

Silicon NPN Power Transistors

2SD1940

DESCRIPTION

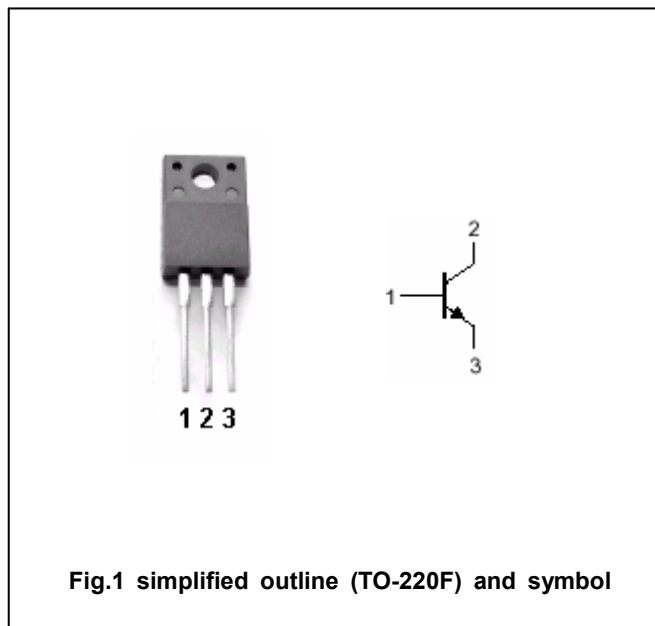
- With TO-220F package
- Wide area of safe operation

APPLICATIONS

- 85V/6A, AF 25 to 30W output applications

PINNING

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

**Absolute maximum ratings (Ta=25℃)**

| SYMBOL | PARAMETER | CONDITIONS | MAX | UNIT |
|-----------|---------------------------|------------------------|---------|------|
| V_{CBO} | Collector-base voltage | Open emitter | 100 | V |
| V_{CEO} | Collector-emitter voltage | Open base | 85 | V |
| V_{EBO} | Emitter-base voltage | Open collector | 6 | V |
| I_C | Collector current | | 6 | A |
| I_{CM} | Collector current-peak | | 10 | A |
| P_C | Collector dissipation | $T_C=25^\circ\text{C}$ | 25 | W |
| T_j | Junction temperature | | 150 | ℃ |
| T_{stg} | Storage temperature | | -55~150 | ℃ |

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CHARACTERISTICS

T_j=25°C unless otherwise specified

| SYMBOL | PARAMETER | CONDITIONS | MIN | TYP. | MAX | UNIT |
|----------------------|--------------------------------------|---|-----|------|-----|------|
| V _{(BR)CEO} | Collector-emitter breakdown voltage | I _C =5mA ; R _{BE} =∞ | 85 | | | V |
| V _{(BR)CBO} | Collector-base breakdown voltage | I _C =5mA ; I _E =0 | 100 | | | V |
| V _{(BR)EBO} | Emitter-base breakdown voltage | I _E =5mA ; I _C =0 | 6 | | | V |
| V _{CEsat} | Collector-emitter saturation voltage | I _C =4A ; I _B =0.4A | | | 2.0 | V |
| V _{BE} | Base-emitter on voltage | I _C =1A ; V _{CE} =5V | | | 1.5 | V |
| I _{CBO} | Collector cut-off current | V _{CB} =40V ; I _E =0 | | | 0.1 | mA |
| I _{EBO} | Emitter cut-off current | V _{EB} =4V ; I _C =0 | | | 0.1 | mA |
| h _{FE-1} | DC current gain | I _C =1A ; V _{CE} =5V | 60 | | 320 | |
| h _{FE-2} | DC current gain | I _C =3A ; V _{CE} =5V | 20 | | | |
| f _T | Transition frequency | I _C =1A ; V _{CE} =5V | | 15 | | MHz |
| C _{OB} | Collector output capacitance | f=1MHz ; V _{CB} =10V | | 110 | | pF |

Switching times

| | | | | | | |
|-----------------|--------------|--|--|------|--|----|
| t _{on} | Turn-on time | I _C =0.5A ; I _{B1} =-I _{B2} =50mA V _{CC} =20V , R _L =40Ω | | 0.28 | | μs |
| t _s | Storage time | | | 3.60 | | μs |
| t _f | Fall time | | | 0.50 | | μs |

◆ h_{FE-1} Classifications

| D | E | F |
|--------|---------|---------|
| 60-120 | 100-200 | 160-320 |

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PACKAGE OUTLINE

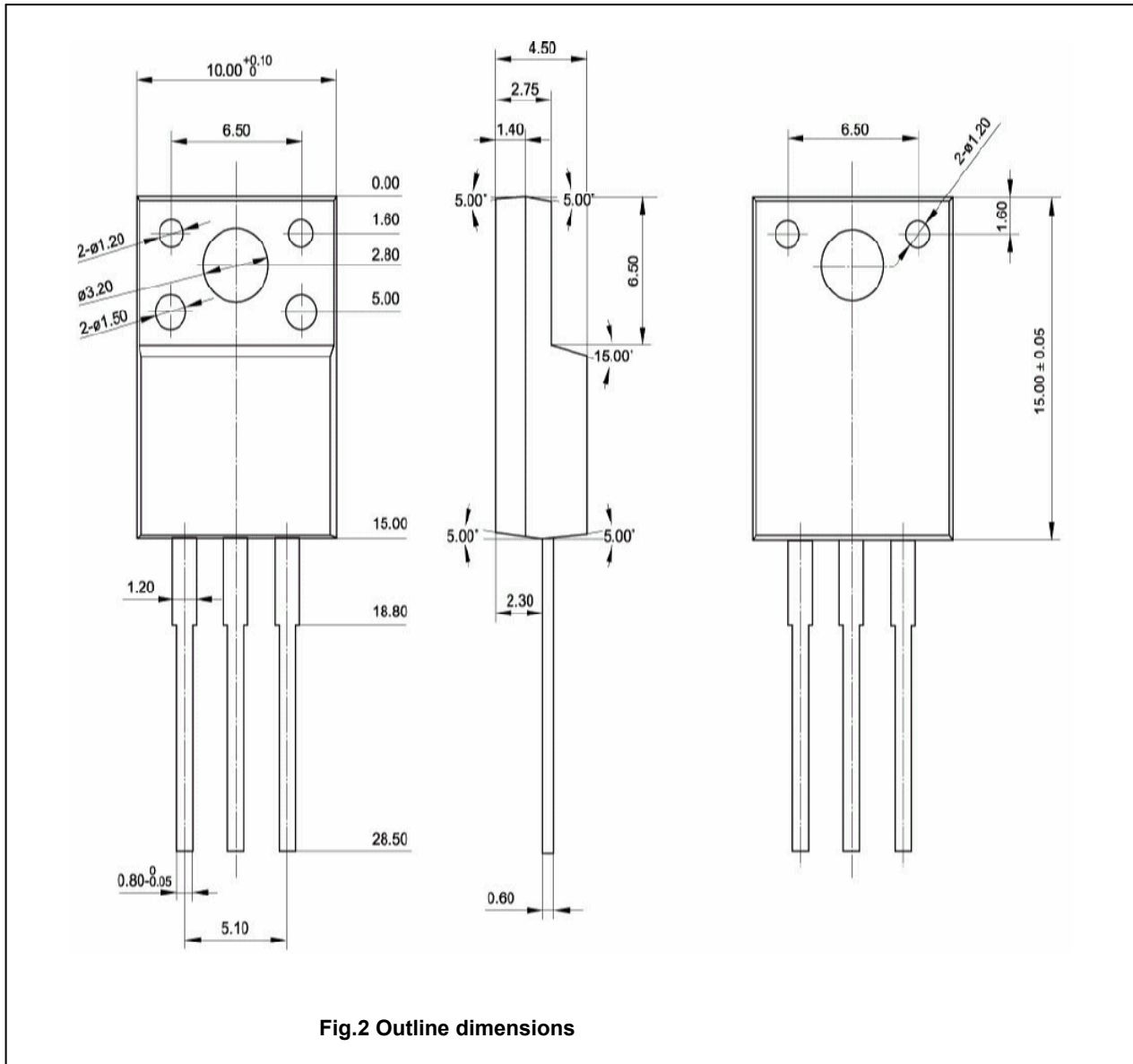


Fig.2 Outline dimensions

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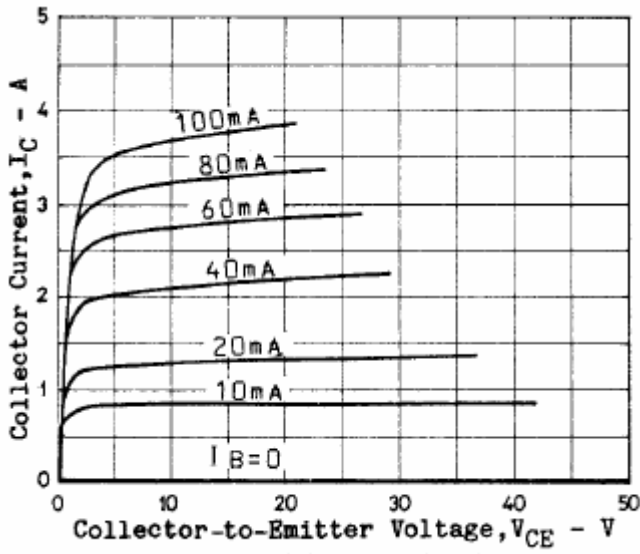


Fig.3 Static Characteristic

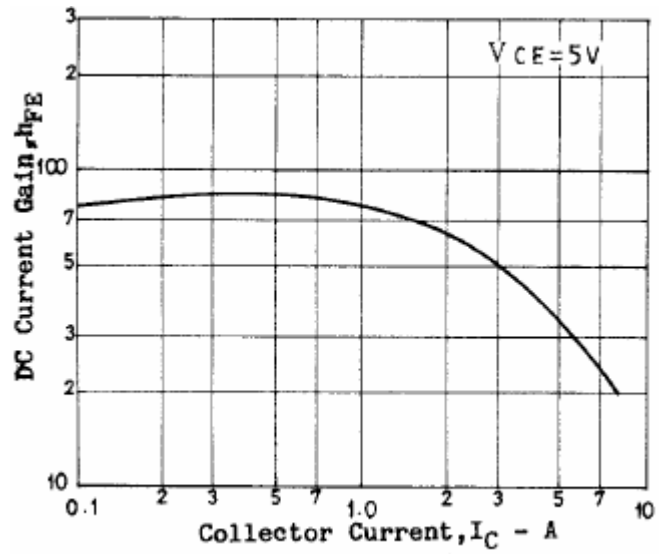


Fig.4 DC current Gain

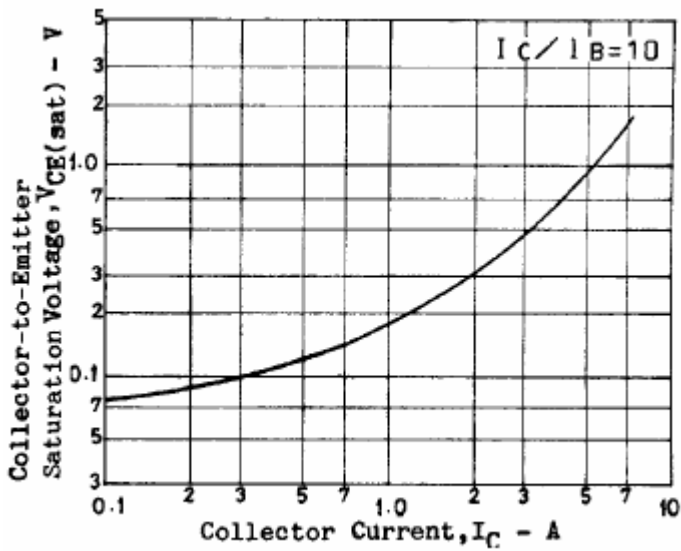


Fig.5 Collector-Emitter Saturation Voltage

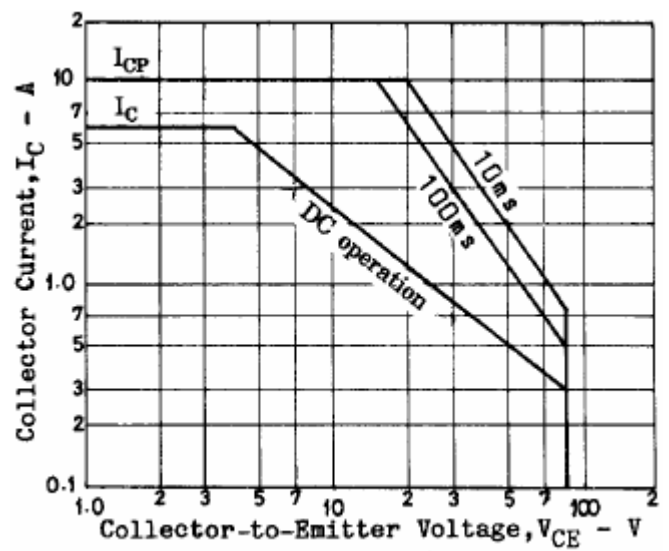


Fig.6 Safe Operating Area