

**Silicon NPN Power Transistors**

**2SC3746**

**DESCRIPTION**

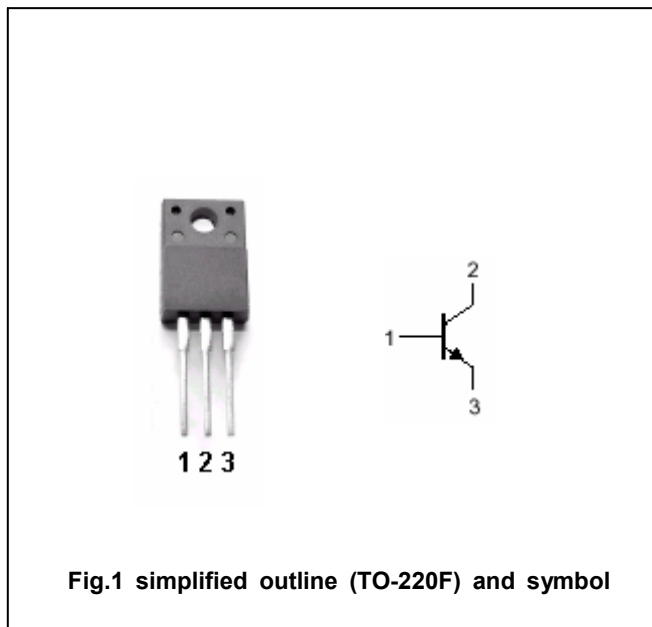
- With TO-220F package
- Complement to type 2SA1469
- Low saturation voltage
- Excellent current dependence of  $h_{FE}$
- Short switching time

**APPLICATIONS**

- Various inductance of lamp drivers for electronic equipment
- Inverters ,converters
- Switching regulator ,driver

**PINNING**

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



**Absolute maximum ratings (Ta=25°C)**

| SYMBOL    | PARAMETER                 | CONDITIONS       | VALUE   | UNIT |
|-----------|---------------------------|------------------|---------|------|
| $V_{CBO}$ | Collector-base voltage    | Open emitter     | 80      | V    |
| $V_{CEO}$ | Collector-emitter voltage | Open base        | 60      | V    |
| $V_{EBO}$ | Emitter-base voltage      | Open collector   | 5       | V    |
| $I_C$     | Collector current         |                  | 5       | A    |
| $I_{CM}$  | Collector current-peak    |                  | 7       | A    |
| $P_C$     | Collector dissipation     | $T_a=25^\circ C$ | 2       | W    |
|           |                           | $T_C=25^\circ C$ | 20      |      |
| $T_j$     | Junction temperature      |                  | 150     | °C   |
| $T_{stg}$ | Storage temperature       |                  | -55~150 | °C   |

## Silicon NPN Power Transistors

2SC3746

## CHARACTERISTICS

T<sub>j</sub>=25°C unless otherwise specified

| SYMBOL               | PARAMETER                            | CONDITIONS                                    | MIN | TYP. | MAX | UNIT |
|----------------------|--------------------------------------|---|-----|------|-----|------|
| V <sub>(BR)CEO</sub> | Collector-emitter breakdown voltage  | I <sub>C</sub> =1mA ; R <sub>BE</sub> =∞      | 60  |      |     | V    |
| V <sub>(BR)CBO</sub> | Collector-base breakdown voltage     | I <sub>C</sub> =10mA ; I <sub>E</sub> =0      | 80  |      |     | V    |
| V <sub>(BR)EBO</sub> | Emitter-base breakdown voltage       | I <sub>E</sub> =10mA ; I <sub>C</sub> =0      | 5   |      |     | V    |
| V <sub>CEsat</sub>   | Collector-emitter saturation voltage | I <sub>C</sub> =2.5A ; I <sub>B</sub> =0.125A |     |      | 0.4 | V    |
| I <sub>CBO</sub>     | Collector cut-off current            | V <sub>CB</sub> =40V ; I <sub>E</sub> =0      |     |      | 0.1 | mA   |
| I <sub>EBO</sub>     | Emitter cut-off current              | V <sub>EB</sub> =4V ; I <sub>C</sub> =0       |     |      | 0.1 | mA   |
| h <sub>FE</sub>      | DC current gain                      | I <sub>C</sub> =1A ; V <sub>CE</sub> =2V      | 70  |      | 280 |      |
| f <sub>T</sub>       | Transition frequency                 | I <sub>C</sub> =1A ; V <sub>CE</sub> =5V      |     | 100  |     | MHz  |

## Switching times

|                 |              |  |  |     |  |    |
|-----------------|--------------|--|--|-----|--|----|
| t <sub>on</sub> | Turn-on time | I <sub>C</sub> =2.0A ; I <sub>B1</sub> =-I <sub>B2</sub> =0.1A<br>V <sub>CC</sub> =20V , R <sub>L</sub> =10Ω |  | 0.1 |  | μs |
| t <sub>s</sub>  | Storage time |  |  | 0.5 |  | μs |
| t <sub>f</sub>  | Fall time    |  |  | 0.1 |  | μs |

◆ h<sub>FE</sub> Classifications

| Q      | R       | S       |
|--------|---------|---------|
| 70-140 | 100-200 | 140-280 |

Silicon NPN Power Transistors

2SC3746

PACKAGE OUTLINE

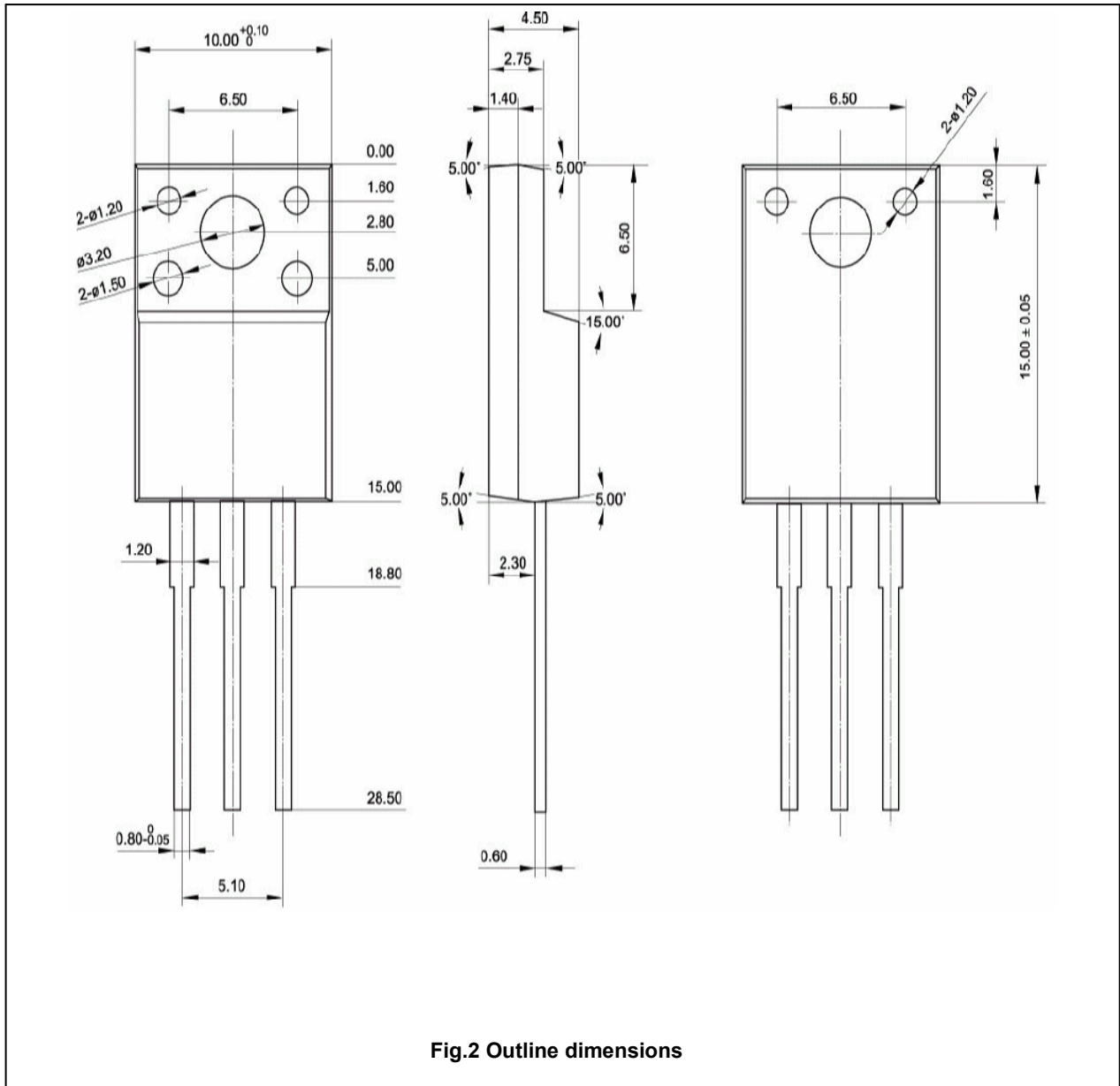


Fig.2 Outline dimensions

Silicon NPN Power Transistors

2SC3746

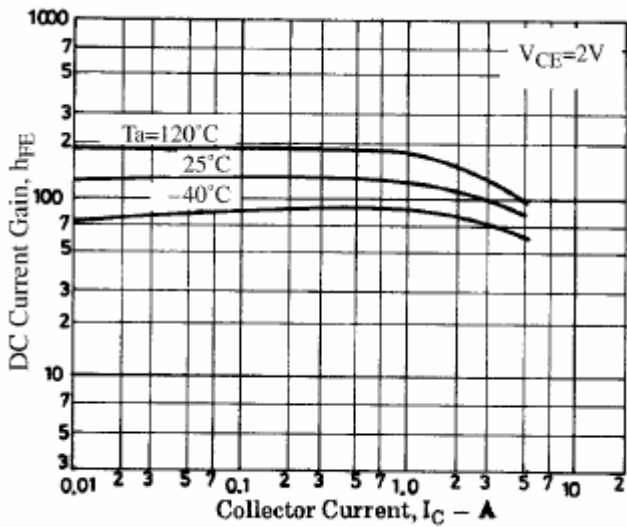


Fig.3 DC current Gain

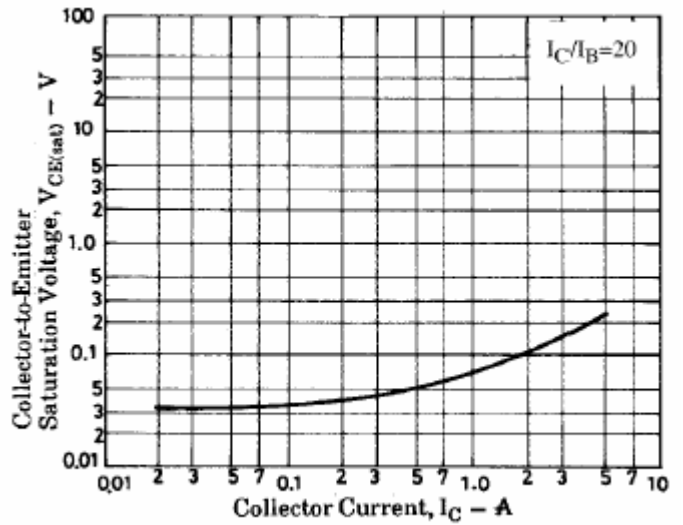


Fig.4 Collector-Emitter Saturation Voltage

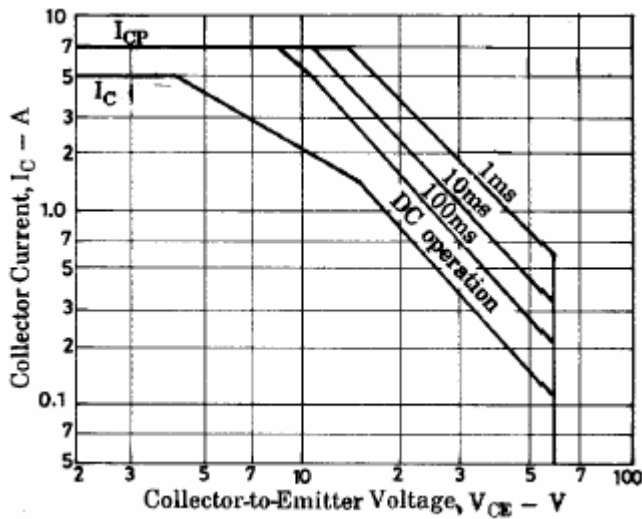


Fig.5 Safe Operating Area