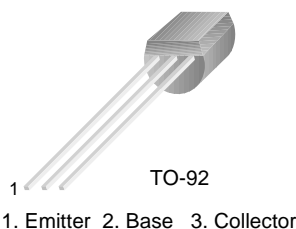


# MPSA13

## NPN Darlington Transistor

- This device is designed for applications requiring extremely high Current gain at collector Currents to 1.0A.
- Sourced from process 05.
- See MPSA14 for characteristics.



### Absolute Maximum Ratings T<sub>a</sub> = 25°C unless otherwise noted

Symbol	Parameter	Value	Units
V <sub>CES</sub>	Collector-Emitter Voltage	30	V
V <sub>CBO</sub>	Collector-Base Voltage	30	V
V <sub>EBO</sub>	Emitter-Base Voltage	10	V
I <sub>C</sub>	Collector Current - Continuous	1.2	A
T <sub>J</sub> , T <sub>STG</sub>	Operating and Storage Junction Temperature Range	-55 to +150	°C

### Electrical Characteristics T<sub>a</sub> = 25°C unless otherwise noted

Symbol	Parameter	Test Condition	Min.	Max.	Units
<b>Off Characteristics</b>					
V <sub>(BR)CES</sub>	Collector-Emitter Breakdown Voltage	I <sub>C</sub> = 100μA, I <sub>B</sub> = 0	30		V
I <sub>CBO</sub>	Collector-Cutoff Current	V <sub>CB</sub> = 30V, I <sub>E</sub> = 0		100	nA
I <sub>EBO</sub>	Emitter-Cutoff Current	V <sub>EB</sub> = 10V, I <sub>C</sub> = 0		100	nA
<b>On Characteristics *</b>					
h <sub>FE</sub>	DC Current Gain	V <sub>CE</sub> = 5.0V, I <sub>C</sub> = 10mA V <sub>CE</sub> = 5.0, I <sub>C</sub> = 100mA	5,000 10,000		
V <sub>CE(sat)</sub>	Collector-Emitter Saturation Voltage	I <sub>C</sub> = 100mA, I <sub>B</sub> = 0.1mA		1.5	V
V <sub>BE(on)</sub>	Base-Emitter On Voltage	I <sub>C</sub> = 100mA, V <sub>CE</sub> = 5.0V		2.0	V
<b>Small Signal Characteristics</b>					
f <sub>T</sub>	Current Gain Bandwidth Product	I <sub>C</sub> = 10mA, V <sub>CE</sub> = 10V, f = 100MHz	125		pF

\* Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%

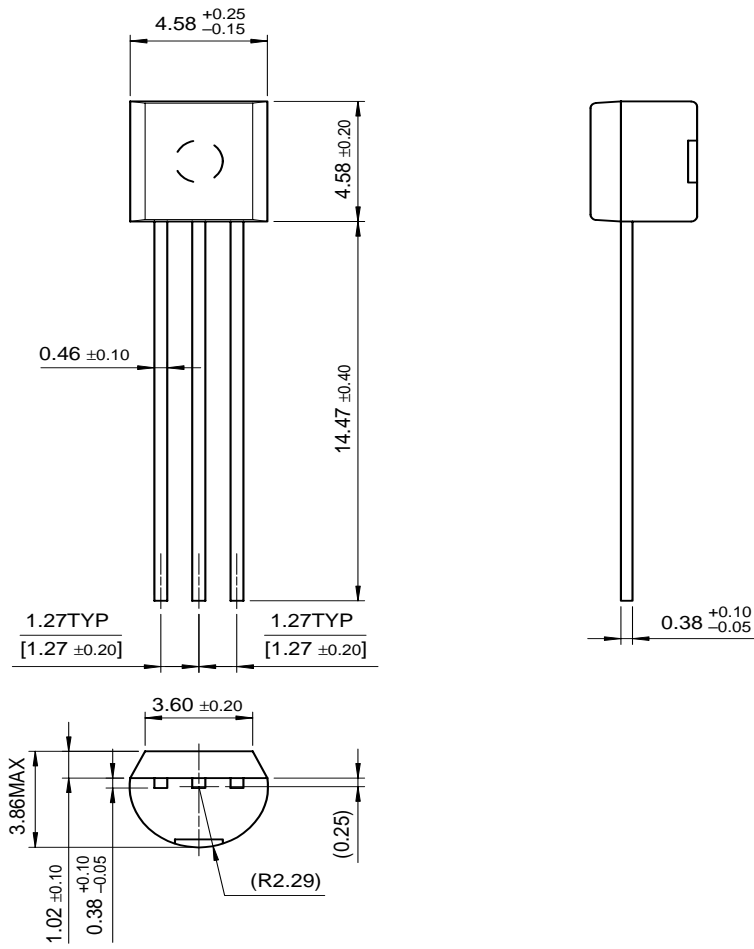
**Thermal Characteristics**  $T_a=25^{\circ}\text{C}$  unless otherwise noted

Symbol	Parameter	Max.	Units
$P_D$	Total Device Dissipation Derate above $25^{\circ}\text{C}$	625 5.0	mW 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	$^{\circ}\text{C}/\text{W}$

\* Device mounted on FR-4PCB  $1.6'' \times 1.6'' \times 0.06''$ .

Mechanical Dimensions

TO-92



Dimensions in Millimeters

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