

## Silicon PNP Power Transistors

2SA1771

## DESCRIPTION

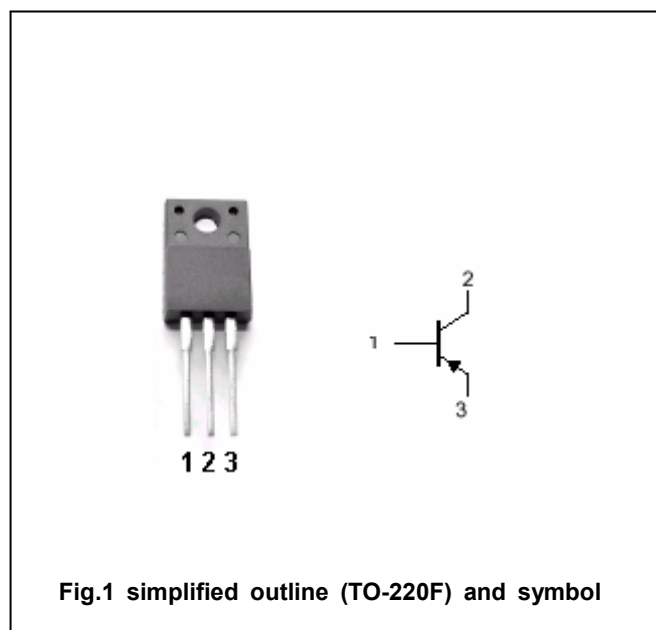
- With TO-220F package
- Low collector saturation voltage
- High speed switching time

## APPLICATIONS

- High current switching

## PINNING

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

Absolute maximum ratings ( $T_a=25^\circ\text{C}$ )

| SYMBOL    | PARAMETER                 | CONDITIONS             | MAX     | UNIT             |
|-----------|---------------------------|------------------------|---------|------------------|
| $V_{CBO}$ | Collector-base voltage    | Open emitter           | -80     | V                |
| $V_{CEO}$ | Collector-emitter voltage | Open base              | -80     | V                |
| $V_{EBO}$ | Emitter-base voltage      | Open collector         | -14     | V                |
| $I_C$     | Collector current         |                        | -12     | A                |
| $I_B$     | Base current              |                        | -1.2    | A                |
| $P_C$     | Collector dissipation     | $T_C=25^\circ\text{C}$ | 30      | W                |
| $T_j$     | Junction temperature      |                        | 150     | $^\circ\text{C}$ |
| $T_{stg}$ | Storage temperature       |                        | -55~150 | $^\circ\text{C}$ |

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## CHARACTERISTICS

Tj=25℃ unless otherwise specified

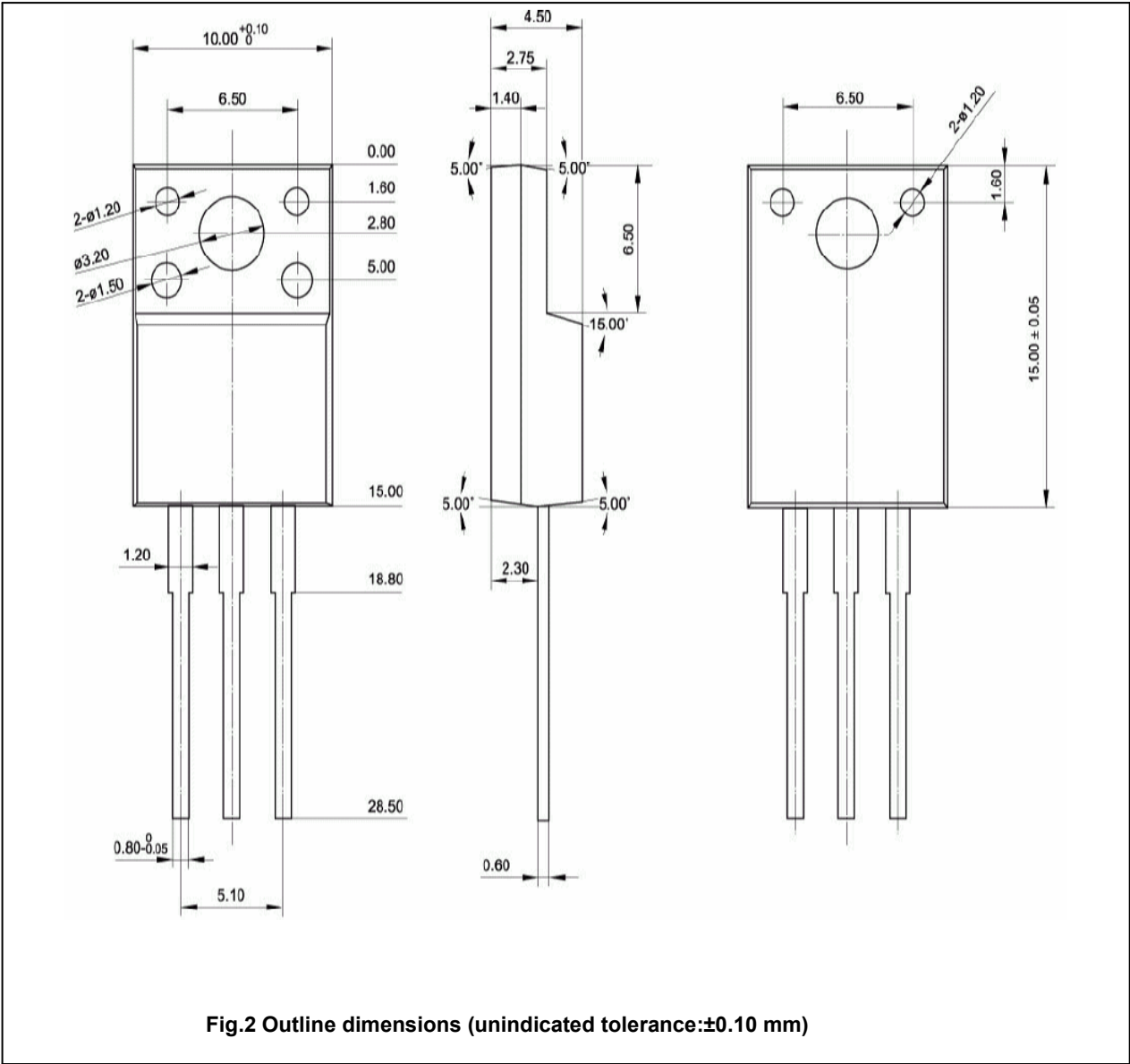
| SYMBOL        | PARAMETER                            | CONDITIONS               | MIN | TYP. | MAX  | UNIT    |
|---------------|--------------------------------------|--------------------------|-----|------|------|---------|
| $V_{(BR)CEO}$ | Collector-emitter breakdown voltage  | $I_C=-50mA$ ; $I_B=0$    | -80 |      |      | V       |
| $V_{CEsat}$   | Collector-emitter saturation voltage | $I_C=-6A$ ; $I_B=-0.3A$  |     |      | -0.4 | V       |
| $V_{BEsat}$   | Base-emitter saturation voltage      | $I_C=-6A$ ; $I_B=-0.3A$  |     |      | -1.2 | V       |
| $I_{CBO}$     | Collector cut-off current            | $V_{CB}=-80V$ ; $I_E=0$  |     |      | -10  | $\mu A$ |
| $I_{EBO}$     | Emitter cut-off current              | $V_{EB}=-14V$ ; $I_C=0$  |     |      | -10  | $\mu A$ |
| $h_{FE-1}$    | DC current gain                      | $I_C=-1A$ ; $V_{CE}=-1V$ | 100 |      | 320  |         |
| $h_{FE-2}$    | DC current gain                      | $I_C=-6A$ ; $V_{CE}=-1V$ | 40  |      |      |         |
| $f_T$         | Transition frequency                 | $I_C=-1A$ ; $V_{CE}=-5V$ |     | 50   |      | MHz     |
| $C_{OB}$      | Collector output capacitance         | $f=1MHz$ ; $V_{CB}=-10V$ |     | 300  |      | pF      |

|          |              |                                                                                  |  |     |  |         |
|----------|--------------|----------------------------------------------------------------------------------|--|-----|--|---------|
| $t_{on}$ | Turn-on time | $I_{B1}=-I_{B2}=-0.3A$ ; $V_{CC}=-30V$<br>$R_L=5\Omega$<br>Duty cycle $\leq 1\%$ |  | 0.2 |  | $\mu s$ |
| $t_s$    | Storage time |                                                                                  |  | 0.6 |  | $\mu s$ |
| $t_f$    | Fall time    |                                                                                  |  | 0.1 |  | $\mu s$ |

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PACKAGE OUTLINE



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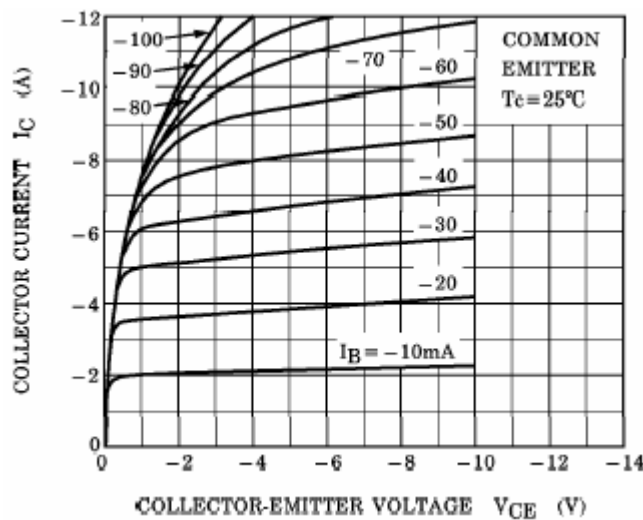


Fig.3 Static Characteristic

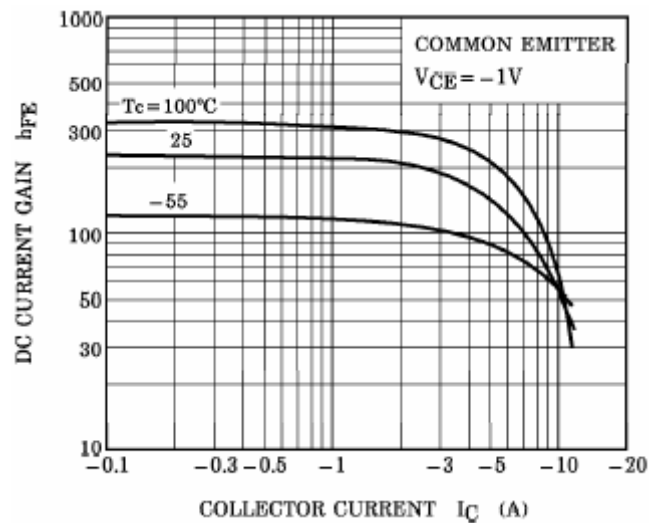


Fig.4 DC current Gain

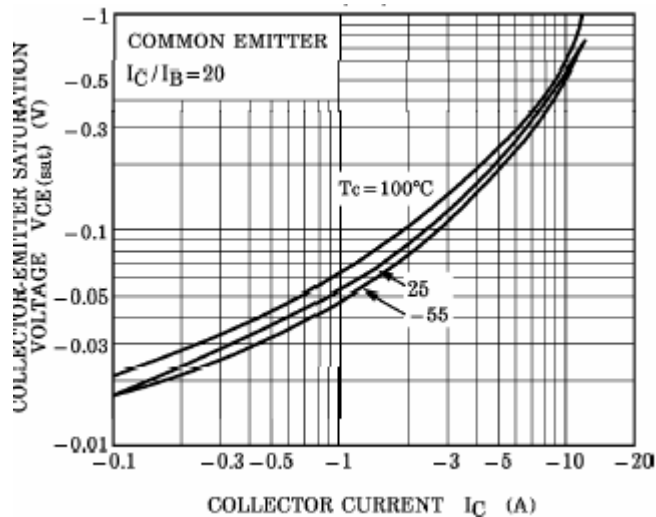


Fig.5 Collector-Emitter Saturation Voltage

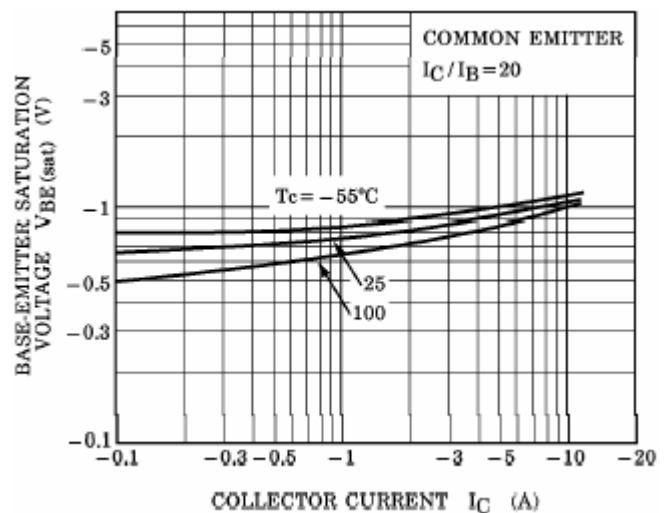


Fig.6 Base-Emitter Saturation Voltage

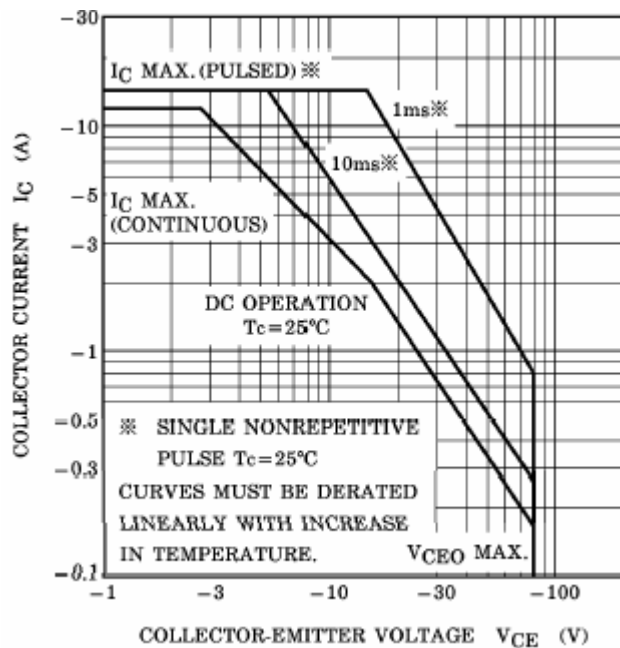


Fig.7 Safe Operating Area