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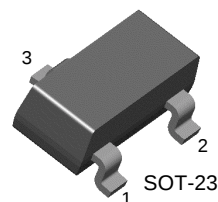
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# KST4401

KST4401

## Switching Transistor



1. Base 2. Emitter 3. Collector

## NPN Epitaxial Silicon Transistor

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

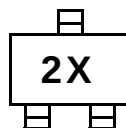
| Symbol    | Parameter                 | Value | Units              |
|-----------|---------------------------|-------|--------------------|
| $V_{CBO}$ | Collector-Base Voltage    | 60    | V                  |
| $V_{CEO}$ | Collector-Emitter Voltage | 40    | V                  |
| $V_{EBO}$ | Emitter-Base Voltage      | 6     | V                  |
| $I_C$     | Collector Current         | 600   | mA                 |
| $P_C$     | Collector Dissipation     | 350   | mW                 |
| $T_{STG}$ | Storage Temperature       | 150   | $^{\circ}\text{C}$ |

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

| Symbol        | Parameter                              | Test Condition                                                                                                                                                                                                   | Min.                        | Max.        | Units  |
|---------------|----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|-------------|--------|
| $BV_{CBO}$    | Collector-Base Breakdown Voltage       | $I_C=100\mu\text{A}$ , $I_E=0$                                                                                                                                                                                   | 60                          |             | V      |
| $BV_{CEO}$    | * Collector-Emitter Breakdown Voltage  | $I_C=1.0\text{mA}$ , $I_B=0$                                                                                                                                                                                     | 40                          |             | V      |
| $BV_{EBO}$    | Emitter-Base Breakdown Voltage         | $I_E=100\mu\text{A}$ , $I_C=0$                                                                                                                                                                                   | 6                           |             | V      |
| $I_{BEV}$     | Base Cut-off Current                   | $V_{CE}=35\text{V}$ , $V_{EB}=0.4\text{V}$                                                                                                                                                                       |                             | 100         | nA     |
| $I_{CEX}$     | Collector Cut-off Current              | $V_{CE}=35\text{V}$ , $V_{EB}=0.4\text{V}$                                                                                                                                                                       |                             | 100         | nA     |
| $h_{FE}$      | * DC Current Gain                      | $V_{CE}=1\text{V}$ , $I_C=0.1\text{mA}$<br>$V_{CE}=1\text{V}$ , $I_C=1\text{mA}$<br>$V_{CE}=1\text{V}$ , $I_C=10\text{mA}$<br>$V_{CE}=1\text{V}$ , $I_C=150\text{mA}$<br>$V_{CE}=2\text{V}$ , $I_C=500\text{mA}$ | 20<br>40<br>80<br>100<br>40 | 300         |        |
| $V_{CE(sat)}$ | * Collector-Emitter Saturation Voltage | $I_C=150\text{mA}$ , $I_B=15\text{mA}$<br>$I_C=500\text{mA}$ , $I_B=50\text{mA}$                                                                                                                                 |                             | 0.4<br>0.75 | V<br>V |
| $V_{BE(sat)}$ | * Base-Emitter Saturation Voltage      | $I_C=150\text{mA}$ , $I_B=15\text{mA}$<br>$I_C=500\text{mA}$ , $I_B=50\text{mA}$                                                                                                                                 | 0.75                        | 0.95<br>1.2 | V<br>V |
| $f_T$         | Current Gain Bandwidth Product         | $I_C=20\text{mA}$ , $V_{CE}=10\text{V}$<br>$f=100\text{MHz}$                                                                                                                                                     | 250                         |             | MHz    |
| $C_{ob}$      | Output Capacitance                     | $V_{CB}=5\text{V}$ , $I_E=0$ , $f=100\text{KHz}$                                                                                                                                                                 |                             | 6.5         | pF     |
| $t_{ON}$      | Turn On Time                           | $V_{CC}=30\text{V}$ , $V_{BE}=2\text{V}$<br>$I_C=150\text{mA}$ , $I_{B1}=15\text{mA}$                                                                                                                            |                             | 35          | ns     |
| $t_{OFF}$     | Turn Off Time                          | $V_{CC}=30\text{V}$ , $I_C=150\text{mA}$<br>$I_{B1}=I_{B2}=15\text{mA}$                                                                                                                                          |                             | 255         | ns     |

\* Pulse Test: Pulse Width $\leq 300\mu\text{s}$ , Duty Cycles $\leq 2\%$

### Marking



## Typical Characteristics

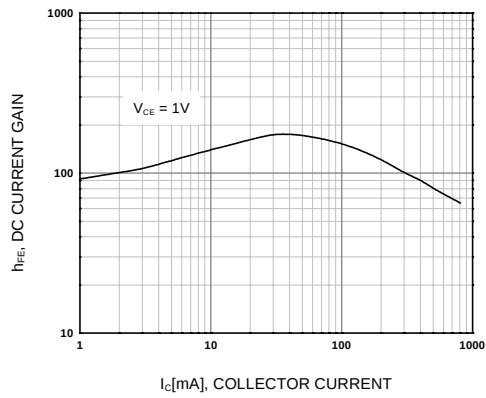


Figure 1. DC current Gain

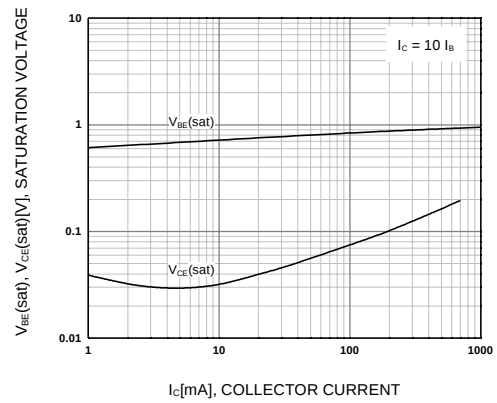


Figure 2. Collector-Emitter Saturation Voltage  
Base-Emitter Saturation Voltage

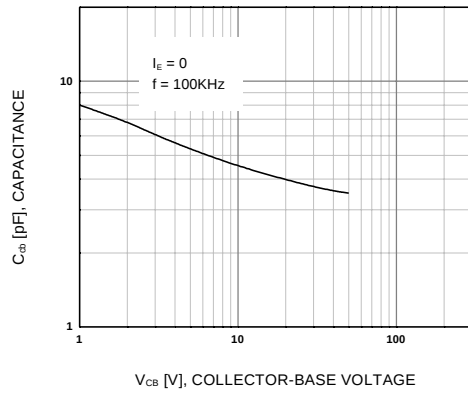


Figure 3. Collector-Base Capacitance

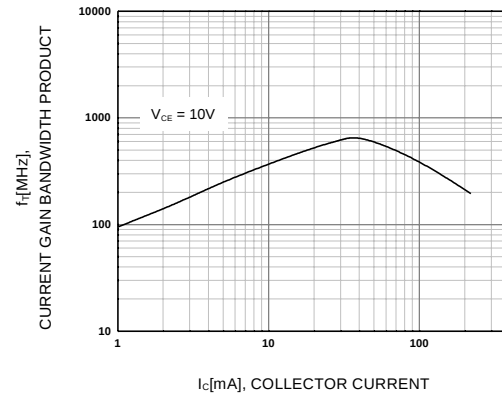
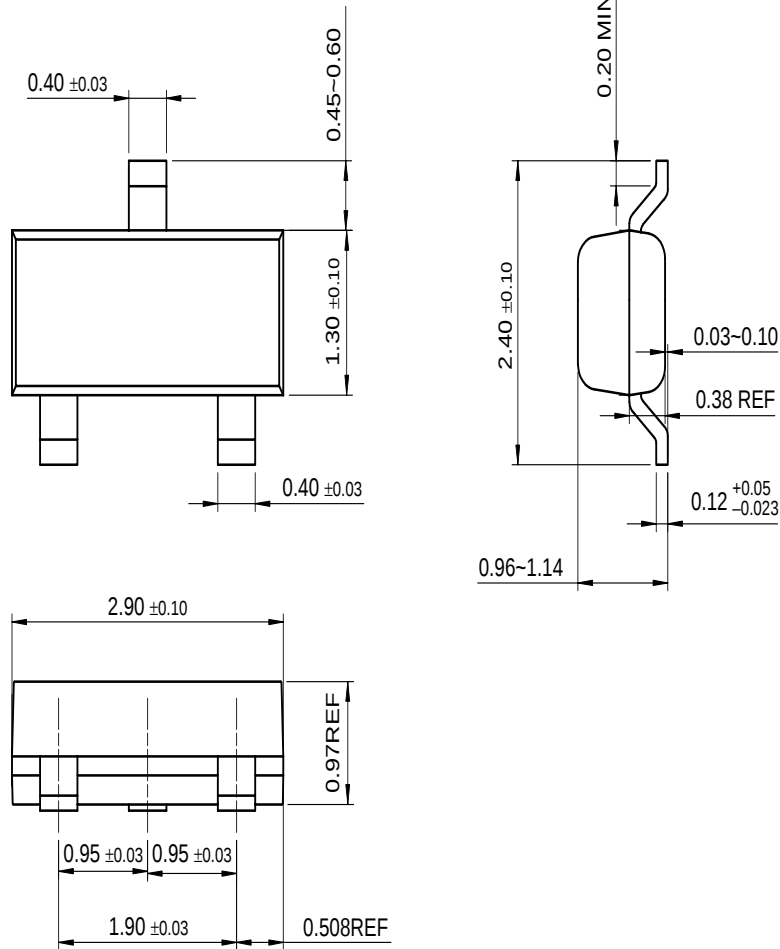


Figure 4. Current Gain Bandwidth Product

# Package Dimensions

## SOT-23



Dimensions in Millimeters

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