

2SC3503/KSC3503

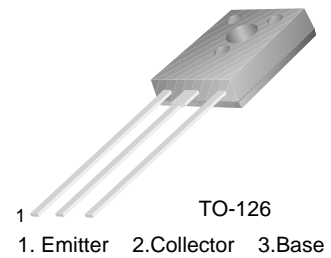
NPN Epitaxial Silicon Transistor

Applications

- Audio, Voltage Amplifier and Current Source
- CRT Display, Video Output
- General Purpose Amplifier

Features

- High Voltage : $V_{CEO} = 300V$
- Low Reverse Transfer Capacitance : $C_{re} = 1.8pF$ at $V_{CB} = 30V$
- Excellent Gain Linearity for low THD
- High Frequency: 150MHz
- Full thermal and electrical Spice models are available
- Complement to 2SA1381/KSA1381.



Absolute Maximum Ratings* $T_a = 25^\circ C$ unless otherwise noted

| Symbol | Parameter | Ratings | Units |
|----------------|---|-------------|------------|
| BV_{CBO} | Collector-Base Voltage | 300 | V |
| BV_{CEO} | Collector-Emitter Voltage | 300 | V |
| BV_{EBO} | Emitter-Base Voltage | 5 | V |
| I_C | Collector Current(DC) | 100 | mA |
| I_{CP} | Collector Current(Pulse) | 200 | mA |
| P_C | Total Device Dissipation, $T_C = 25^\circ C$ $T_C = 125^\circ C$ | 7 1.2 | W W |
| T_J, T_{STG} | Junction and Storage Temperature | - 55 ~ +150 | $^\circ C$ |

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

Thermal Characteristics* $T_a = 25^\circ C$ unless otherwise noted

| Symbol | Parameter | Max. | Units |
|-----------------|--------------------------------------|------|--------------|
| $R_{\theta JC}$ | Thermal Resistance, Junction to Case | 17.8 | $^\circ C/W$ |

* Device mounted on minimum pad size

h_{FE} Classification

| Classification | C | D | E | F |
|----------------|---------|----------|-----------|-----------|
| h_{FE} | 40 ~ 80 | 60 ~ 120 | 100 ~ 200 | 160 ~ 320 |

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

| Symbol | Parameter | Test Condition | Min. | Typ. | Max. | Units |
|---------------|--------------------------------------|--|------|------|------|---------------|
| BV_{CBO} | Collector-Base Breakdown Voltage | $I_C = 10\mu\text{A}, I_E = 0$ | 300 | | | V |
| BV_{CEO} | Collector- Emitter Breakdown Voltage | $I_C = 1\text{mA}, I_B = 0$ | 300 | | | V |
| BV_{EBO} | Emitter-Base Breakdown Voltage | $I_E = 10\mu\text{A}, I_C = 0$ | 5 | | | V |
| I_{CBO} | Collector Cut-off Current | $V_{CB} = 200\text{V}, I_E = 0$ | | | 0.1 | μA |
| I_{EBO} | Emitter Cut-off Current | $V_{EB} = 4\text{V}, I_C = 0$ | | | 0.1 | μA |
| h_{FE} | DC Current Gain | $V_{CE} = 10\text{V}, I_C = 10\text{mA}$ | 40 | | 320 | |
| $V_{CE(sat)}$ | Collector-Emitter Saturation Voltage | $I_C = 20\text{mA}, I_B = 2\text{mA}$ | | | 0.6 | V |
| $V_{BE(sat)}$ | Base-Emitter Saturation Voltage | $I_C = 20\text{mA}, I_B = 2\text{mA}$ | | | 1 | V |
| f_T | Current Gain Bandwidth Product | $V_{CE} = 30\text{V}, I_C = 10\text{mA}$ | | 150 | | MHz |
| C_{ob} | Output Capacitance | $V_{CB} = 30\text{V}, f = 1\text{MHz}$ | | 2.6 | | pF |
| C_{re} | Reverse Transfer Capacitance | $V_{CB} = 30\text{V}, f = 1\text{MHz}$ | | 1.8 | | pF |

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

| Part Number* | Marking | Package | Packing Method | Remarks |
|--------------|----------|---------|----------------|--------------|
| 2SC3503CSTU | 2SC3503C | TO-126 | TUBE | hFE1 C grade |
| 2SC3503DSTU | 2SC3503D | TO-126 | TUBE | hFE1 D grade |
| 2SC3503ESTU | 2SC3503E | TO-126 | TUBE | hFE1 E grade |
| 2SC3503FSTU | 2SC3503F | TO-126 | TUBE | hFE1 F grade |
| KSC3503CSTU | C3503C | TO-126 | TUBE | hFE1 C grade |
| KSC3503DSTU | C3503D | TO-126 | TUBE | hFE1 D grade |
| KSC3503ESTU | C3503E | TO-126 | TUBE | hFE1 E grade |
| KSC3503FSTU | C3503F | TO-126 | TUBE | hFE1 F grade |

* 1. Affix "-S-" means the standard TO126 Package.(see package dimensions). If the affix is "-STS-" instead of "-S-", that mean the short-lead TO126 package.
 2. Suffix "-TU" means the tube packing. The Suffix "TU" could be replaced to other suffix character as packing method.

Typical Characteristics

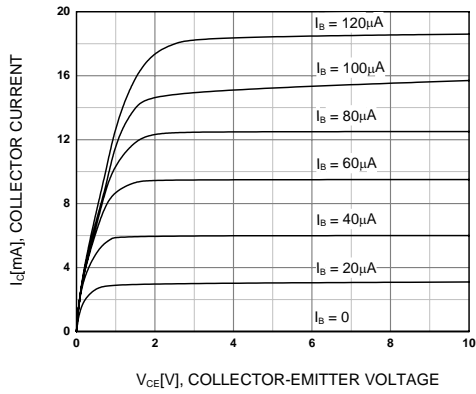


Figure 1. Static Characteristic

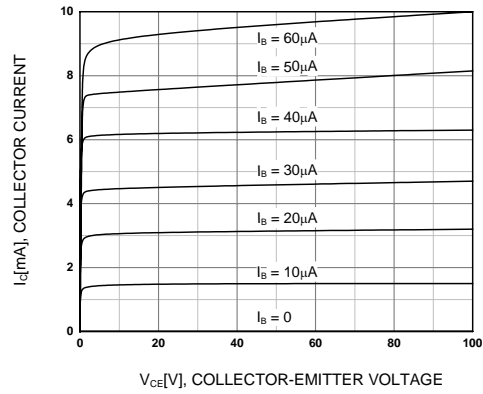


Figure 2. Static Characteristic

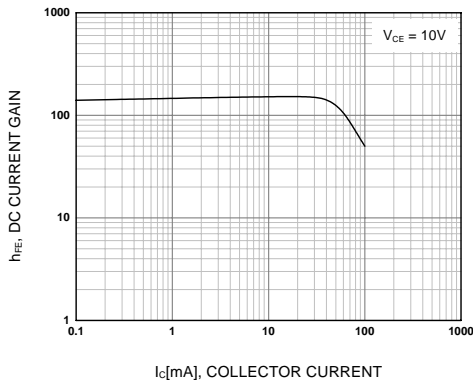


Figure 3. DC current Gain

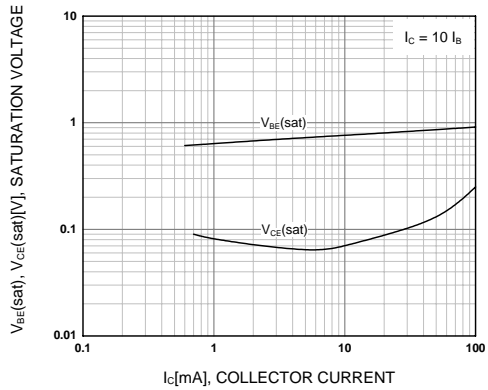


Figure 4. Base-Emitter Saturation Voltage
Collector-Emitter Saturation Voltage

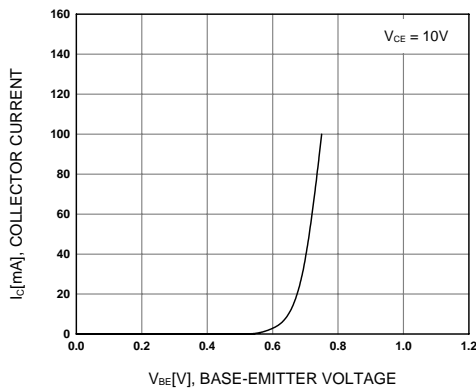


Figure 5. Base-Emitter On Voltage

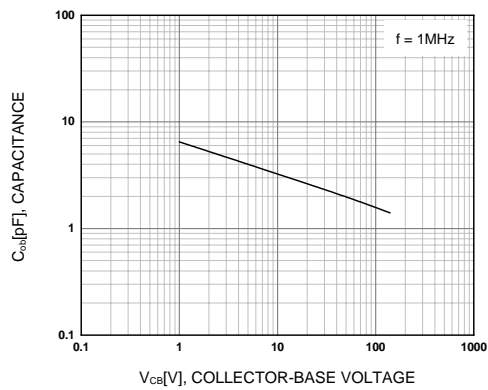


Figure 6. Collector Output Capacitance

Typical Characteristics (Continued)

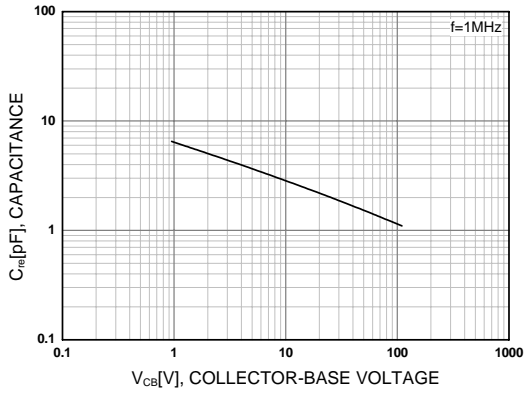


Figure 7. Reverse Transfer Capacitance

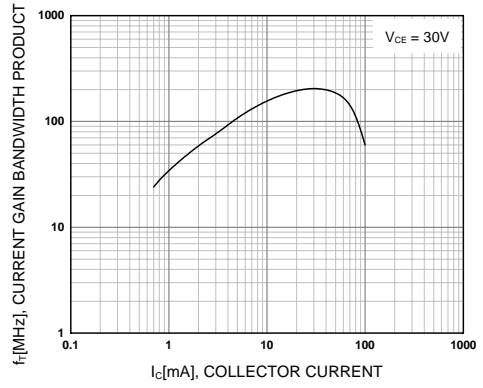


Figure 8. Current Gain Bandwidth Product

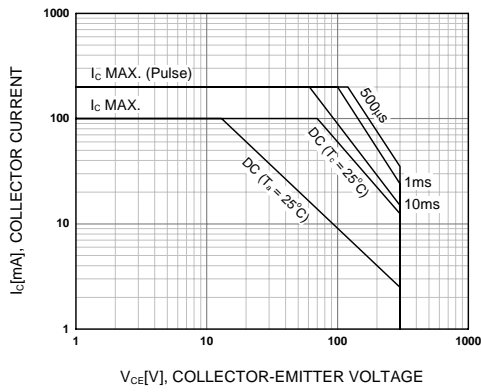


Figure 9. Safe Operating Area

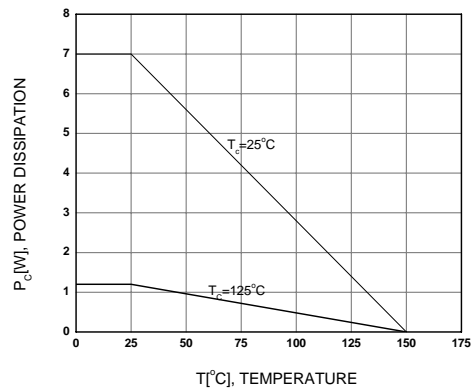
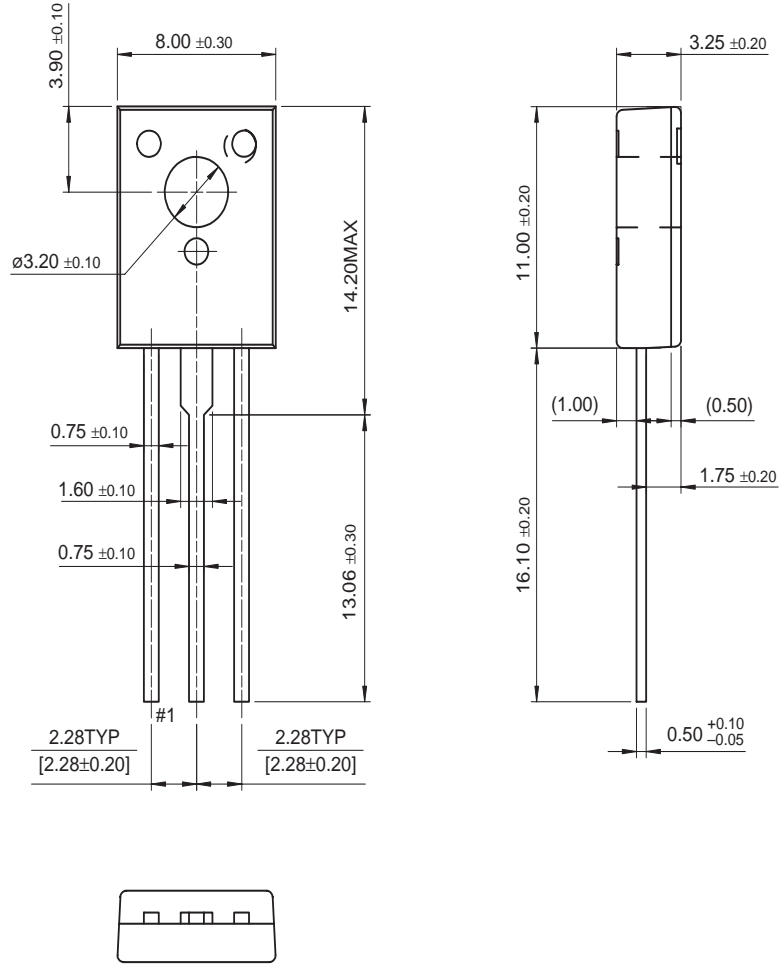


Figure 10. Power Derating

Package Dimensions

TO-126



Dimensions in Millimeters



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