

KSB13003C KSU13003C

NPN Silicon Power Transistor, VCBO= 800V, VCEO= 450V, IC= 1.5A

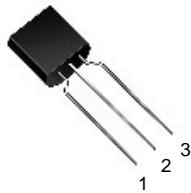
General Description

- High voltage, High speed power switching
- Suitable for Electronic Ballast up to 21W

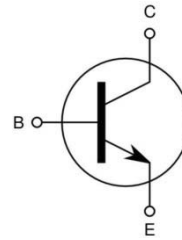
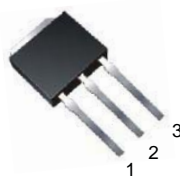
Features

- VCBO = 800V
- VCEO = 450V
- VBEO = 9V
- IC = 1.5A

TO-92



TO-251



Ordering Information

| Ordering number | Package | Pin Assignment | | | Packing |
|-----------------|---------|----------------|---|---|---------|
| | | 1 | 2 | 3 | |
| KSB13003C | TO-92 | B | C | E | Ammo |
| KSB13003CR | TO-92 | E | C | B | Ammo |
| KSU13003C | TO-251 | B | C | E | Tube |
| KSU13003CR | TO-251 | E | C | B | Tube |

Absolute Maximum Ratings TC=25°C unless otherwise noted

| CHARACTERISTICS | SYMBOL | RATING | | UNIT |
|--------------------------------|-----------|---------|--------|------|
| | | TO-92 | TO-251 | |
| Collector-Base Voltage | V_{CBO} | 800 | | V |
| Collector-Emitter Voltage | V_{CEO} | 450 | | V |
| Emitter-Base Voltage | V_{EBO} | 9 | | V |
| Collector Current(DC) | I_C | 1.5 | | A |
| Collector Current(Pulse) | I_{CP} | 3 | | A |
| Base Current | I_B | 0.75 | | A |
| Collector Dissipation(Tc=25°C) | P_C | 1.1 | 25 | W |
| Junction Temperature | T_J | 150 | | °C |
| Storage Temperature | T_{STG} | -65~150 | | °C |

Electrical Characteristics TC=25°C unless otherwise noted

| CHARACTERISTICS | SYMBOL | Test Condition | Min | Typ. | Max | Unit |
|---------------------------------------|------------------------|-------------------------------------------------------------------------|---------|------|-----|---------|
| Collector-Base Breakdown Voltage | V_{CBO} | $I_C=500\mu A, I_E=0$ | 800 | | | V |
| Collector-Emitter Breakdown Voltage | V_{CEO} | $I_C=10mA, I_B=0$ | 450 | | | V |
| Emitter Cut-off Current | I_{EBO} | $V_{EB}=9V, I_C=0$ | | | 1 | mA |
| *DC Current Gain | h_{FE1} h_{FE2} | $V_{CE}=5V, I_C=0.2A$ $V_{CE}=5V, I_C=1A$ | 20 6 | | 40 | |
| *Collector-Emitter Saturation Voltage | $V_{CE}(sat)$ | $I_C=0.5A, I_B=0.1A$ | | | 0.8 | V |
| *Base-Emitter Saturation Voltage | $V_{BE}(sat)$ | $I_C=0.5A, I_B=0.1A$ | | | 1.2 | V |
| Output Capacitance | C_{ob} | $V_{CB}=10V, f=0.1MHz$ | | 21 | | pF |
| Current Gain Bandwidth Product | f_T | $V_{CE}=10V, I_C=0.1A$ | 4 | | | MHz |
| Turn on Time | t_{on} | $V_{CC}=125V, I_C=2A$ $I_{B1}=0.2A, I_{B2}=-0.2A$ $R_L=125\Omega$ | | | 1.1 | μs |
| Storage Time | t_{stg} | | | | 4.0 | μs |
| Fall Time | t_F | | | | 0.7 | μs |

* Pulse Test: Pulse Width \leq 300 μs , Duty Cycles \leq 2%

Typical Characteristics

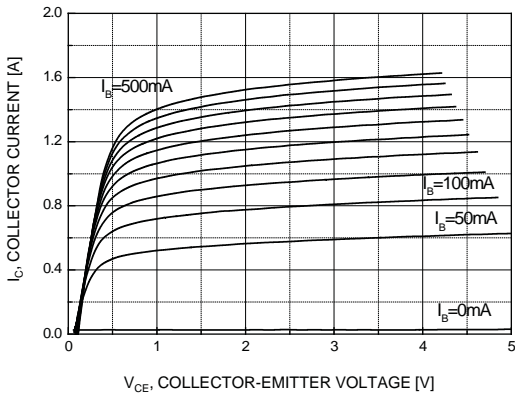


Figure 1. Static Characteristic

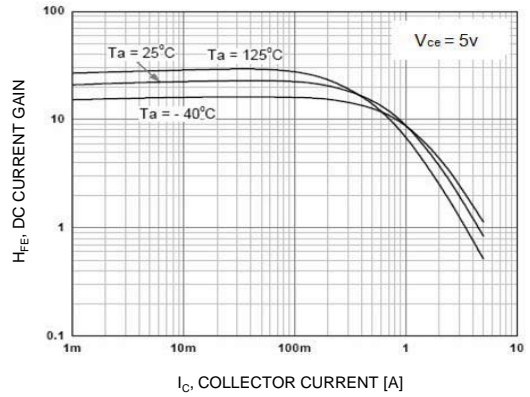


Figure 2. DC Current Gain

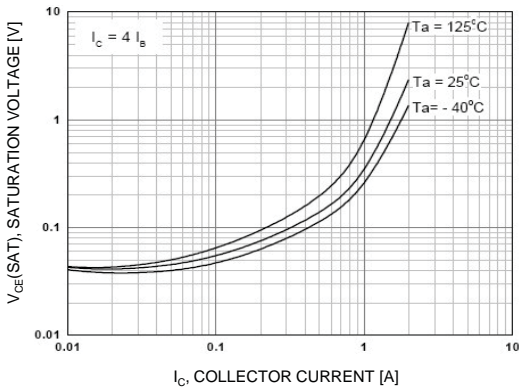


Figure 3. Collector-Emitter Saturation Voltage

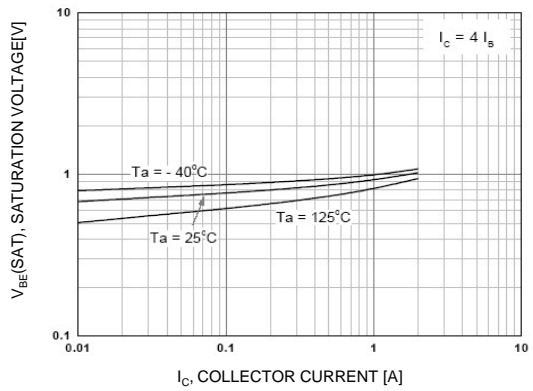


Figure 4. Base-Emitter Saturation Voltage

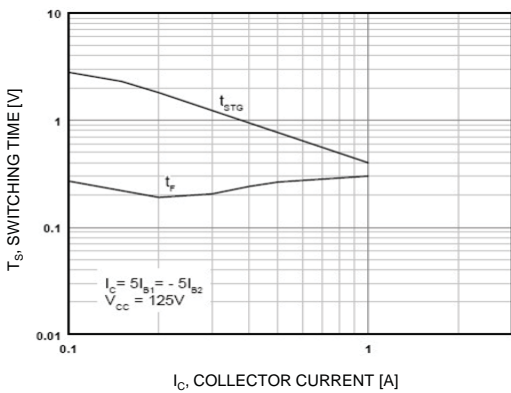


Figure 5. Resistive Load Switching Time

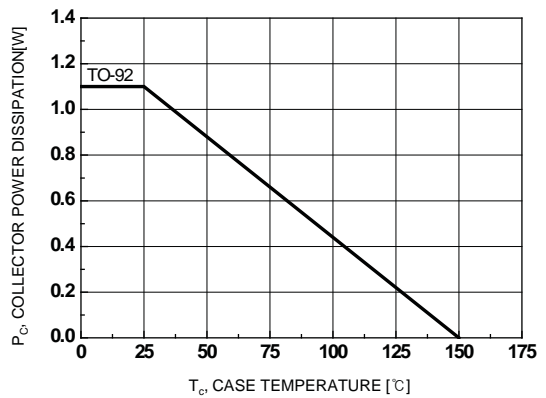


Figure 6. Power Derating

Typical Characteristics

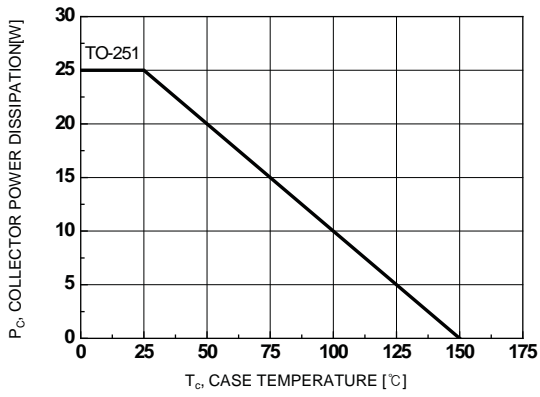
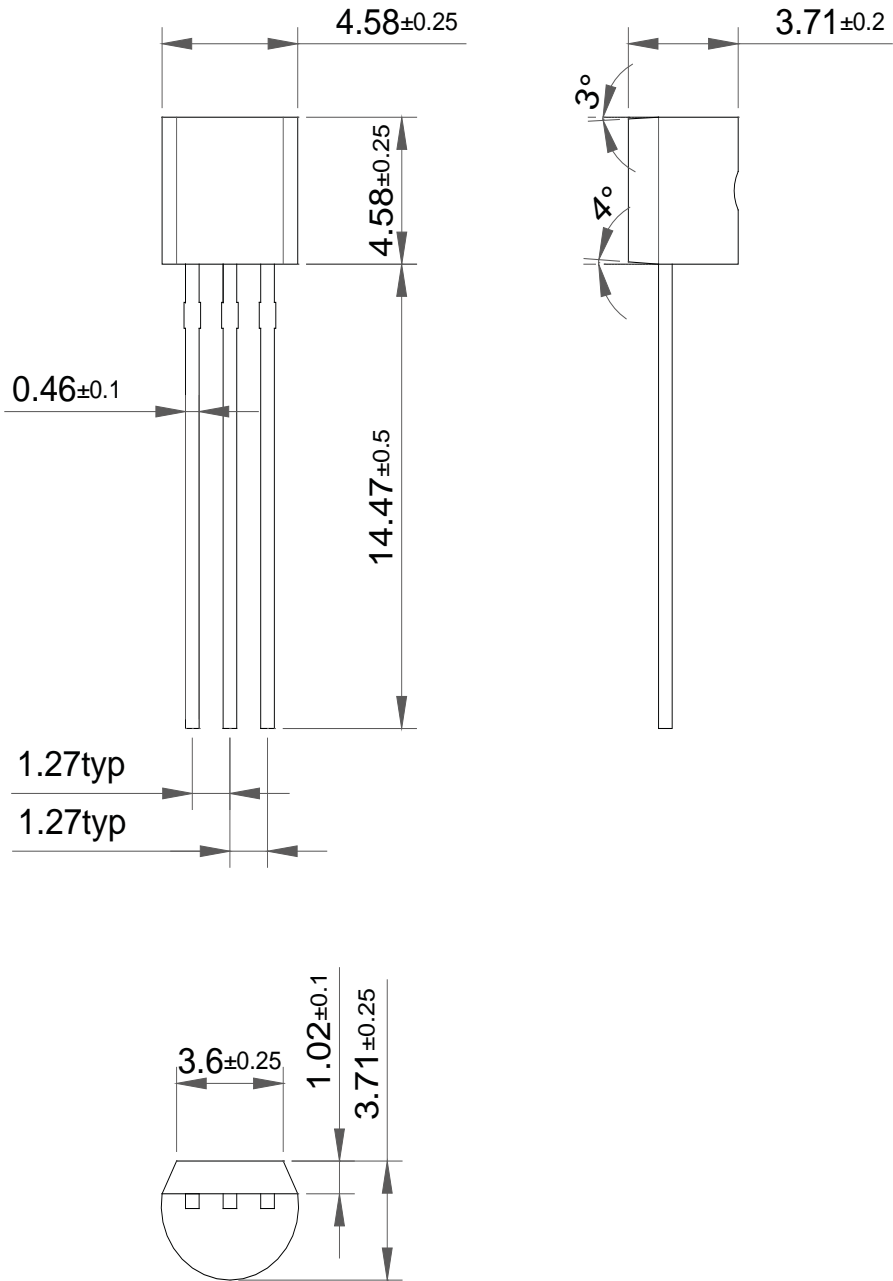


Figure 7. Power Derating

Package Dimension

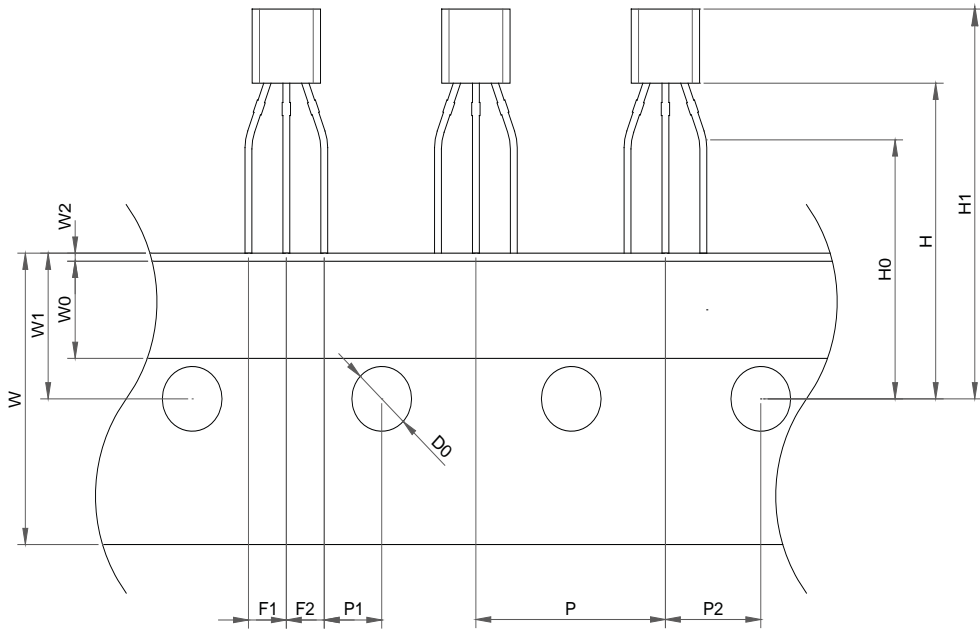
TO-92



Dimensions in Millimeters

Package Dimension

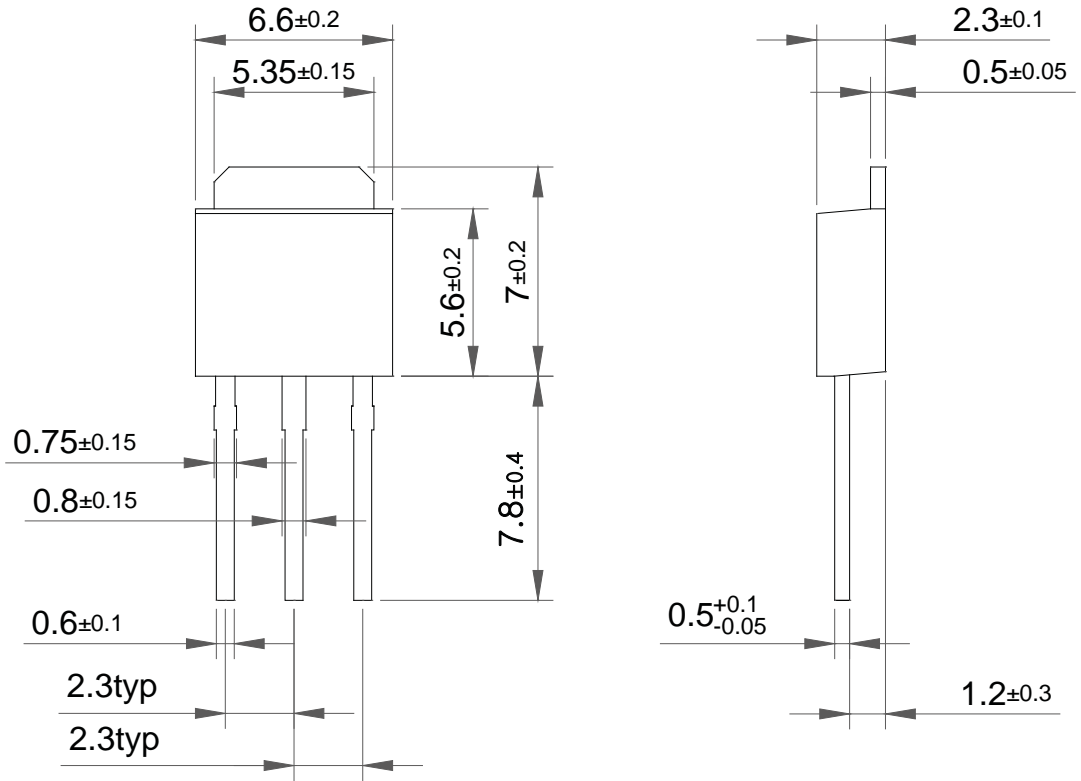
TO-92 TAPING



| Item | Symbol | Dimension [mm] | |
|--------------------------------------------|--------|----------------|-----------|
| | | Reference | Tolerance |
| Component pitch | P | 12.7 | ±0.5 |
| Side lead to center of feed hole | P1 | 3.85 | ±0.5 |
| Center lead to center of feed hole | P2 | 6.35 | ±0.5 |
| Lead pitch | F1,F2 | 2.5 | +0.2/-0.1 |
| Carrier Tape width | W | 18.0 | +1.0/-0.5 |
| Adhesive tape width | W0 | 6.0 | ±0.5 |
| Tape feed hole location | W1 | 9.0 | ±0.5 |
| Adhesive tape position | W2 | 1.0 MAX | |
| Center of feed hole to bottom of component | H | 19.5 | ±1 |
| Center of feed hole to lead form | H0 | 16.0 | ±0.5 |
| Component height | H1 | 27.0 max | |
| Tape feed hole diameter | D0 | 4.0 | ±0.2 |

Package Dimension

TO-251



Dimensions in Millimeters