

## Silicon PNP Power Transistors

2SA1600

## DESCRIPTION

- With ITO-220 package
- Switching power transistor
- Low collector saturation voltage

## PINNING

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

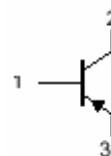


Fig.1 simplified outline (ITO-220) and symbol

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

| SYMBOL    | PARAMETER                 | CONDITIONS             | VALUE   | UNIT             |
|-----------|---------------------------|------------------------|---------|------------------|
| $V_{CBO}$ | Collector-base voltage    | Open emitter           | -60     | V                |
| $V_{CEO}$ | Collector-emitter voltage | Open base              | -40     | V                |
| $V_{EBO}$ | Emitter-base voltage      | Open collector         | -7      | V                |
| $I_C$     | Collector current         |                        | -12     | A                |
| $I_{CM}$  | Collector current-Peak    |                        | -24     | A                |
| $I_B$     | Base current              |                        | -2      | A                |
| $I_{BM}$  | Base current-Peak         |                        | -3      | A                |
| $P_T$     | Total power dissipation   | $T_C=25^\circ\text{C}$ | 30      | W                |
| $T_j$     | Junction temperature      |                        | 150     | $^\circ\text{C}$ |
| $T_{stg}$ | Storage temperature       |                        | -55~150 | $^\circ\text{C}$ |

## THERMAL CHARACTERISTICS

| SYMBOL        | PARAMETER                        | MAX  | UNIT                      |
|---------------|----------------------------------|------|---------------------------|
| $R_{th\ j-c}$ | Thermal resistance junction case | 4.16 | $^\circ\text{C}/\text{W}$ |

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## CHARACTERISTICS

Tj=25°C unless otherwise specified

| SYMBOL        | PARAMETER                            | CONDITIONS                    | MIN | TYP. | MAX  | UNIT |
|---------------|--------------------------------------|-------------------------------|-----|------|------|------|
| $V_{CE(SUS)}$ | Collector-emitter sustaining voltage | $I_C = -0.1A ; I_B = 0$       | -40 |      |      | V    |
| $V_{CEsat}$   | Collector-emitter saturation voltage | $I_C = -6A ; I_B = -0.3A$     |     |      | -0.3 | V    |
| $V_{BEsat}$   | Base-emitter saturation voltage      | $I_C = -6A ; I_B = -0.3A$     |     |      | -1.2 | V    |
| $I_{CBO}$     | Collector cut-off current            | At rated voltage              |     |      | -0.1 | mA   |
| $I_{CEO}$     |                                      |                               |     |      |      |      |
| $I_{EBO}$     | Emitter cut-off current              | At rated voltage              |     |      | -0.1 | mA   |
| $h_{FE}$      | DC current gain                      | $I_C = -6A ; V_{CE} = -2V$    | 70  |      |      |      |
| $f_T$         | Transition frequency                 | $I_C = -1.2A ; V_{CE} = -10V$ |     | 50   |      | MHz  |

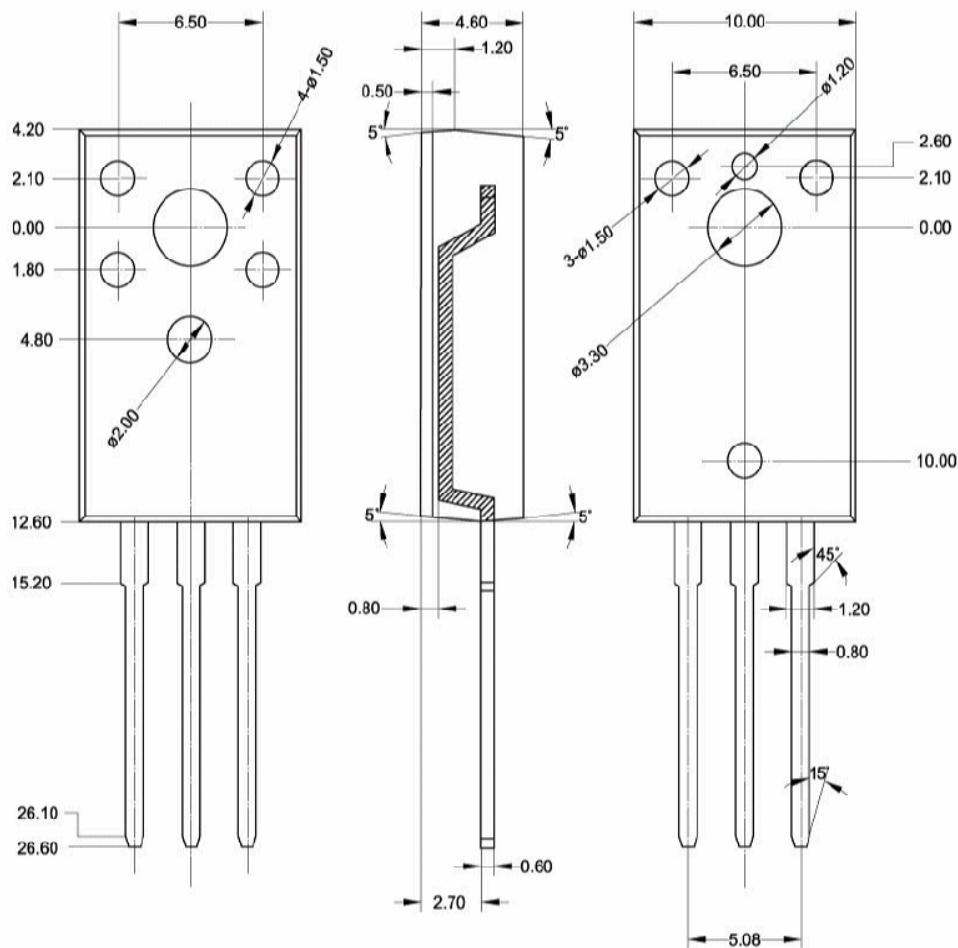
## Switching times

|          |              |                                                                             |  |  |     |         |
|----------|--------------|-----------------------------------------------------------------------------|--|--|-----|---------|
| $t_{on}$ | Turn-on time | $I_C = -6A ; I_{B1} = -I_{B2} = -0.6A ,$<br>$R_L = 5\Omega ; V_{BB2} = -4V$ |  |  | 0.3 | $\mu s$ |
| $t_s$    | Storage time |                                                                             |  |  | 1.5 | $\mu s$ |
| $t_f$    | Fall time    |                                                                             |  |  | 0.5 | $\mu s$ |

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## PACKAGE OUTLINE

Fig.2 Outline dimensions (unindicated tolerance:  $\pm 0.20$  mm)