

Silicon NPN Power Transistors

2SC3972 2SC3972A

DESCRIPTION

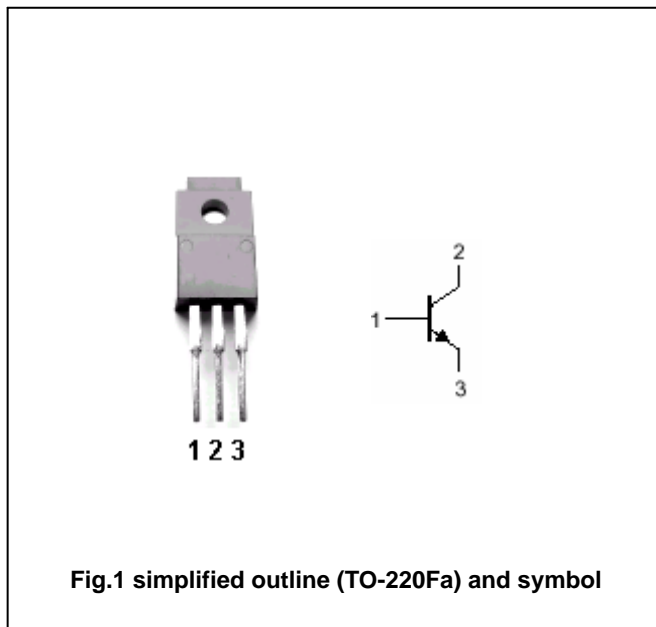
- With TO-220Fa package
- High speed switching
- High V_{CBO}
- Wide area of safe operation

APPLICATIONS

- For high breakdown voltate ,high-speed switching applications

PINNING

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



Absolute maximum ratings (Ta=25)

| SYMBOL | PARAMETER | CONDITIONS | VALUE | UNIT |
|-----------|-----------------------------|----------------|---------|------|
| V_{CBO} | Collector-base voltage | 2SC3972 | 800 | V |
| | | 2SC3972A | 900 | |
| V_{CEO} | Collector-emitter voltage | Open base | 500 | V |
| V_{EBO} | Emitter-base voltage | Open collector | 8 | V |
| I_C | Collector current (DC) | | 5 | A |
| I_{CM} | Collector current-Peak | | 10 | A |
| I_B | Base current | | 3 | A |
| P_C | Collector power dissipation | $T_C=25$ | 40 | W |
| | | $T_a=25$ | 2 | |
| 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 | 500 | | | V |
| V _{CEsat} | Collector-emitter saturation voltage | I _C =2A; I _B =0.4A | | | 1.0 | V |
| V _{BEsat} | Base-emitter saturation voltage | I _C =2A; I _B =0.4A | | | 1.5 | V |
| I _{CBO} | Collector cut-off current | 2SC3972 | | | 0.1 | mA |
| | | 2SC3972A | | | | |
| I _{EBO} | Emitter cut-off current | V _{EB} =5V; I _C =0 | | | 0.1 | mA |
| h _{FE-1} | DC current gain | I _C =0.1A; V _{CE} =5V | 15 | | | |
| h _{FE-2} | DC current gain | I _C =2A; V _{CE} =5V | 8 | | | |
| f _T | Transition frequency | I _C =0.5A; V _{CE} =10V; f=1MHz | | 20 | | MHz |

Switching times

| | | | | | | |
|-----------------|--------------|--|--|--|-----|----|
| t _{on} | Turn-on time | I _C =2A; I _{B1} =0.4A I _{B2} =-0.8A; V _{CC} =200V | | | 1.0 | μs |
| t _s | Storage time | | | | 3.0 | μs |
| t _f | Fall time | | | | 0.3 | μs |

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PACKAGE OUTLINE

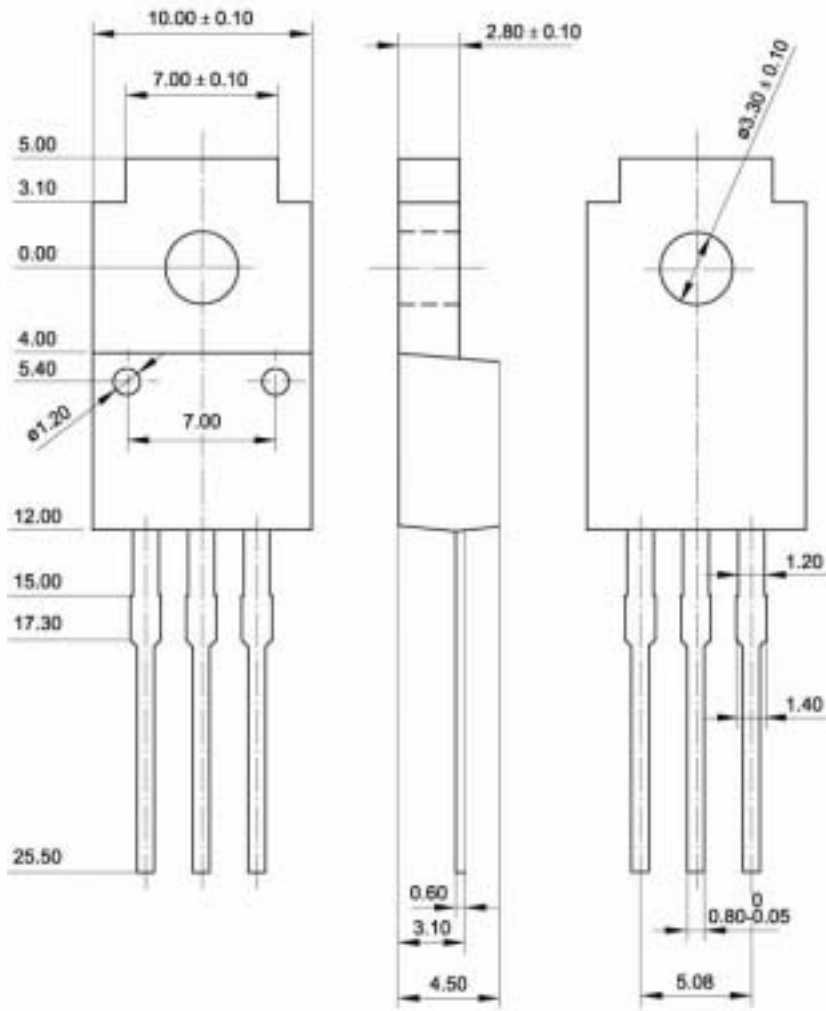


Fig.2 Outline dimensions (unindicated tolerance: ± 0.15 mm)

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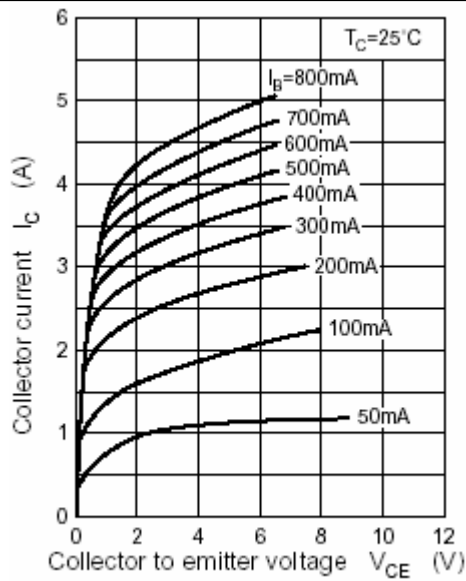


Fig.3 Static Characteristic

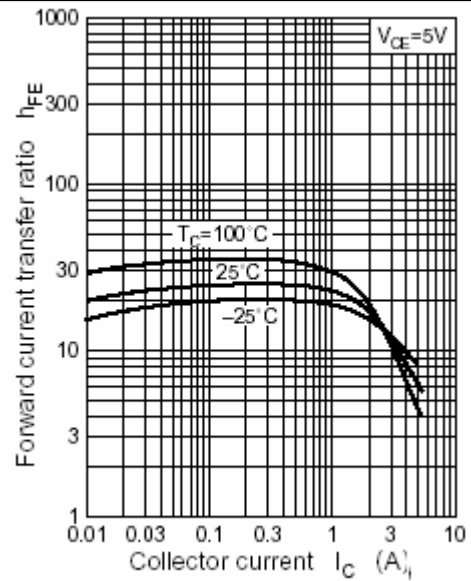


Fig.4 DC current Gain

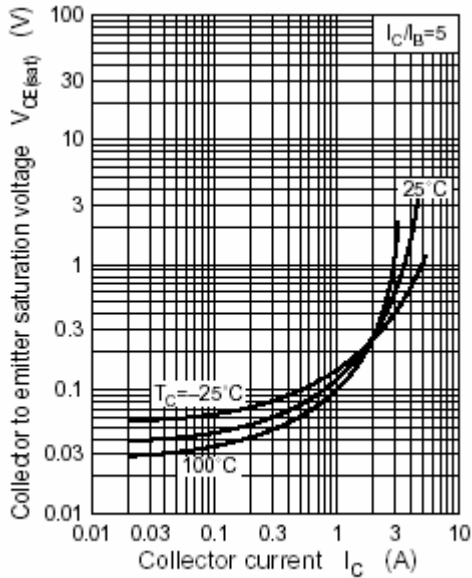


Fig.5 Collector-Emitter Saturation Voltage

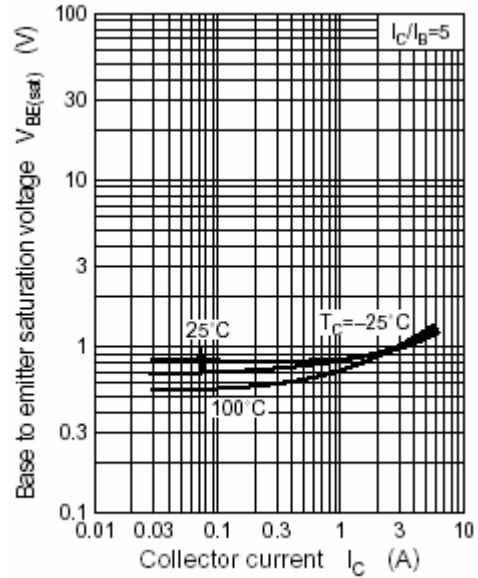


Fig.6 Base-Emitter Saturation Voltage

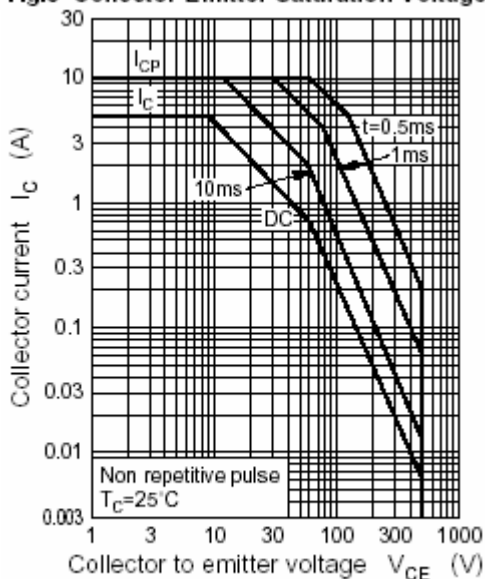


Fig.7 Safe Operating Area