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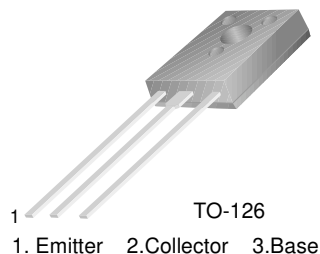
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**Feature**

- High Dc Current Gain
- Low Collector Saturation Voltage
- Built-in a Damper Diode at E-C
- High Power Dissipation :  $P_C = 1.3W$  ( $T_a=25^\circ C$ )

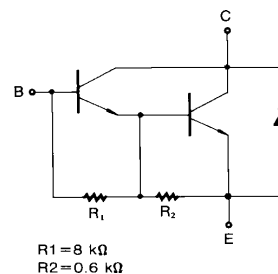


**NPN Silicon Darlington Transistor**

**Absolute Maximum Ratings**  $T_C=25^\circ C$  unless otherwise noted

| Symbol    | Parameter                                  | Value      | Units      |
|-----------|--|------------|------------|
| $V_{CBO}$ | Collector-Base Voltage                     | 150        | V          |
| $V_{CEO}$ | Collector-Emitter Voltage                  | 100        | V          |
| $V_{EBO}$ | Emitter-Base Voltage                       | 8          | V          |
| $I_C$     | Collector Current (DC)                     | 3          | A          |
| $I_{CP}$  | *Collector Current (Pulse)                 | 5          | A          |
| $P_C$     | Collector Dissipation ( $T_a=25^\circ C$ ) | 1.3        | A          |
| $P_C$     | Collector Dissipation ( $T_C=25^\circ C$ ) | 15         | W          |
| $T_J$     | Junction Temperature                       | 150        | W          |
| $T_{STG}$ | Storage Temperature                        | - 55 ~ 150 | $^\circ C$ |

\*  $PW \leq 10ms$ , duty Cycle  $\leq 50\%$



**Electrical Characteristics**  $T_C=25^\circ C$  unless otherwise noted

| Symbol                 | Parameter                             | Test Condition  | Min.     | Typ. | Max. | Units   |
|------------------------|---------------------------------------|---|----------|------|------|---------|
| $I_{CBO}$              | Collector Cut-off Current             | $V_{CB} = 100V, I_E = 0$  |          |      | 10   | $\mu A$ |
| $I_{EBO}$              | Emitter Cut-off Current               | $V_{EB} = 5V, I_C = 0$  |          |      | 2    | mA      |
| $h_{FE1}$<br>$h_{FE2}$ | *DC Current Gain                      | $V_{CE} = 2V, I_C = 1.5A$<br>$V_{CE} = 2V, I_C = 3A$                          | 2K<br>1K |      | 20K  |         |
| $V_{CE(sat)}$          | *Collector-Emitter Saturation Voltage | $I_C = 1.5A, I_B = 1.5mA$   |          | 0.9  | 1.2  | V       |
| $V_{BE(sat)}$          | *Base-Emitter Saturation Voltage      | $I_C = 1.5A, I_B = 1.5mA$   |          | 1.5  | 2    | V       |
| $t_{ON}$               | Turn ON Time                          | $V_{CC} = 40V, I_C = 1.5A$<br>$I_{B1} = - I_{B2} = 1.5mA$<br>$R_L = 27\Omega$ |          | 0.5  |      | $\mu s$ |
| $t_{STG}$              | Storage Time                          |   |          | 2    |      | $\mu s$ |
| $t_F$                  | Fall Time                             |   |          | 1    |      | $\mu s$ |

\* Pulse test:  $PW \leq 350\mu s$ , duty Cycle  $\leq 2\%$  Pulsed

**$h_{FE}$  Classification**

| Classification | O           | Y            | G            |
|----------------|-------------|--------------|--------------|
| $h_{FE1}$      | 2000 ~ 5000 | 4000 ~ 12000 | 6000 ~ 20000 |

# Typical Characteristics

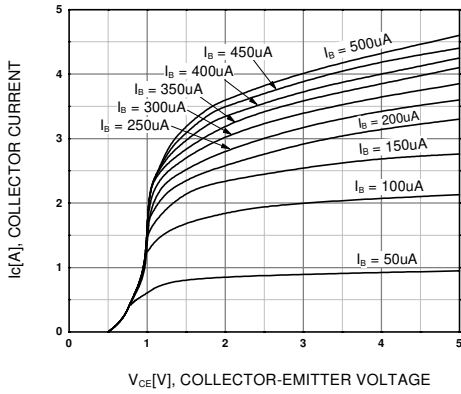


Figure 1. Static Characteristic

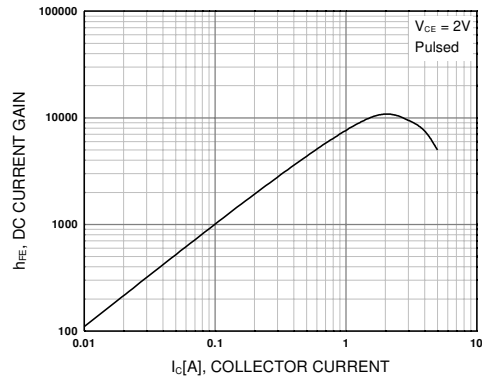


Figure 2. DC current Gain

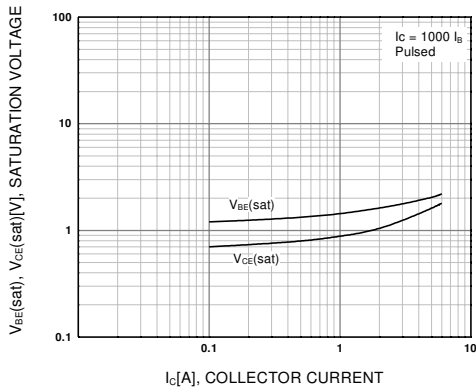


Figure 3. Collector-Emitter Saturation Voltage Base-Emitter Saturation Voltage

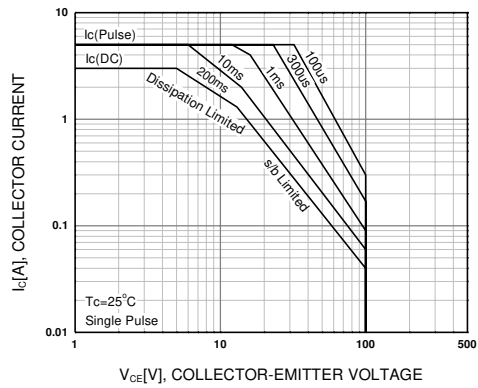


Figure 4. Forward Bias Safe Operating Areas

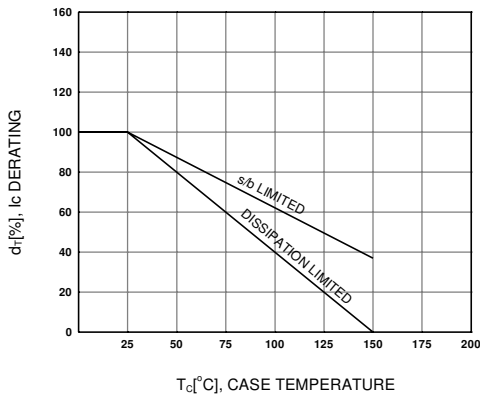


Figure 5. Derating Curve of Safe Operating Areas

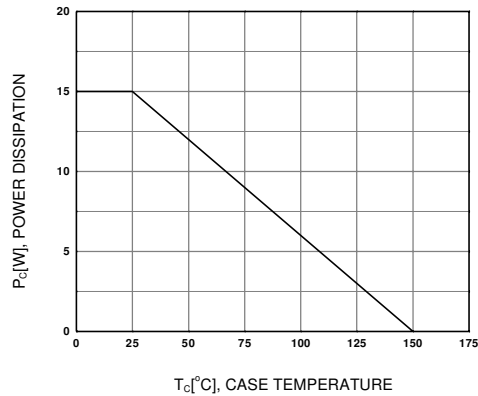
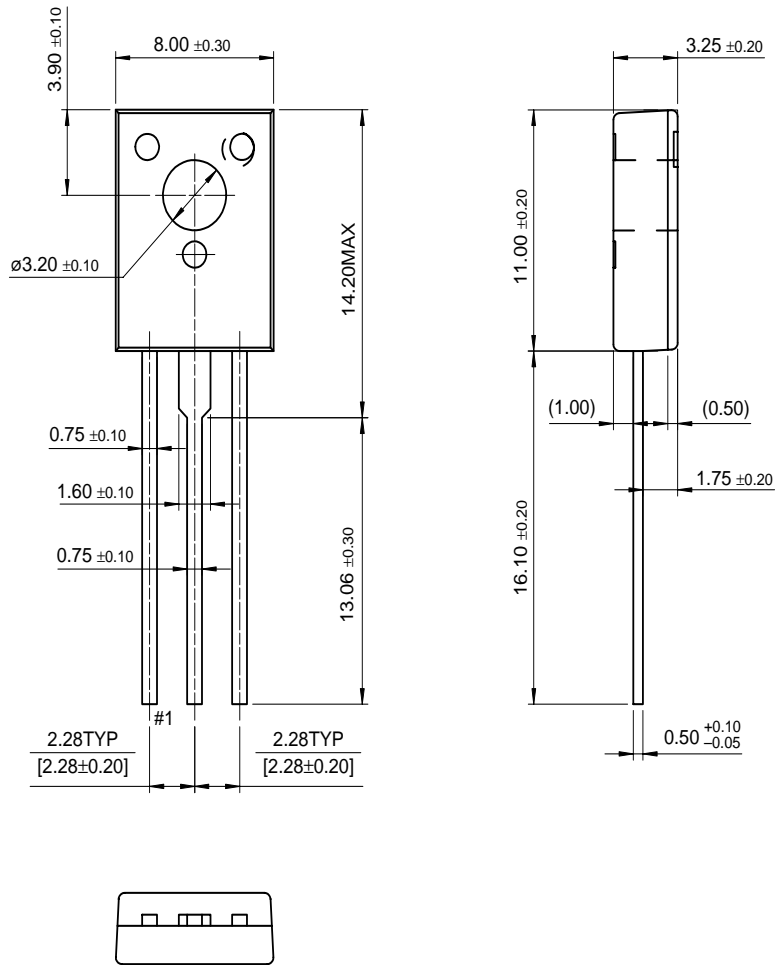


Figure 6. Power Derating

# Package Dimensions

KSD1692

## TO-126



Dimensions in Millimeters

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| CROSSVOLT™           | POP™          | UHC™        |
| E <sup>2</sup> CMOS™ | PowerTrench®  | VCX™        |
| FACT™                | QFET™         |             |
| FACT Quiet Series™   | QS™           |             |
| FAST®                | Quiet Series™ |             |
| FASTr™               | SuperSOT™-3   |             |
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