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March 2008



KSE13003 NPN Silicon Transistor

High Voltage Switch Mode Applications

- High Voltage Capability
- High Speed Switching
- Suitable for Switching Regulator and Motor Control •



Absolute Maximum Ratings* T_c = 25°C unless otherwise noted (notes_1)

| Symbol | Parameter | Value | Units | |
|---|---------------------------|-----------|-------|--|
| V _{CBO} | Collector-Base Voltage | 700 | V | |
| V _{CEO} | Collector-Emitter Voltage | 400 | V | |
| V _{EBO} | Emitter-Base Voltage | 9 | V | |
| I _C Collector Current (DC) | | 1.5 | A | |
| I _{CP} | Collector Current (Pulse) | 3 | A | |
| I _B Base Current | | 0.75 | A | |
| P_{C} Collector Dissipation ($T_{C} = 25^{\circ}C$) | | 20 | W | |
| T _J Junction Temperature | | 150 | °C | |
| T _{STG} | Storage Temperature Range | -65 ~ 150 | °C | |

* These ratings are limiting values above which the serviceability of any semiconductor device may be impaired. NOTES_1:

1) These ratings are based on a maximum junction temperature of 150°C.
2) These are steady state limits. The factory should be consulted on applications involving pulsed or low duty cycle operations.

h_{FE} Classification

| Classification | H1 | H2 | H3 |
|-------------------|------|--------|---------|
| h _{FE} * | 9~16 | 14~ 21 | 19 ~ 26 |

* Test on V_{CE} = 2V, I_C = 0.5A.

| Symbol | Parameter | Conditions | Min. | Тур. | Max | Units |
|-----------------------|---------------------------------------|--|--------|------|---------------|-------------|
| BV _{CEO} | Collector-Emitter Breakdown Voltage | I _C = 5mA, I _B = 0 | 400 | | | V |
| I _{EBO} | Emitter Cut-off Current | V _{EB} = 9V, I _C = 0 | | | 10 | μA |
| h _{FE} | *DC Current Gain | $V_{CE} = 2V, I_C = 0.5A$ $V_{CE} = 2V, I_C = 1A$ | 8 5 | | 40 | |
| V _{CE} (sat) | *Collector Emitter Saturation Voltage | $\begin{split} I_{C} &= 0.5A, \ I_{B} = 0.1A \\ I_{C} &= 1A, \ I_{B} = 0.25A \\ I_{C} &= 1.5A, \ I_{B} = 0.5A \end{split}$ | | | 0.5 1 3 | V V V |
| V _{BE} (sat) | *Base Emitter Saturation Voltage | $I_{C} = 0.5A, I_{B} = 0.1A$ $I_{C} = 1A, I_{B} = 0.25A$ | | | 1 1.2 | V V |
| C _{ob} | Output Capacitance | V _{CB} = 10V , f = 0.1MHz | | 21 | | pF |
| f _T | Current Gain Bandwidth Product | V _{CE} = 10V, I _C = 0.1A | 4 | | | MHz |
| t _{ON} | Turn On Time | V _{CC} =125V, I _C = 1A | | | 1.1 | ms |
| t _{STG} | Storage Time | $I_{B1} = 0.2A, I_{B2} = -0.2A$ $P_{1} = 125W$ | | | 4.0 | ms |
| t _F | Fall Time | | | | 0.7 | ms |

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* Pulse Test: Pulse Width=5ms, Duty Cycle≤10%

Package Marking and Ordering Information

| Device Item (notes_2) | Device Marking | Package | Packing Method | Remarks |
|-----------------------|----------------|---------|----------------|---------|
| KSE13003H1ASTU | 1 E13003 | TO-126 | TUBE | |
| KSE13003H2ASTU | 2 E13003 | TO-126 | TUBE | |
| KSE13003H3ASTU | 3 E13003 | TO-126 | TUBE | |

Notes_2 :

1) The Affix "-H1/-H2/-H3" means the hFE classification.

2) The Sufix "-STU" means the TO126 short lead package and the Tube packing method, which can be on fairchildsemi website at http://www.fairchildsemi.com



KSE13003 — NPN Silicon Transistor

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| Datasheet Identification | Product Status | Definition | | |
|--------------------------|-----------------------|--|--|--|
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