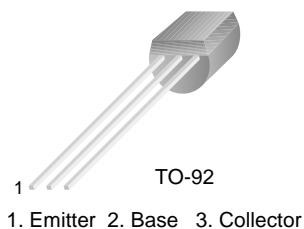


MPSA13

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 |

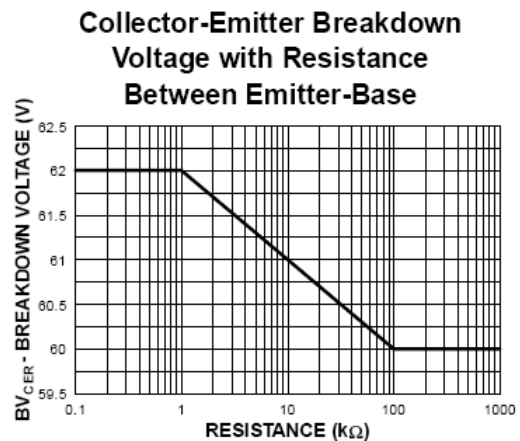
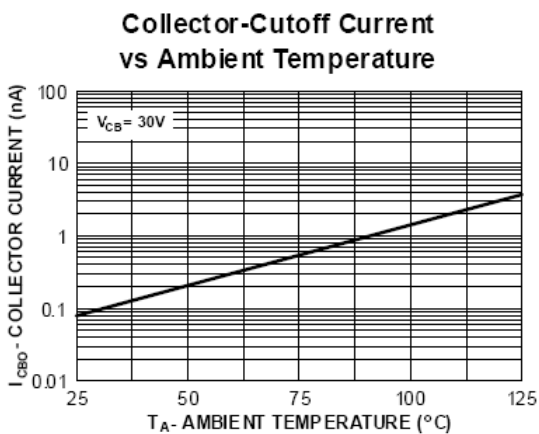
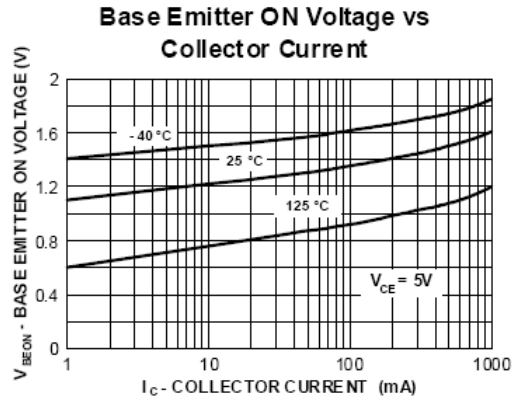
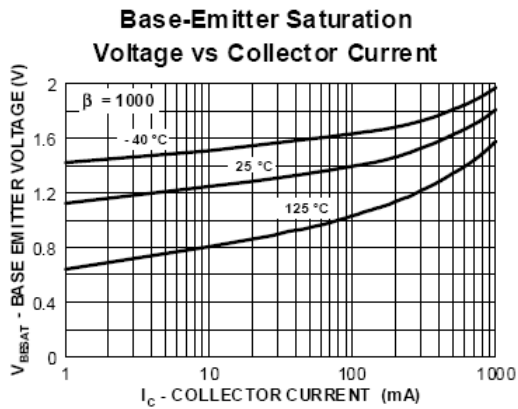
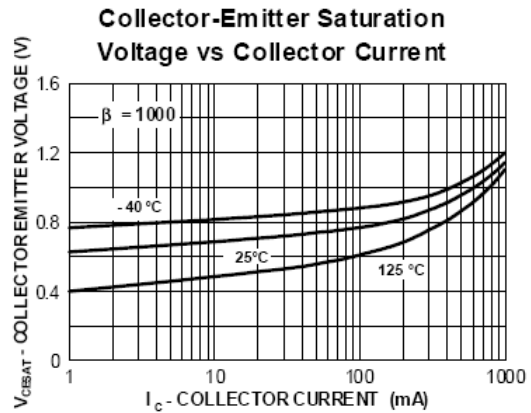
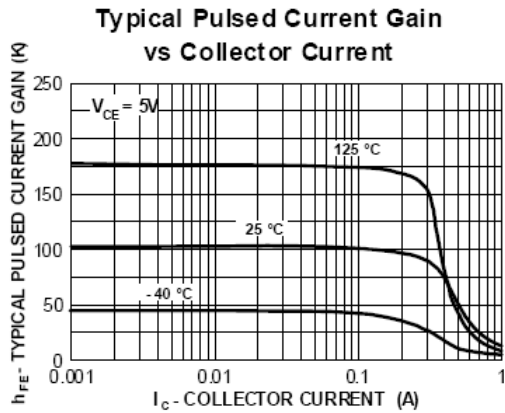
* Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%

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 | $^\circ\text{C}/\text{W}$ |

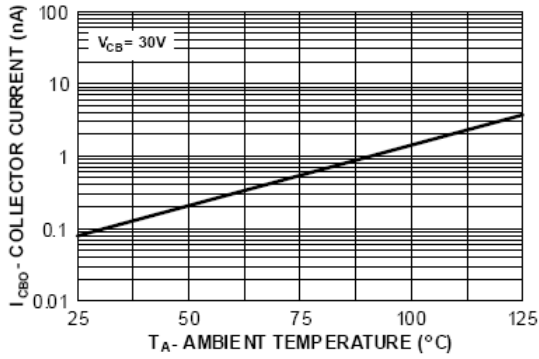
* Device mounted on FR-4PCB $1.6" \times 1.6" \times 0.06"$.

Typical Characteristics

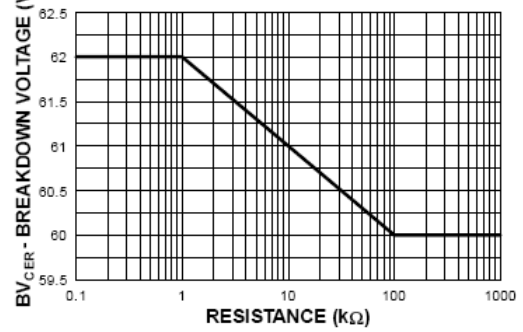


Typical Characteristics (continued)

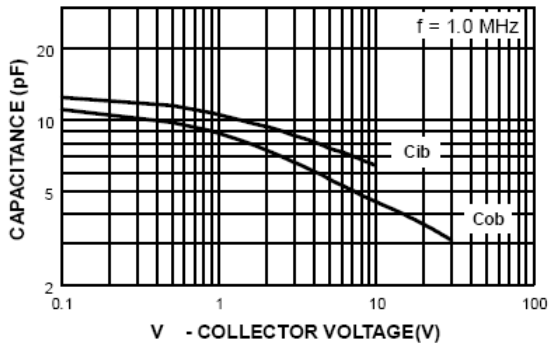
Collector-Cutoff Current vs Ambient Temperature



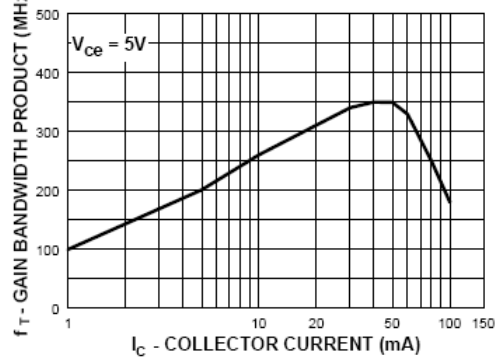
Collector-Emitter Breakdown Voltage with Resistance Between Emitter-Base



Input and Output Capacitance vs Reverse Voltage

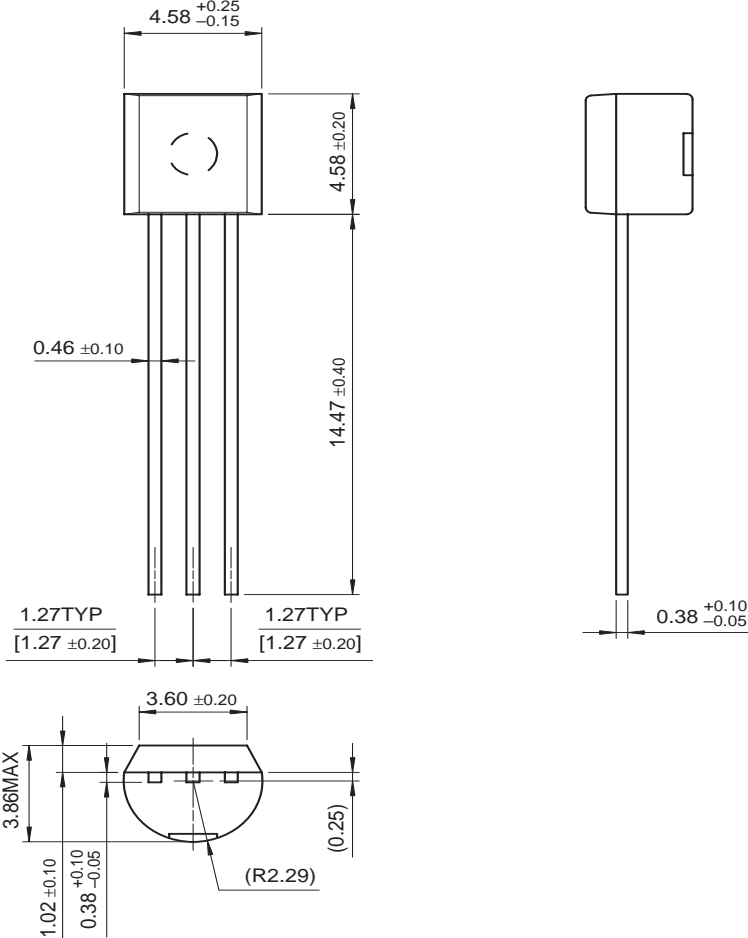


Gain Bandwidth Product vs Collector Current



Mechanical Dimensions

TO-92




Dimensions in Millimeters



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|--------------------------|------------------------|--|
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