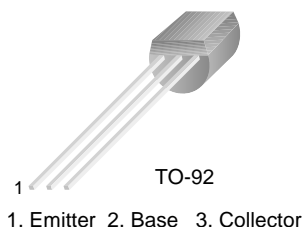


MPSA13

NPN Darlington Transistor

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



Absolute Maximum Ratings

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

Symbol	Parameter	Value	Units
V_{CES}	Collector-Emitter Voltage	30	V
V_{CBO}	Collector-Base Voltage	30	V
V_{EBO}	Emitter-Base Voltage	10	V
I_C	Collector Current - Continuous	1.2	A
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55 to +150	$^\circ\text{C}$

Electrical Characteristics

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

Symbol	Parameter	Test Condition	Min.	Max.	Units
Off Characteristics					
$V_{(BR)CES}$	Collector-Emitter Breakdown Voltage	$I_C = 100\mu\text{A}, I_B = 0$	30		V
I_{CBO}	Collector-Cutoff Current	$V_{CB} = 30\text{V}, I_E = 0$		100	nA
I_{EBO}	Emitter-Cutoff Current	$V_{EB} = 10\text{V}, I_C = 0$		100	nA
On Characteristics *					
h_{FE}	DC Current Gain	$V_{CE} = 5.0\text{V}, I_C = 10\text{mA}$ $V_{CE} = 5.0, I_C = 100\text{mA}$	5,000 10,000		
$V_{CE(sat)}$	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	$I_C = 100\text{mA}, V_{CE} = 5.0\text{V}$		2.0	V
Small Signal Characteristics					
f_T	Current Gain Bandwidth Product	$I_C = 10\text{mA}, V_{CE} = 10\text{V}, f = 100\text{MHz}$	125		pF

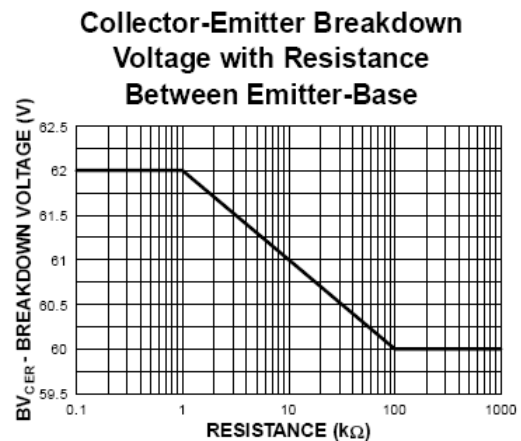
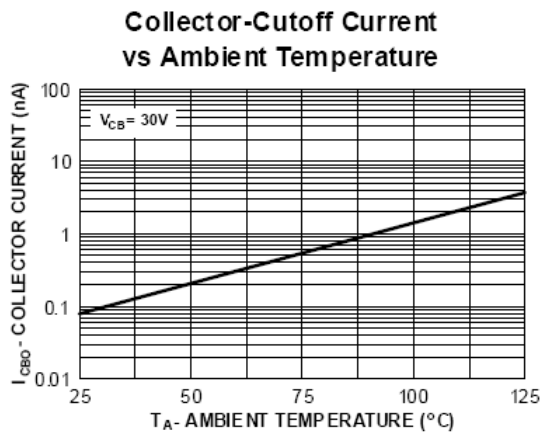
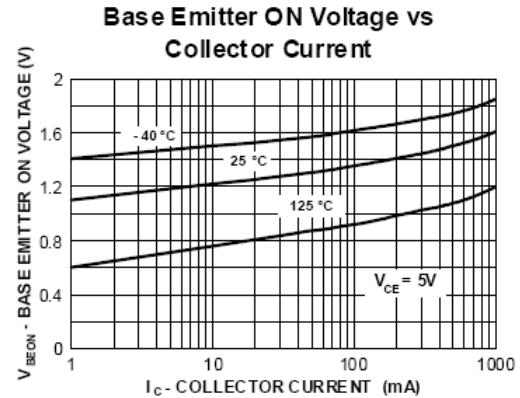
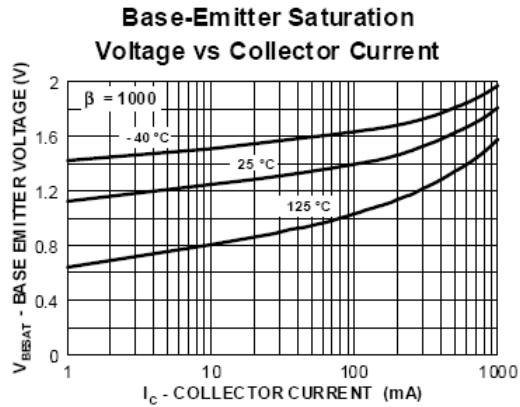
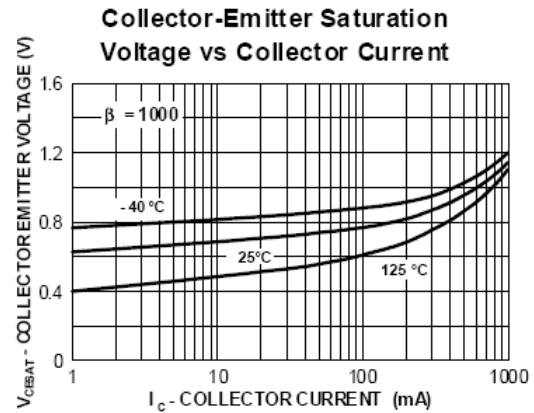
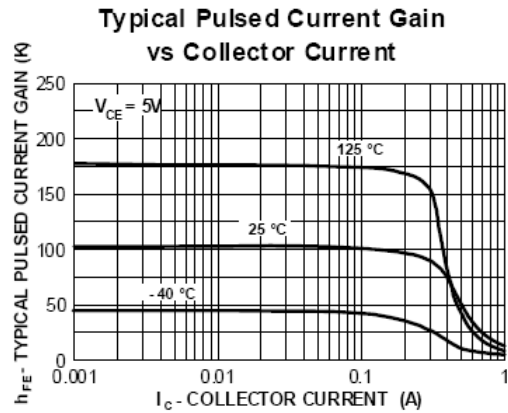
 * Pulse Test: Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 2\%$

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

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

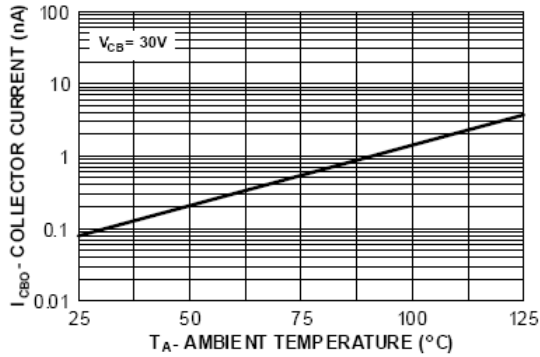
* Device mounted on FR-4PCB $1.6" \times 1.6" \times 0.06"$.

Typical Characteristics

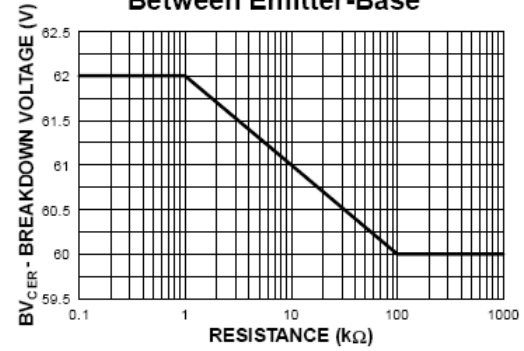


Typical Characteristics (continued)

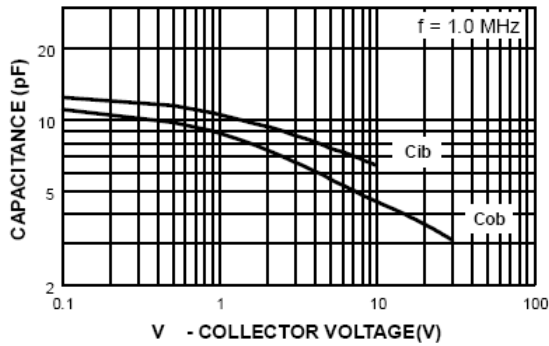
Collector-Cutoff Current
vs Ambient Temperature



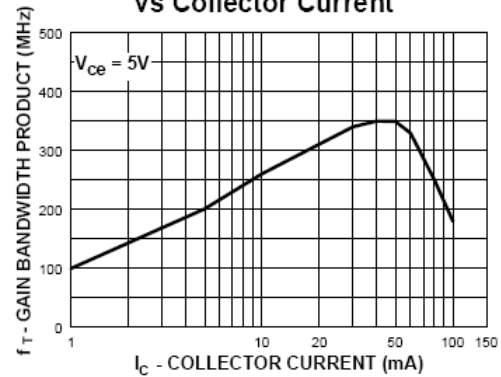
Collector-Emitter Breakdown
Voltage with Resistance
Between Emitter-Base



Input and Output Capacitance
vs Reverse Voltage

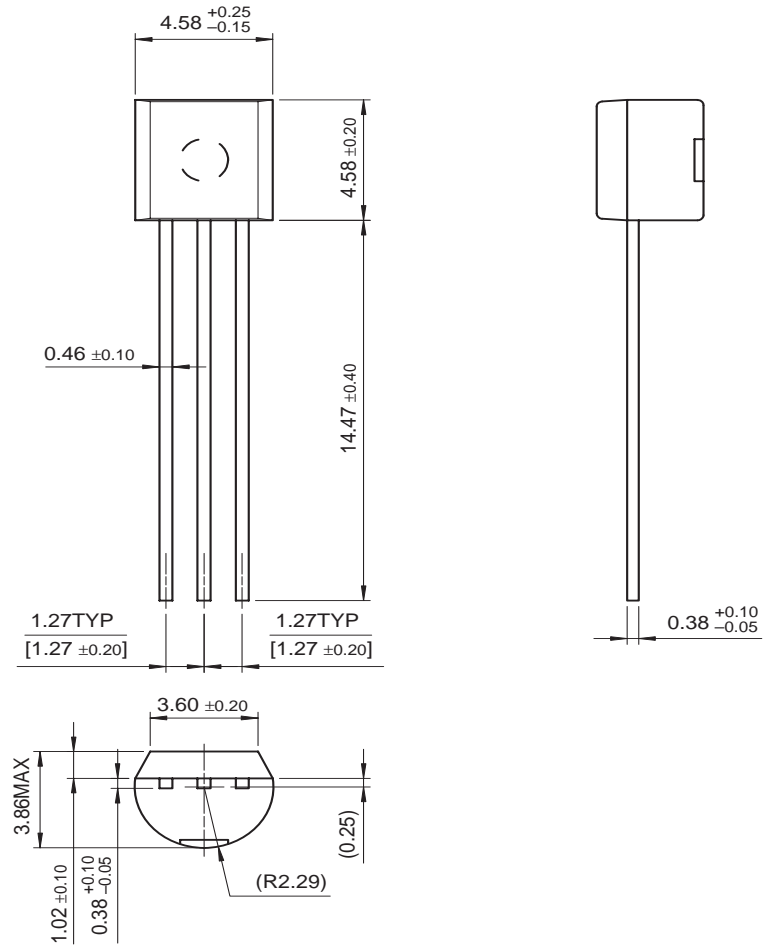


Gain Bandwidth Product
vs Collector Current



Mechanical Dimensions

TO-92




Dimensions in Millimeters



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