

Silicon PNP Power Transistors

2SB1603 2SB1603A

DESCRIPTION

- With TO-220F package
- Low collector saturation voltage
- High speed switching

APPLICATIONS

- For low-voltage switching applications

PINNING

| PIN | DESCRIPTION |
|-----|-------------|
| 1 | Base |
| 2 | Collector |
| 3 | Emitter |

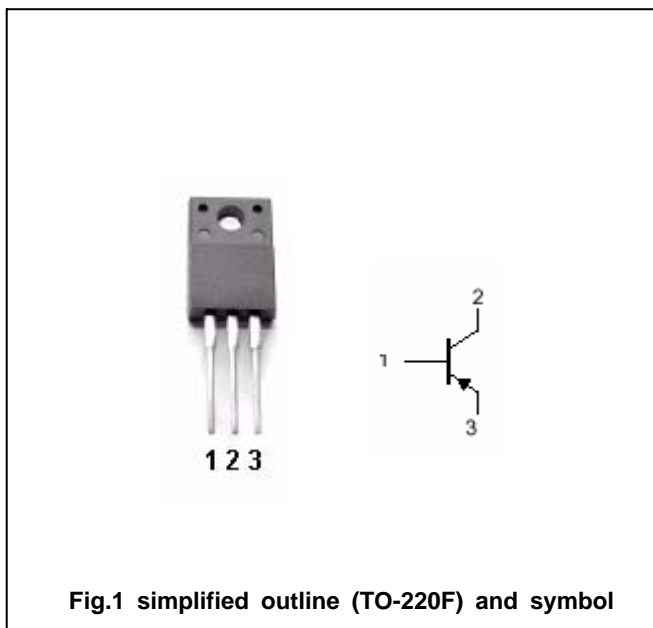


Fig.1 simplified outline (TO-220F) and symbol

Absolute maximum ratings (Ta=25)

| SYMBOL | PARAMETER | CONDITIONS | MAX | UNIT |
|------------------|---------------------------|--------------------|---------|------|
| V _{CBO} | Collector-base voltage | 2SB1603 | -40 | V |
| | | 2SB1603A | -50 | |
| V _{CEO} | Collector-emitter voltage | 2SB1603 | -20 | V |
| | | 2SB1603A | -40 | |
| V _{EBO} | Emitter-base voltage | Open collector | -5 | V |
| I _C | Collector current | | -4 | A |
| I _{CM} | Collector current-peak | | -8 | A |
| P _C | Collector dissipation | T _a =25 | 2 | W |
| | | T _C =25 | 25 | |
| T _j | Junction temperature | | 150 | |
| T _{stg} | Storage temperature | | -55~150 | |

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CHARACTERISTICS

T_j=25 unless otherwise specified

| SYMBOL | PARAMETER | CONDITIONS | MIN | TYP. | MAX | UNIT |
|----------------------|--------------------------------------|--|-----|------|------|------|
| V _{(BR)CEO} | Collector-emitter breakdown voltage | I _C =-10mA ; I _B =0 | -20 | | | V |
| | | | -40 | | | |
| V _{CEsat} | Collector-emitter saturation voltage | I _C =-2A ; I _B =-0.1A | | | -0.5 | V |
| V _{BEsat} | Base-emitter saturation voltage | I _C =-2A ; I _B =-0.1A | | | -1.5 | V |
| I _{CBO} | Collector cut-off current | V _{CB} =-40V ; I _E =0 | | | -50 | μA |
| I _{EBO} | Emitter cut-off current | V _{EB} =-5V ; I _C =0 | | | -50 | μA |
| h _{FE-1} | DC current gain | I _C =-0.1A ; V _{CE} =-2V | 45 | | | |
| h _{FE-2} | DC current gain | I _C =-1A ; V _{CE} =-2V | 90 | | 260 | |
| f _T | Transition frequency | I _C =-0.5A ; V _{CE} =-5V | | 150 | | MHz |

Switching times

| | | | | | | |
|------------------|--------------|--|--|-----|--|----|
| t _{on} | Turn-on time | I _C =-2A ; I _{B1} =-I _{B2} =-0.2A | | 0.3 | | μs |
| t _{stg} | Storage time | | | 0.4 | | μs |
| t _f | Fall time | | | 0.1 | | μs |

◆ h_{FE-2} Classifications

| Q | P |
|--------|---------|
| 90-180 | 130-260 |

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PACKAGE OUTLINE

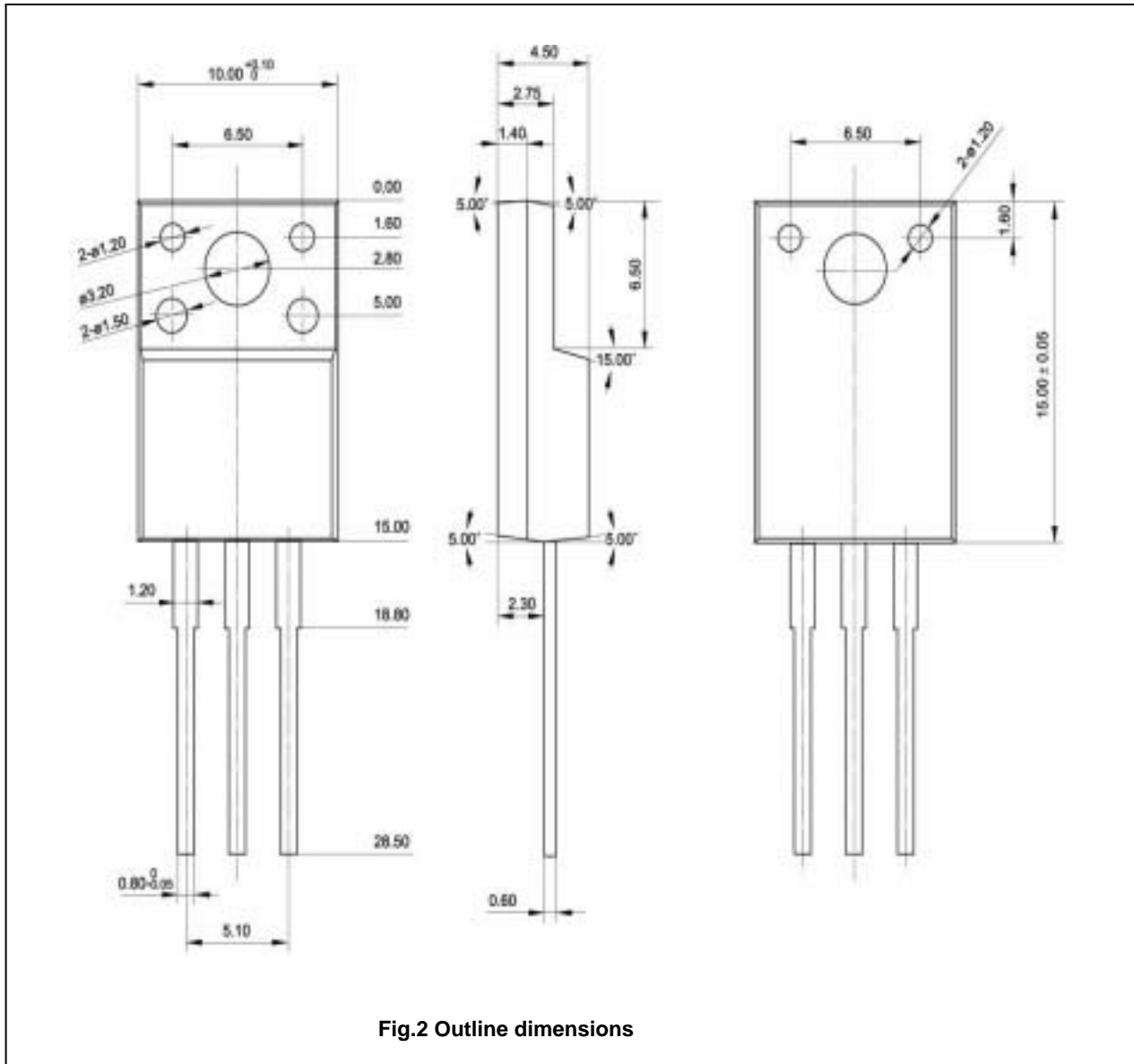


Fig.2 Outline dimensions

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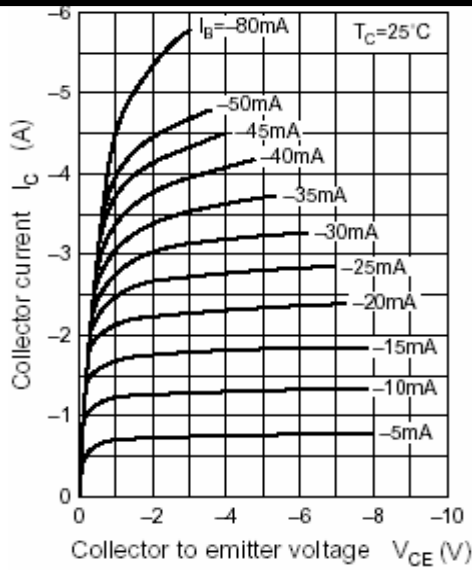


Fig.3 Static Characteristic

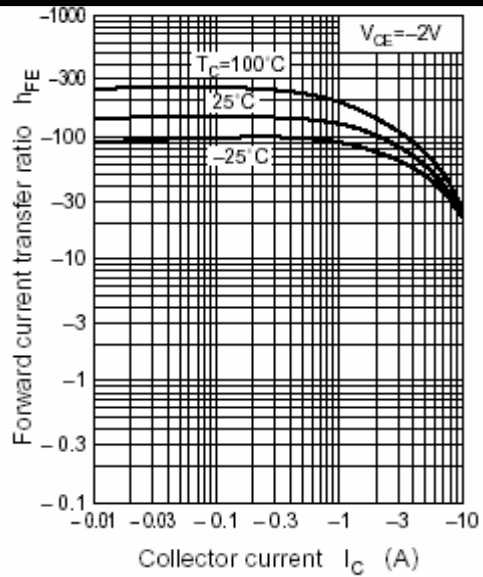


Fig.4 DC current Gain

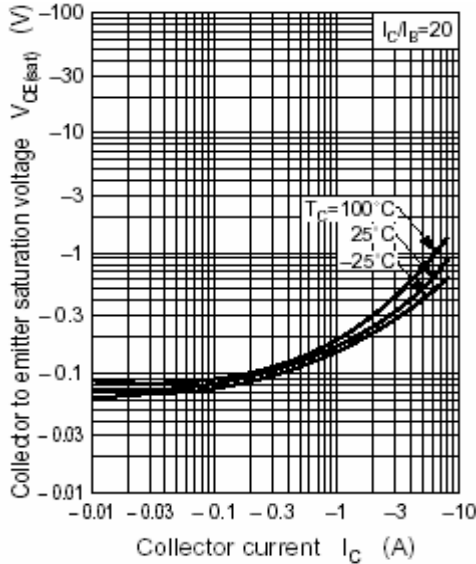


Fig.5 Collector-Emitter Saturation Voltage

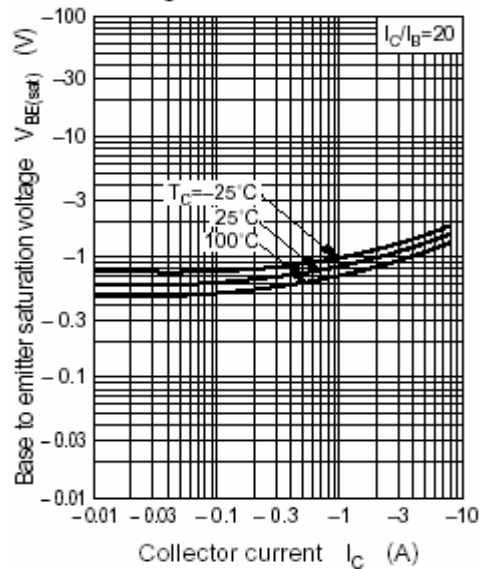


Fig.6 Base-Emitter Saturation Voltage

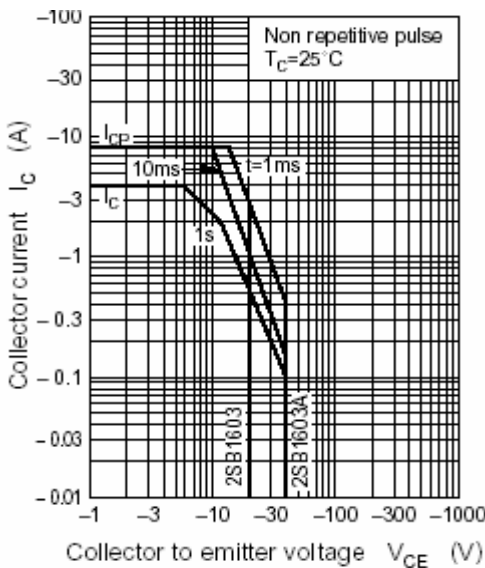


Fig.7 Safe Operating Area