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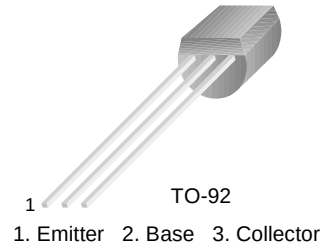
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## KSP13/14

### Darlington Transistor

- Collector-Emitter Voltage:  $V_{CES}=30V$
- Collector Power Dissipation:  $P_C$  (max)=625mW



### NPN Epitaxial Silicon Darlington Transistor

#### Absolute Maximum Ratings $T_a=25^\circ C$ unless otherwise noted

| Symbol    | Parameter                   | Value     | Units      |
|-----------|-----------------------------|-----------|------------|
| $V_{CBO}$ | Collector-Base Voltage      | 30        | V          |
| $V_{CES}$ | Collector-Emitter Voltage   | 30        | V          |
| $V_{EBO}$ | Emitter-Base Voltage        | 10        | V          |
| $I_C$     | Collector Current           | 500       | mA         |
| $P_C$     | Collector Power Dissipation | 625       | mW         |
| $T_J$     | Junction Temperature        | 150       | $^\circ C$ |
| $T_{STG}$ | Storage Temperature         | -55 ~ 150 | $^\circ C$ |

#### Electrical Characteristics $T_a=25^\circ C$ unless otherwise noted

| Symbol        | Parameter                            | Test Condition                      | Min. | Max. | Units |
|---------------|--------------------------------------|-------------------------------------|------|------|-------|
| $BV_{CES}$    | Collector-Emitter Breakdown Voltage  | $I_C=100\mu A, I_B=0$               | 30   |      | V     |
| $I_{CBO}$     | Collector Cut-off Current            | $V_{CB}=30V, I_E=0$                 |      | 100  | nA    |
| $I_{EBO}$     | Emitter Cut-off Current              | $V_{EB}=10V, I_C=0$                 |      | 100  | nA    |
| $h_{FE}$      | * DC Current Gain                    |                                     |      |      |       |
|               | : KSP13                              | $V_{CE}=5V, I_C=10mA$               | 5K   |      |       |
|               | : KSP14                              |                                     | 10K  |      |       |
|               | : KSP13                              | $V_{CE}=5V, I_C=100mA$              | 10K  |      |       |
|               | : KSP14                              |                                     | 20K  |      |       |
| $V_{CE(sat)}$ | Collector-Emitter Saturation Voltage | $I_C=100mA, I_B=0.1mA$              |      | 1.5  | V     |
| $V_{BE(on)}$  | Base-Emitter On Voltage              | $V_{CE}=5V, I_C=100mA$              |      | 2.0  | V     |
| $f_T$         | Current Gain Bandwidth Product       | $V_{CE}=5V, I_C=10mA$<br>$f=100MHz$ | 125  |      | MHz   |

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

# Typical Characteristics

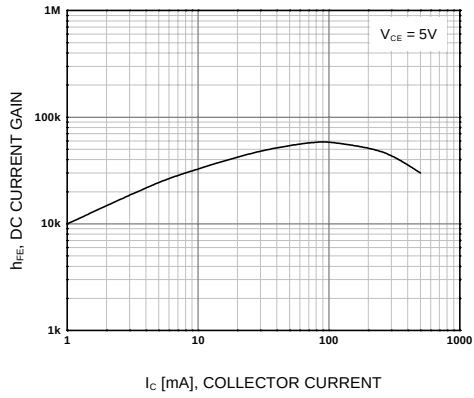


Figure 1. DC current Gain

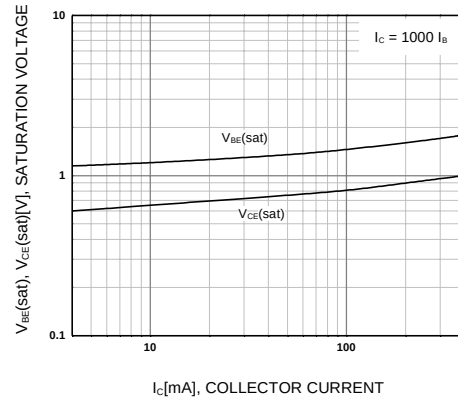


Figure 2. Base-Emitter Saturation Voltage  
Collector-Emitter Saturation Voltage

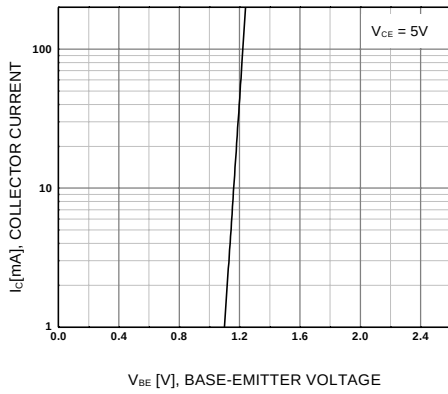


Figure 3. Base-Emitter On Voltage

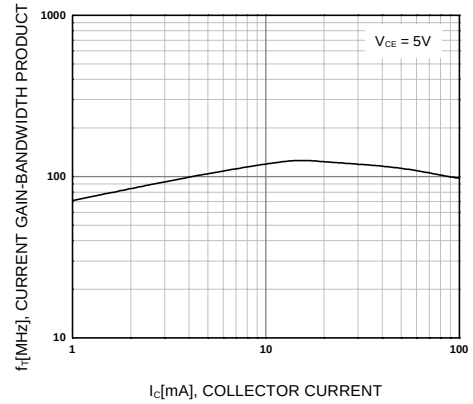
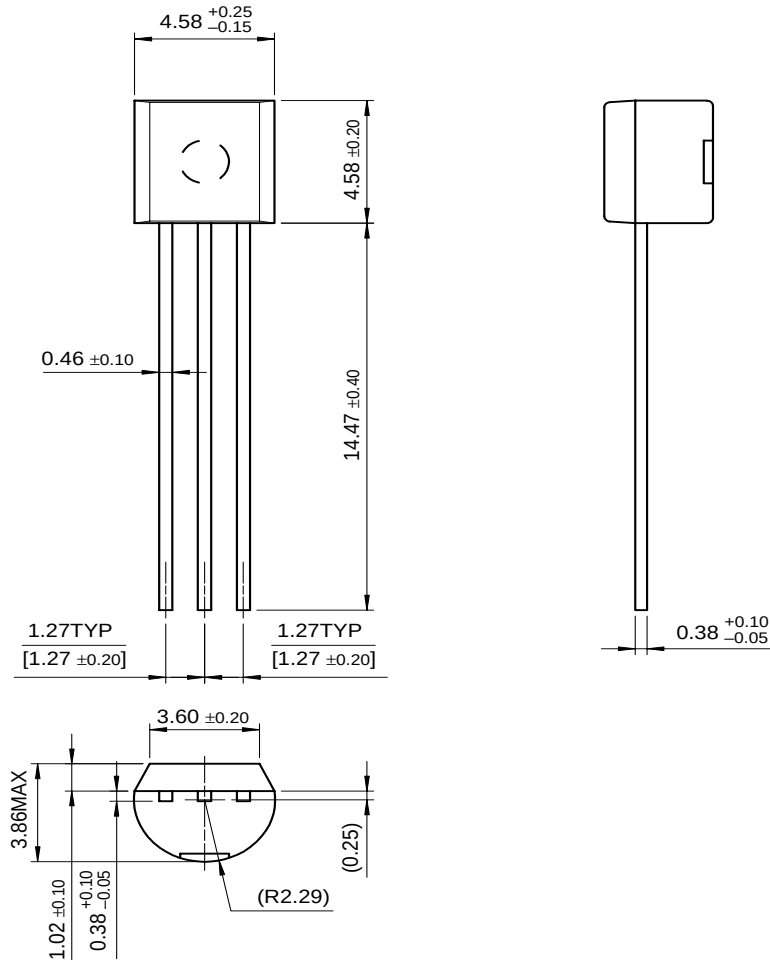


Figure 4. Current Gain Bandwidth Product

# Package Dimensions

## TO-92



Dimensions in Millimeters

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