



April 2015

# KSH45H11

## PNP Epitaxial Silicon Transistor

### Features

- Lead Formed for Surface Mount Application (No Suffix)
- Straight Lead (I-PAK, “- I” Suffix)
- Electrically Similar to Popular KSE45H
- Fast Switching Speeds
- Low Collector Emitter Saturation Voltage

### Applications

- Switching Regulators
- Converters
- Power Amplifiers

### Description

General-purpose power and switching such as output or driver stages in applications D-PAK for surface mount applications.



### Ordering Information

| Part Number | Top Mark   | Package          | Packing Method |
|-------------|------------|------------------|----------------|
| KSH45H11TF  | KSH45H11   | TO-252 3L (DPAK) | Tape and Reel  |
| KSH45H11TM  | KSH45H11   | TO-252 3L (DPAK) | Tape and Reel  |
| KSH45H11ITU | KSH45H11-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  $T_A = 25^\circ\text{C}$  unless otherwise noted.

| Symbol    | Parameter                                          | Value        | Unit             |
|-----------|----------------------------------------------------|--------------|------------------|
| $V_{CEO}$ | Collector-Emitter Voltage                          | - 80         | V                |
| $V_{EBO}$ | Emitter-Base Voltage                               | - 5          | V                |
| $I_C$     | Collector Current (DC)                             | - 8          | A                |
| $I_{CP}$  | Collector Current (Pulse)                          | - 16         | A                |
| $P_C$     | Collector Dissipation ( $T_C = 25^\circ\text{C}$ ) | 20           | W                |
|           | Collector Dissipation ( $T_A = 25^\circ\text{C}$ ) | 1.75         |                  |
| $T_J$     | Junction Temperature                               | 150          | $^\circ\text{C}$ |
| $T_{STG}$ | Storage Temperature                                | - 55 to +150 | $^\circ\text{C}$ |

**Electrical Characteristics<sup>(1)</sup>**

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

| Symbol         | Parameter                            | Conditions                                                 | Min. | Typ. | Max.  | Unit          |
|----------------|--------------------------------------|------------------------------------------------------------|------|------|-------|---------------|
| $V_{CEO(sus)}$ | Collector-Emitter Sustaining Voltage | $I_C = -30\text{ mA}, I_B = 0$                             | - 80 |      |       | V             |
| $I_{CEO}$      | Collector Cut-Off Current            | $V_{CE} = -80\text{ V}, I_B = 0$                           |      |      | - 10  | $\mu\text{A}$ |
| $I_{EBO}$      | Emitter Cut-Off Current              | $V_{EB} = -5\text{ V}, I_C = 0$                            |      |      | - 50  | $\mu\text{A}$ |
| $h_{FE}$       | DC Current Gain                      | $V_{CE} = -1\text{ V}, I_C = -2\text{ A}$                  | 60   |      |       |               |
|                |                                      | $V_{CE} = -1\text{ V}, I_C = -4\text{ A}$                  | 40   |      |       |               |
| $V_{CE(sat)}$  | Collector-Emitter Saturation Voltage | $I_C = -8\text{ A}, I_B = -0.4\text{ A}$                   |      |      | - 1   | V             |
| $V_{BE(sat)}$  | Base-Emitter Saturation Voltage      | $I_C = -8\text{ A}, I_B = -0.8\text{ A}$                   |      |      | - 1.5 | V             |
| $f_T$          | Current Gain Bandwidth Product       | $V_{CE} = -10\text{ V}, I_C = -0.5\text{ A}$               |      | 40   |       | MHz           |
| $C_{ob}$       | Collector Capacitance                | $V_{CB} = -10\text{ V}, f = 1\text{ MHz}$                  |      | 230  |       | pF            |
| $t_{ON}$       | Turn-On Time                         | $I_C = -5\text{ A},$<br>$I_{B1} = -I_{B2} = -0.5\text{ A}$ |      | 135  |       | ns            |
| $t_{STG}$      | Storage Time                         |                                                            |      | 500  |       | ns            |
| $t_F$          | Fall Time                            |                                                            |      | 100  |       | ns            |

**Note:**

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

## Typical Performance Characteristics

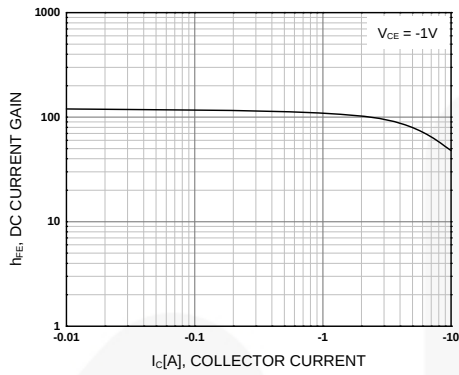


Figure 1. DC Current Gain

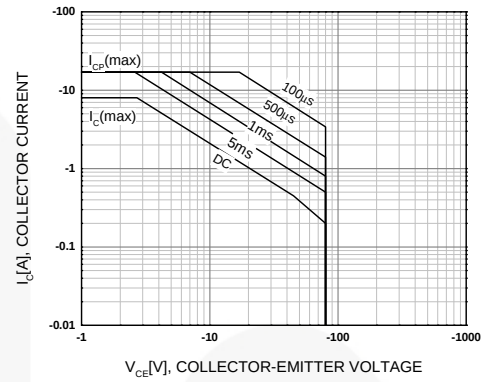


Figure 2. Safe Operating Area

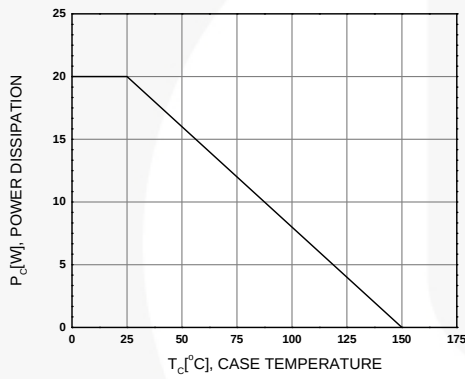


Figure 3. Power Derating

# Physical Dimensions

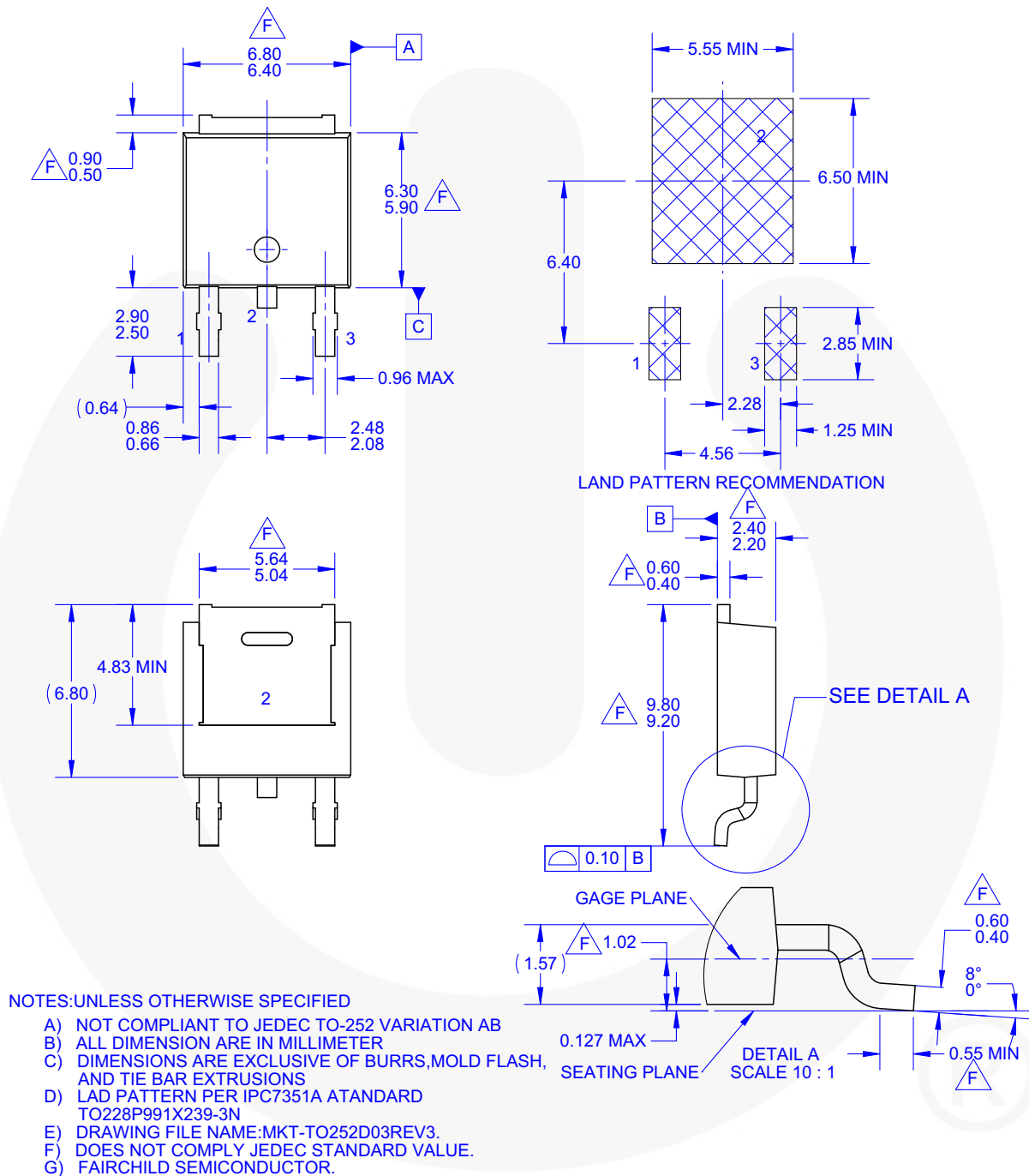


Figure 4. 3-LEAD, TO-252, NOT COMPLIANT TO JEDEC TO-252 VAR. AB, SURFACE MOUNT (DPAK)

Physical Dimensions (Continued)

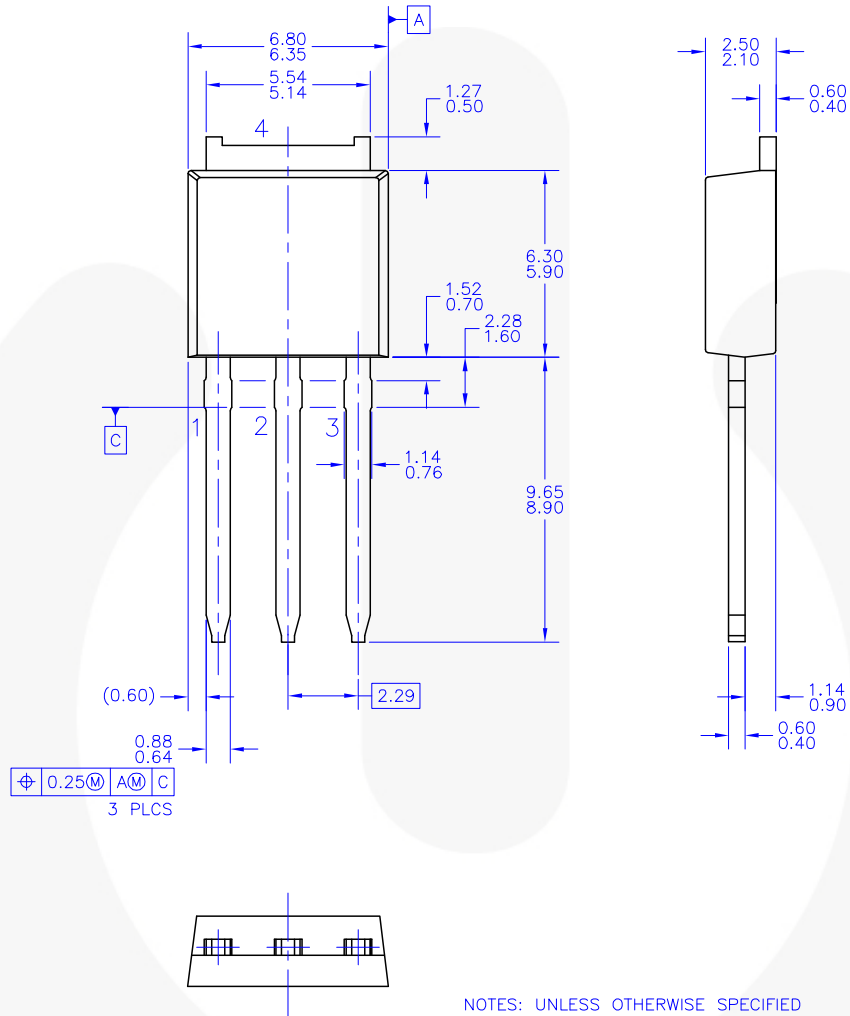


Figure 5. TO-251 (IPAK) MOLDED, 3-LEAD



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Rev. 174