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KSH122 / KSH122I

NPN Silicon Darlington Transistor

Features

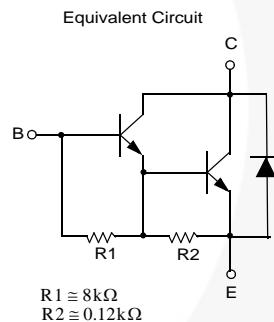
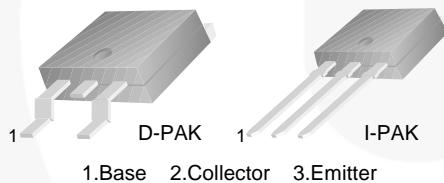
- D-PAK for Surface Mount Applications
- High DC Current Gain
- Built-in Damper Diode at E-C
- Lead Formed for Surface Mount Applications (No Suffix)
- Straight Lead (I-PAK, “ - I ” Suffix)
- Electrically Similar to Popular TIP122
- Complement to KSH127

Applications

- Switching Regulators
- Converters
- Power Amplifiers

Description

Designed for general-purpose power and switching, such as output or driver stages in applications.



Ordering Information

| Part Number | Top Mark | Package | Packing Method |
|-------------|----------|------------------|----------------|
| KSH122TF | KSH122 | TO-252 3L (DPAK) | Tape and Reel |
| KSH122TM | KSH122 | TO-252 3L (DPAK) | Tape and Reel |
| KSH122ITU | KSH122-I | TO-251 3L (IPAK) | Rail |

Absolute Maximum Ratings

Stresses exceeding the absolute maximum ratings may damage the device. The device may not function or be operable above the recommended operating conditions and stressing the parts to these levels is not recommended. In addition, extended exposure to stresses above the recommended operating conditions may affect device reliability. The absolute maximum ratings are stress ratings only. Values are at $T_C = 25^\circ\text{C}$ unless otherwise noted.

| Symbol | Parameter | Value | Unit |
|-----------|--|-------------|------------------|
| V_{CBO} | Collector-Base Voltage | 100 | V |
| V_{CEO} | Collector-Emitter Voltage | 100 | V |
| V_{EBO} | Emitter-Base Voltage | 5 | V |
| I_C | Collector Current (DC) | 8 | A |
| I_{CP} | Collector Current (Pulse) | 16 | A |
| I_B | Base Current | 120 | mA |
| P_C | Collector Dissipation ($T_C=25^\circ\text{C}$) | 20.00 | W |
| | Collector Dissipation ($T_A=25^\circ\text{C}$) | 1.75 | |
| T_J | Junction Temperature | 150 | $^\circ\text{C}$ |
| T_{STG} | Storage Temperature | - 65 to 150 | $^\circ\text{C}$ |

Electrical Characteristics

Values are at $T_A = 25^\circ\text{C}$ unless otherwise noted.

| Symbol | Parameter | Conditions | Min. | Typ. | Max. | Unit |
|-----------------------|---|---|------|------|-------|---------------|
| $V_{CEO(\text{sus})}$ | Collector-Emitter Sustaining Voltage ⁽¹⁾ | $I_C = 30 \text{ mA}, I_B = 0$ | 100 | | | V |
| I_{CEO} | Collector Cut-Off Current | $V_{CE} = 50 \text{ V}, I_B = 0$ | | | 10 | μA |
| I_{CBO} | Collector Cut-Off Current | $V_{CB} = 100 \text{ V}, I_E = 0$ | | | 10 | μA |
| I_{EBO} | Emitter Cut-Off Current | $V_{EB} = 5 \text{ V}, I_C = 0$ | | | 2 | mA |
| h_{FE} | DC Current Gain ⁽¹⁾ | $V_{CE} = 4 \text{ V}, I_C = 4 \text{ A}$ | 1000 | | 12000 | |
| | | $V_{CE} = 4 \text{ V}, I_C = 8 \text{ A}$ | 100 | | | |
| $V_{CE(\text{sat})}$ | Collector-Emitter Saturation Voltage ⁽¹⁾ | $I_C = 4 \text{ A}, I_B = 16 \text{ mA}$ | | | 2 | V |
| | | $I_C = 8 \text{ A}, I_B = 80 \text{ mA}$ | | | 4 | |
| $V_{BE(\text{sat})}$ | Base-Emitter Saturation Voltage ⁽¹⁾ | $I_C = 8 \text{ A}, I_B = 80 \text{ mA}$ | | | 4.5 | V |
| $V_{BE(\text{on})}$ | Base-Emitter On Voltage ⁽¹⁾ | $V_{CE} = 4 \text{ V}, I_C = 4 \text{ A}$ | | | 2.8 | V |
| C_{ob} | Output Capacitance | $V_{CB} = 10 \text{ V}, I_E = 0, f = 0.1 \text{ MHz}$ | | | 200 | pF |

Note:

1. Pulse test: $pw \leq 300 \mu\text{s}$, duty cycle $\leq 2\%$.

Typical Performance Characteristics

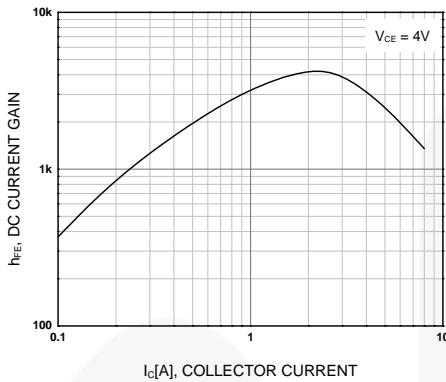
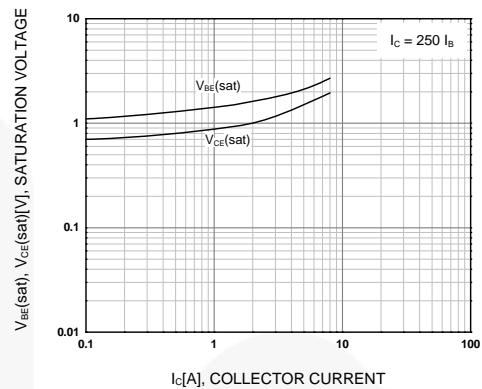


Figure 1. DC Current Gain



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

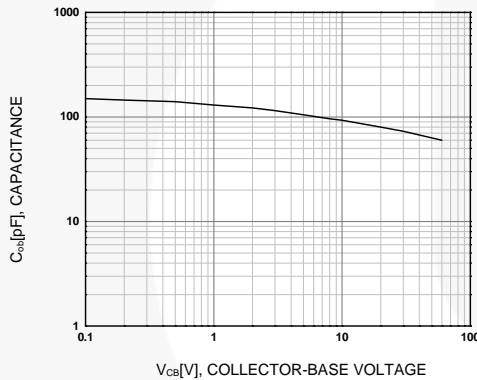


Figure 3. Collector Output Capacitance

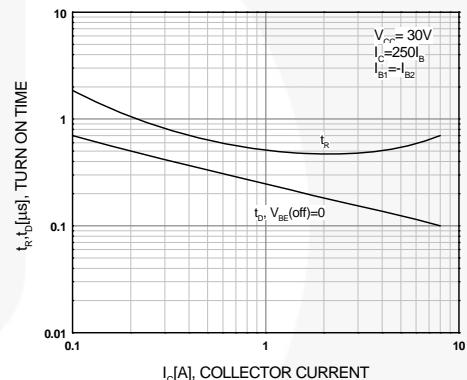


Figure 4. Turn-On Time

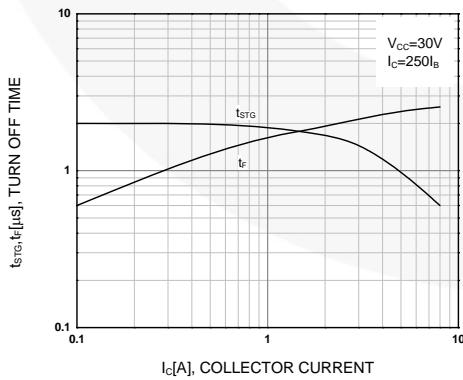


Figure 5. Turn-Off Time

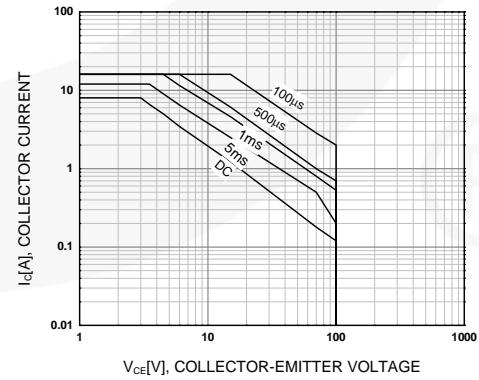


Figure 6. Safe Operating Area

Typical Performance Characteristics (Continued)

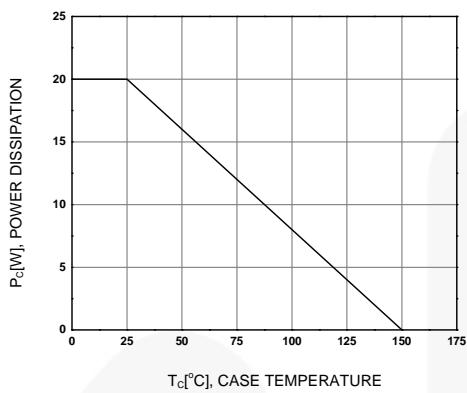
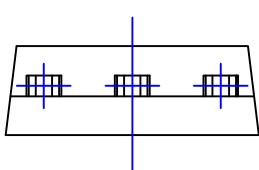
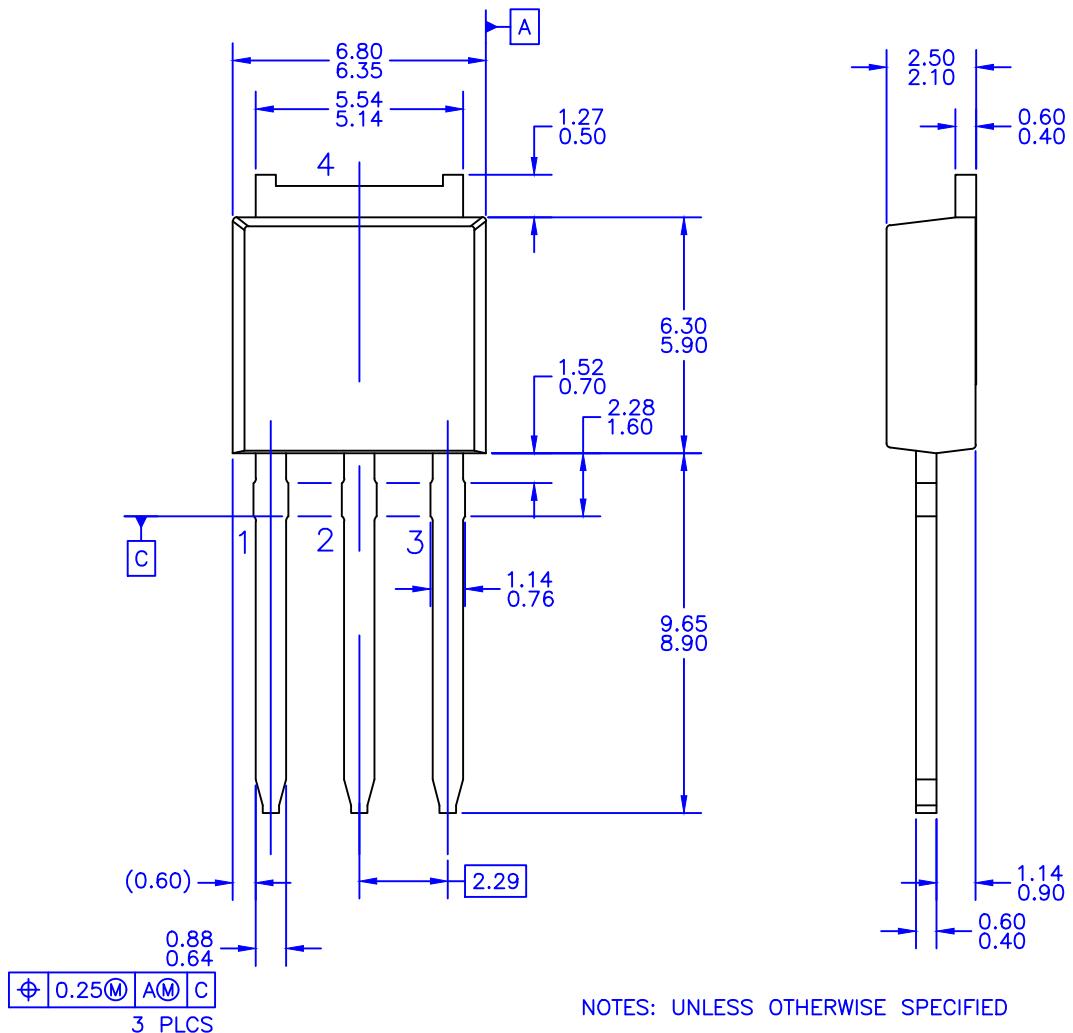
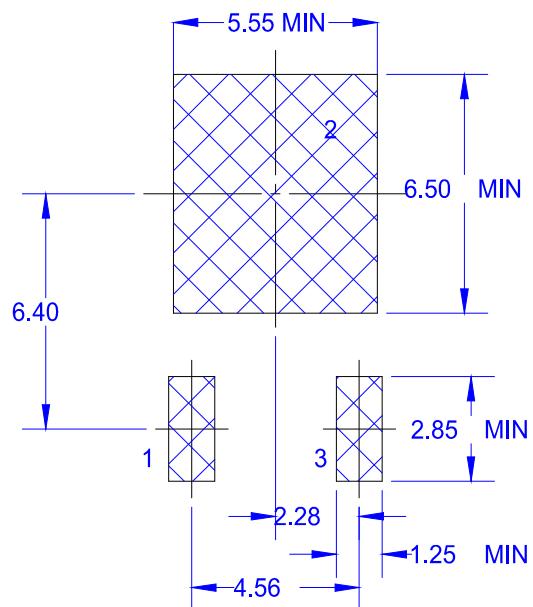
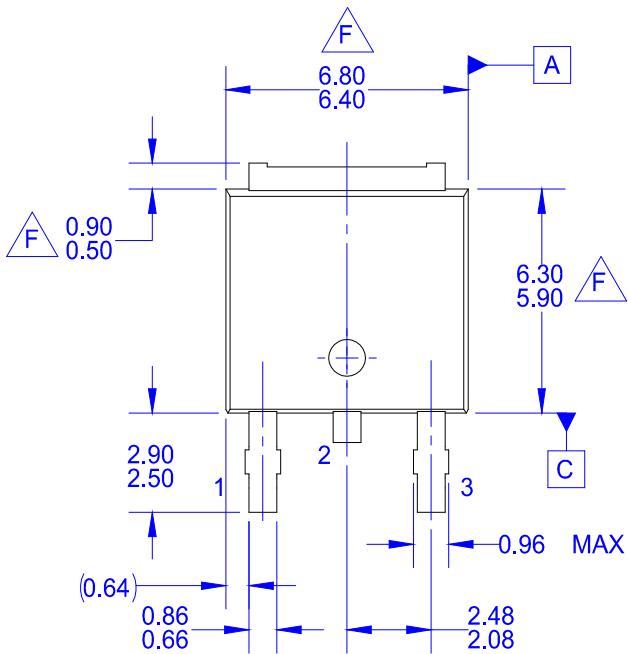


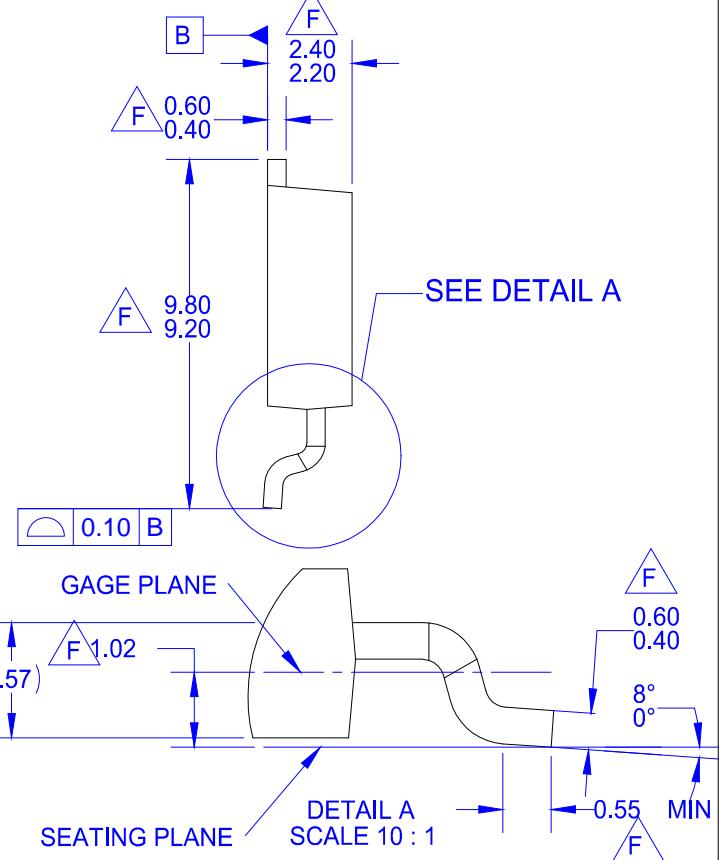
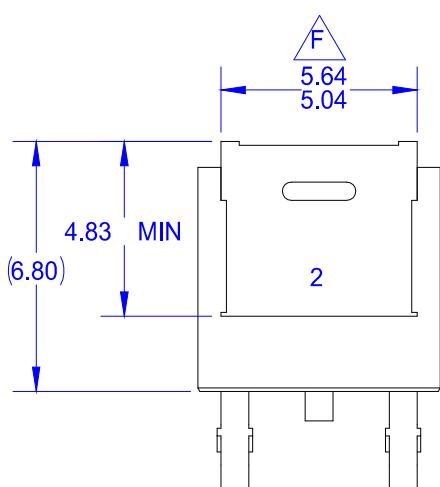
Figure 7. Power Derating



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