# Silicon NPN Power Transistors 2SD600 2SD600K

## DESCRIPTION

·With TO-126 package
·Complement to type 2SB631/631K
·High breakdown voltage $V_{CEO}$100/120V
·High current 1A
·Low saturation voltage

## APPLICATIONS

·For low-frequency power amplifier applications

**PINNING**

| PIN | DESCRIPTION |
|---|---|
| 1 | Emitter |
| 2 | Collector;connected to mounting base |
| 3 | Base |

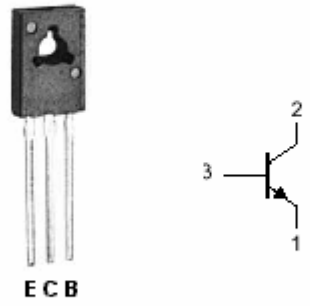



Fig.1 simplified outline (TO-126) and symbol

**Absolute maximum ratings(Ta=25□)**

| SYMBOL | PARAMETER | | CONDITIONS | VALUE | UNIT |
|---|---|---|---|---|---|
| $V_{CBO}$ | Collector-base voltage | 2SD600 | Open emitter | 100 | V |
| | | 2SD600K | | 120 | |
| $V_{CEO}$ | Collector-emitter voltage | 2SD600 | Open base | 100 | V |
| | | 2SD600K | | 120 | |
| $V_{EBO}$ | Emitter-base voltage | | Open collector | 5 | V |
| $I_C$ | Collector current (DC) | | | 1 | A |
| $I_{CM}$ | Collector current-peak | | | 2 | A |
| $P_D$ | Total power dissipation | | $T_a$=25□ | 1 | W |
| | | | $T_C$=25□ | 8 | |
| $T_j$ | Junction temperature | | | 150 | □ |
| $T_{stg}$ | Storage temperature | | | -55~150 | □ |

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## CHARACTERISTICS

**Tj=25□ unless otherwise specified**

| SYMBOL | PARAMETER | | CONDITIONS | MIN | TYP. | MAX | UNIT |
|---|---|---|---|---|---|---|---|
| $V_{(BR)CEO}$ | Collector-emitter breakdown voltage | 2SD600 | $I_C$=1mA; $R_{BE}$=∞ | 100 | | | V |
| | | 2SD600K | | 120 | | | |
| $V_{(BR)CBO}$ | Collector-base breakdown voltage | 2SD600 | $I_C$=10μA ;$I_E$=0 | 100 | | | V |
| | | 2SD600K | | 120 | | | |
| $V_{(BR)EBO}$ | Emitter-base breakdown voltage | | $I_E$=10μA ;$I_C$=0 | 5 | | | V |
| $V_{CEsat}$ | Collector-emitter saturation voltage | | $I_C$=0.5A ;$I_B$=50mA | | | 0.4 | V |
| $V_{BEsat}$ | Base-emitter saturation voltage | | $I_C$=0.5A ;$I_B$=50mA | | | 1.2 | V |
| $I_{CBO}$ | Collector cut-off current | | $V_{CB}$=50V; $I_E$=0 | | | 1 | μA |
| $I_{EBO}$ | Emitter cut-off current | | $V_{EB}$=4V; $I_C$=0 | | | 1 | μA |
| $h_{FE-1}$ | DC current gain | | $I_C$=50mA ; $V_{CE}$=5V | 60 | | 320 | |
| $h_{FE-2}$ | DC current gain | | $I_C$=0.5A ; $V_{CE}$=5V | 20 | | | |
| $f_T$ | Transition frequency | | $I_C$=50mA ; $V_{CE}$=10V | | 130 | | MHz |
| $C_{OB}$ | Collector output capacitance | | f=1MHz ; $V_{CB}$=10V | | 20 | | pF |

Switching times

| | | | | | | |
|---|---|---|---|---|---|---|
| $t_f$ | Fall time | $I_C$=500mA ; $V_{CE}$=12V<br>$I_{B1}$=-$I_{B2}$=50mA | | 0.1 | | μs |
| $t_{off}$ | Turn-off time | | | 0.5 | | μs |
| $t_{stg}$ | Storage time | | | 0.7 | | μs |

◆ **$h_{FE-1}$ Classifications**

| D | E | F |
|---|---|---|
| 60-120 | 100-200 | 160-320 |

**PACKAGE OUTLINE**

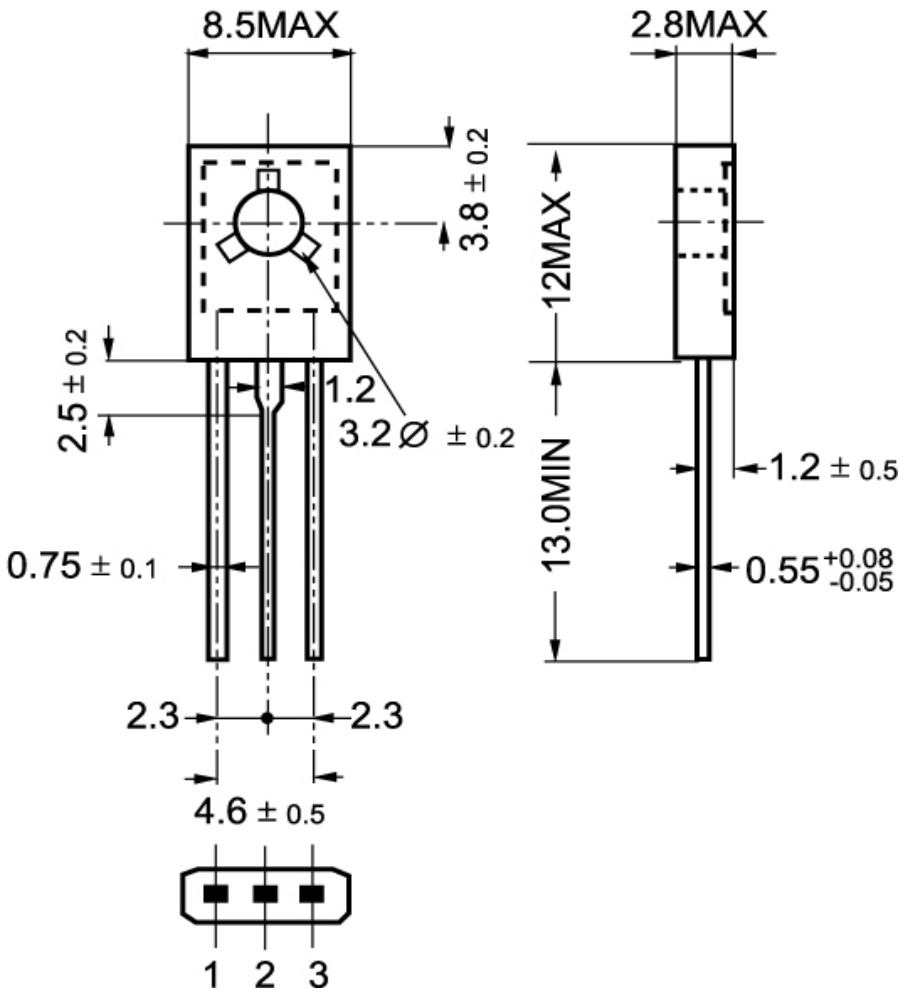



**Fig.2 Outline dimensions**

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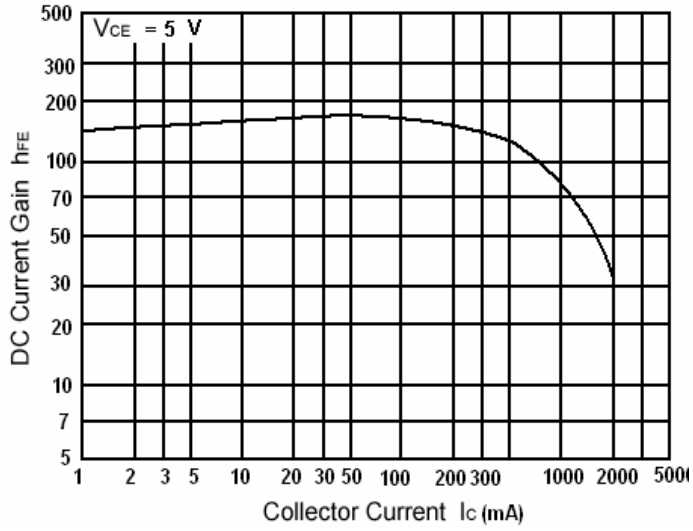



Fig.3 DC current Gain

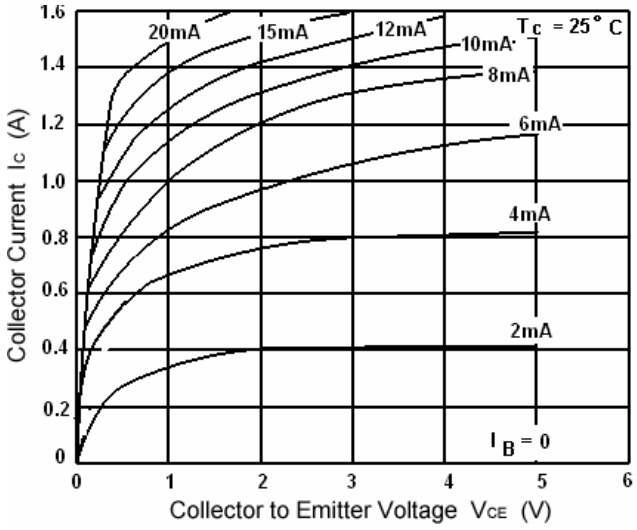



Fig.4 Static Characteristic

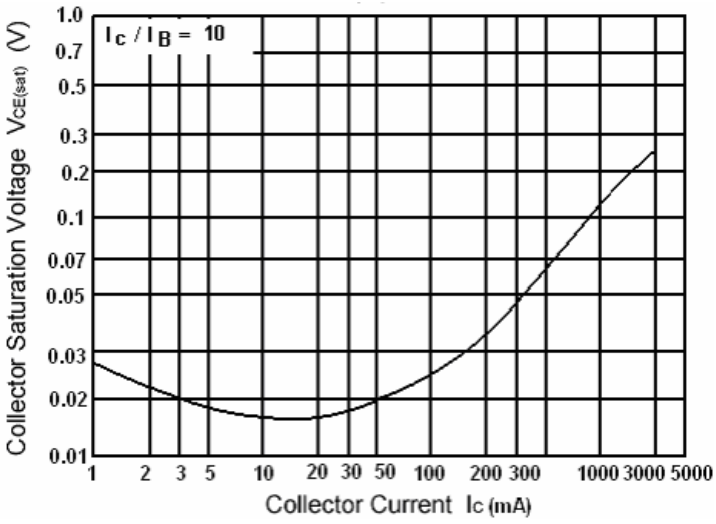



Fig.5 Collector-Emitter Saturation Voltage

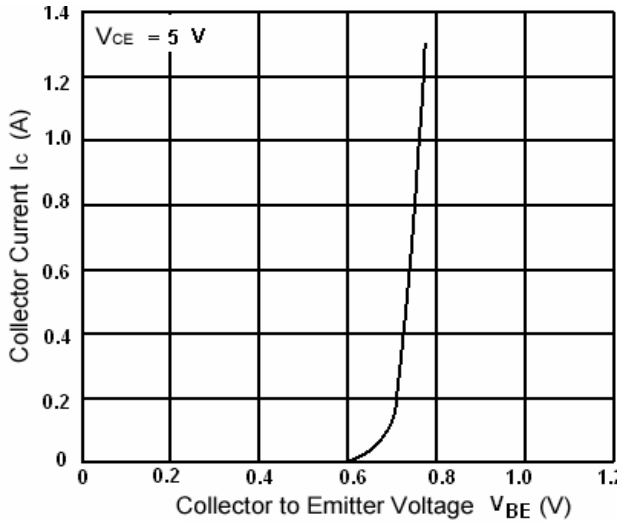



Fig.6 Base-Emitter On Voltage

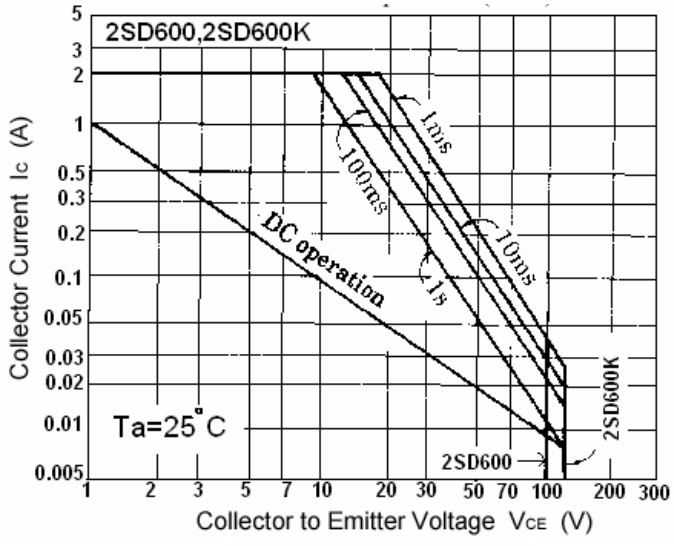



Fig.7 Safe Operating Area