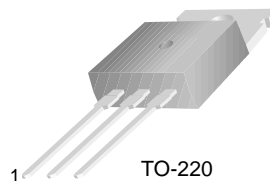


## KSE44H Series

### General Purpose Power Switching Applications

- Low Collector-Emitter Saturation Voltage :  $V_{CE(sat)} = 1V$  (Max.) @ 8A
- Fast Switching Speeds
- Complement to KSE45H



TO-220  
1.Base 2.Collector 3.Emitter

### NPN Epitaxial Silicon Transistor

#### Absolute Maximum Ratings $T_C=25^\circ\text{C}$ unless otherwise noted

| Symbol    | Parameter  | Value          | Units            |   |
|-----------|--|----------------|------------------|---|
| $V_{CEO}$ | Collector-Emitter Voltage                        | : KSE44H 1,2   | 30               | V |
|           |  | : KSE44H 4,5   | 45               | V |
|           |  | : KSE44H 7,8   | 60               | V |
|           |  | : KSE44H 10,11 | 80               | V |
| $V_{EBO}$ | Emitter- Base Voltage                            | 5              | V                |   |
| $I_C$     | Collector Current (DC)                           | 10             | A                |   |
| $I_{CP}$  | *Collector Current (Pulse)                       | 20             | A                |   |
| $P_C$     | Collector Dissipation ( $T_C=25^\circ\text{C}$ ) | 50             | W                |   |
| $P_C$     | Collector Dissipation ( $T_a=25^\circ\text{C}$ ) | 1.67           | W                |   |
| $T_J$     | Junction Temperature                             | 150            | $^\circ\text{C}$ |   |
| $T_{STG}$ | Storage Temperature                              | - 55 ~ 150     | $^\circ\text{C}$ |   |

#### Electrical Characteristics $T_C=25^\circ\text{C}$ unless otherwise noted

| Symbol        | Parameter                             | Test Condition   | Min.                | Typ. | Max. | Units         |   |
|---------------|---------------------------------------|--|---------------------|------|------|---------------|---|
| $I_{CES}$     | Collector Cut-off Current             | $V_{CE} = \text{Rated } V_{CEO}, V_{EB} = 0$           |                     |      | 10   | $\mu\text{A}$ |   |
| $I_{EBO}$     | Emitter Cut-off Current               | $V_{EB} = 5V, I_C = 0$                                 |                     |      | 100  | $\mu\text{A}$ |   |
| $h_{FE}$      | *DC Current Gain                      | $V_{CE} = 1V, I_C = 2A$                                |                     |      |      |               |   |
|               |                                       |  | : KSE44H 1,4,7,10   | 35   |      |               |   |
|               | : KSE44H 2,5,8,11                     | 60   |                     |      |      |               |   |
| $V_{CE(sat)}$ | *Collector-Emitter Saturation Voltage | $I_C = 8A, I_B = 0.8A$<br>$I_C = 8A, I_B = 0.4A$       |                     |      | 1    | V             |   |
|               |                                       |  | : KSE44H 1, 4, 7 10 |      |      | 1             | V |
|               |                                       |  | : KSE44H 2, 5, 8,11 |      |      |               |   |
| $V_{BE(sat)}$ | *Base-Emitter Saturation Voltage      | $I_C = 8A, I_B = 0.8A$                                 |                     |      | 1.5  | V             |   |
| $f_T$         | Current Gain Bandwidth Product        | $V_{CE} = 10V, I_C = 0.5A$                             |                     | 50   |      | MHz           |   |
| $C_{ob}$      | Output Capacitance                    | $V_{CB} = 10V, f = 1\text{MHz}$                        |                     | 130  |      | pF            |   |
| $t_{ON}$      | Turn ON Time                          | $V_{CC} = 20V, I_C = 5A$<br>$I_{B1} = - I_{B2} = 0.5A$ |                     | 300  |      | ns            |   |
| $t_{STG}$     | Storage Time                          |  |                     | 500  |      | ns            |   |
| $t_F$         | Fall Time                             |  |                     | 140  |      | ns            |   |

\* Pulse test:  $PW \leq 300\mu\text{s}$ , Duty cycle  $\leq 2\%$

# Typical Characteristics

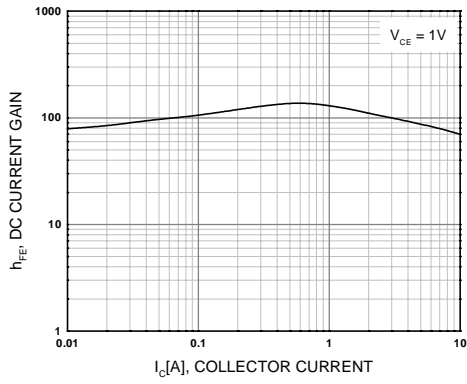


Figure 1. DC current Gain

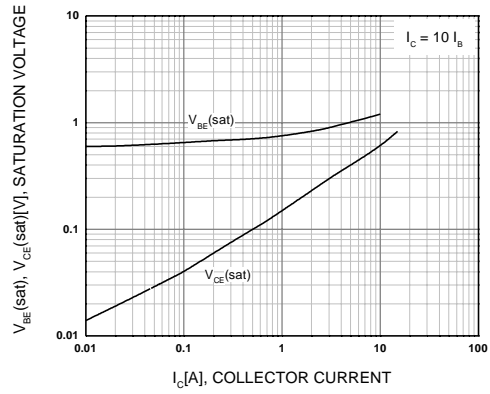


Figure 2. Base-Emitter Saturation Voltage  
Collector-Emitter Saturation Voltage

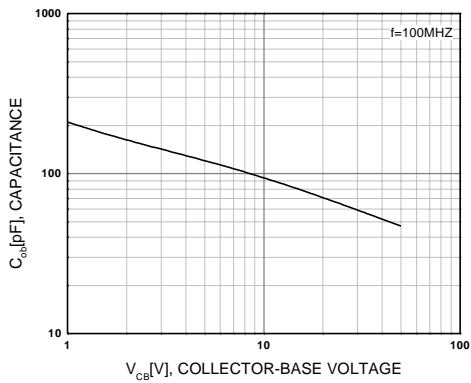


Figure 3. Collector Output Capacitance

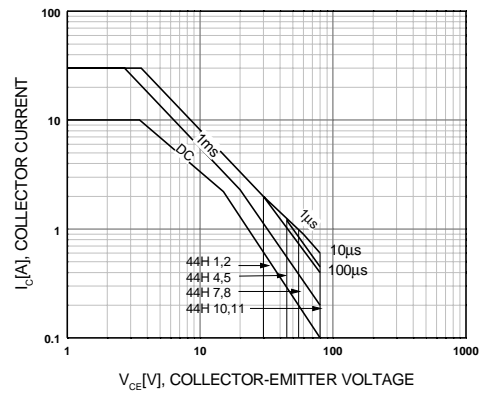


Figure 4. Safe Operating Area

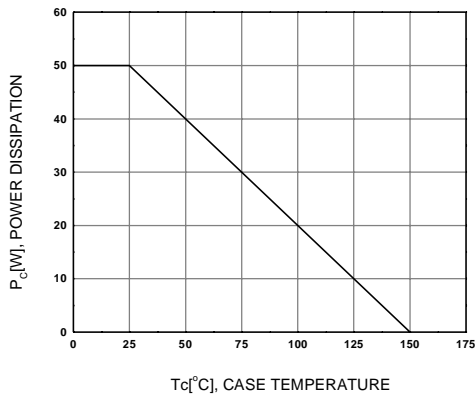


Figure 5. Power Derating

# Package Dimensions

KSE44H Series

## TO-220



Dimensions in Millimeters

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