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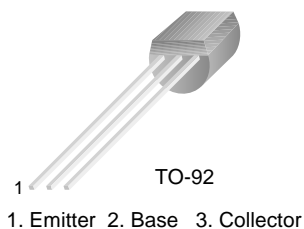
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MPSA13

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°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	°C

Electrical Characteristics T_a = 25°C unless otherwise noted

Symbol	Parameter	Test Condition	Min.	Max.	Units
Off Characteristics					
V _{(BR)CES}	Collector-Emitter Breakdown Voltage	I _C = 100μA, I _B = 0	30		V
I _{CB0}	Collector-Cutoff Current	V _{CB} = 30V, I _E = 0		100	nA
I _{EBO}	Emitter-Cutoff Current	V _{EB} = 10V, I _C = 0		100	nA
On Characteristics *					
h _{FE}	DC Current Gain	V _{CE} = 5.0V, I _C = 10mA V _{CE} = 5.0, I _C = 100mA	5,000 10,000		
V _{CE(sat)}	Collector-Emitter Saturation Voltage	I _C = 100mA, I _B = 0.1mA		1.5	V
V _{BE(on)}	Base-Emitter On Voltage	I _C = 100mA, V _{CE} = 5.0V		2.0	V
Small Signal Characteristics					
f _T	Current Gain Bandwidth Product	I _C = 10mA, V _{CE} = 10V, f = 100MHz	125		pF

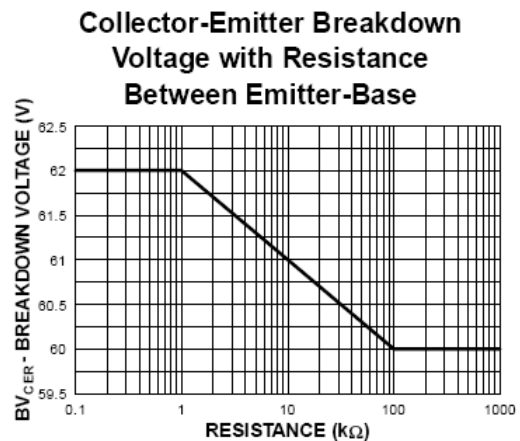
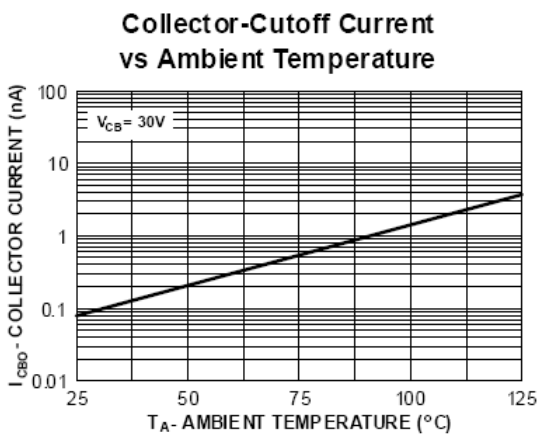
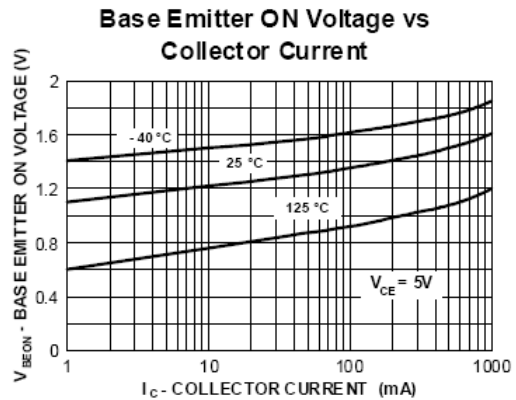
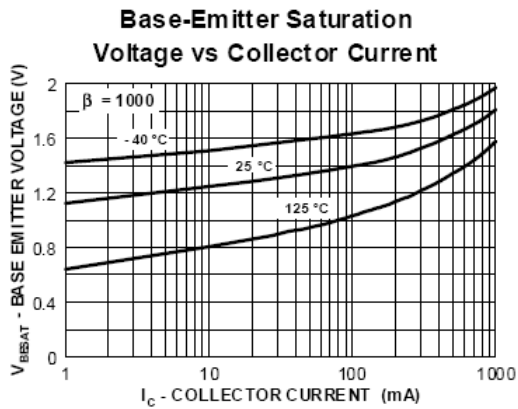
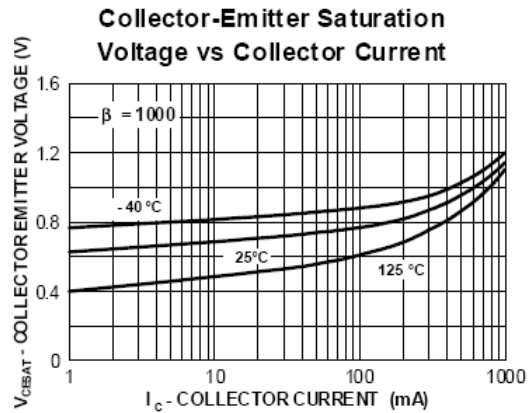
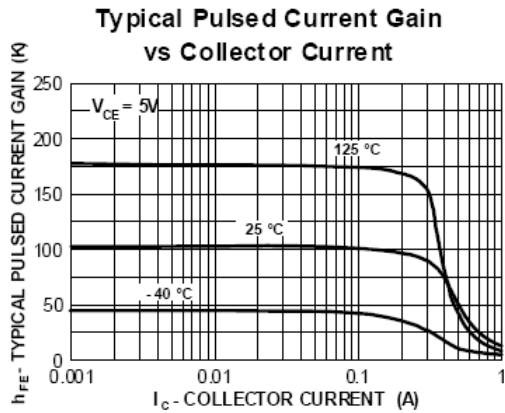
* Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%

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

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

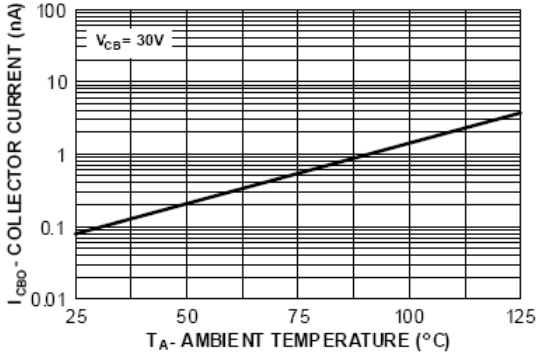
* Device mounted on FR-4PCB $1.6'' \times 1.6'' \times 0.06''$.

Typical Characteristics

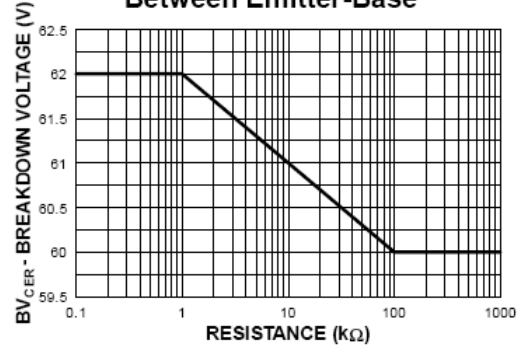


Typical Characteristics (continued)

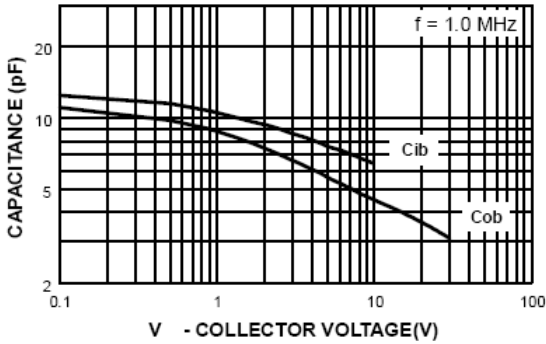
Collector-Cutoff Current vs Ambient Temperature



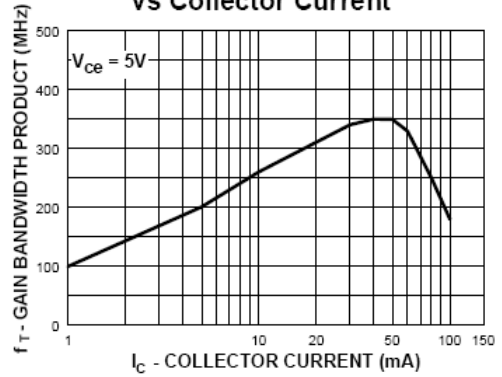
Collector-Emitter Breakdown Voltage with Resistance Between Emitter-Base



Input and Output Capacitance vs Reverse Voltage

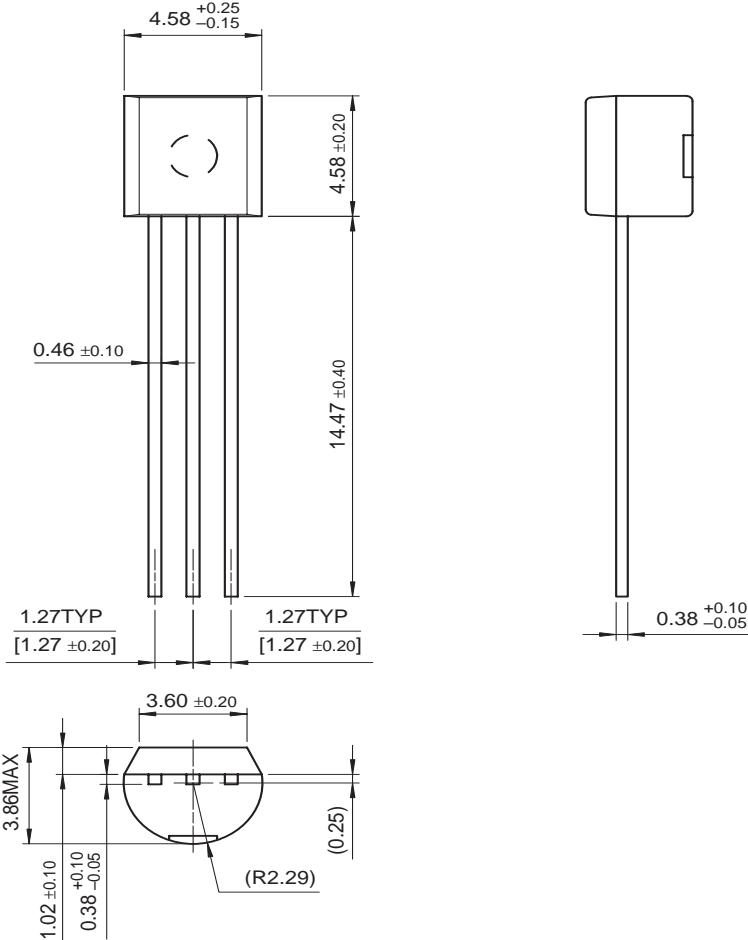


Gain Bandwidth Product vs Collector Current



Mechanical Dimensions

TO-92




Dimensions in Millimeters



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