

Silicon NPN Power Transistors

2N5301 2N5302 2N5303

DESCRIPTION

- With TO-3 package
- Complement to type 2N4398/4399/5745
- Low collector/saturation voltage
- Excellent safe operating area

APPLICATIONS

- For use in power amplifier and switching circuits applications.

PINNING

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

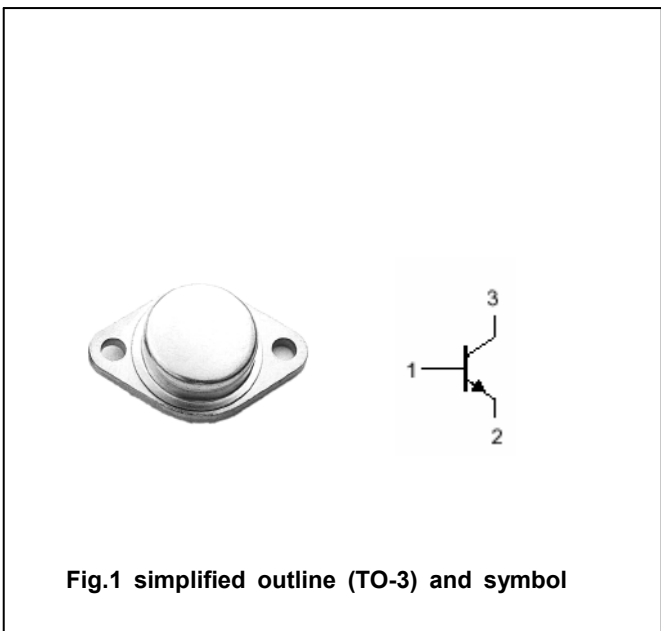


Fig.1 simplified outline (TO-3) and symbol

Absolute maximum ratings(Ta=□)

| SYMBOL | PARAMETER | CONDITIONS | VALUE | UNIT |
|------------------|---------------------------|---------------------|---------|------|
| V _{CBO} | Collector-base voltage | 2N5301 | 40 | V |
| | | 2N5302 | 60 | |
| | | 2N5303 | 80 | |
| V _{CEO} | Collector-emitter voltage | 2N5301 | 40 | V |
| | | 2N5302 | 60 | |
| | | 2N5303 | 80 | |
| V _{EBO} | Emitter-base voltage | Open collector | 5 | V |
| I _C | Collector current | 2N5301/5302 | 30 | A |
| | | 2N5303 | 20 | |
| I _B | Base current | | 7.5 | A |
| P _D | Total power dissipation | T _C =25□ | 200 | W |
| T _j | Junction temperature | | 200 | □ |
| T _{stg} | Storage temperature | | -65~200 | □ |

THERMAL CHARACTERISTICS

| SYMBOL | PARAMETER | VALUE | UNIT |
|---------------------|-------------------------------------|-------|------|
| R _{th j-c} | Thermal resistance junction to case | 0.875 | □/W |

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CHARACTERISTICS

T_j=25°C unless otherwise specified

| SYMBOL | PARAMETER | CONDITIONS | MIN | TYP. | MAX | UNIT |
|-----------------------|--------------------------------------|--|--|------|-----------|------|
| V _{CE0(SUS)} | Collector-emitter sustaining voltage | 2N5301 | I _C =0.2A ; I _B =0 | | | V |
| | | 2N5302 | | | | |
| | | 2N5303 | | | | |
| V _{CEsat-1} | Collector-emitter saturation voltage | 2N5301/5302 | I _C =10A ; I _B =1A | | | V |
| | | 2N5303 | | | | |
| V _{CEsat-2} | Collector-emitter saturation voltage | 2N5301/5302 | I _C =20A ; I _B =2A | | | V |
| | | 2N5303 | I _C =15A ; I _B =1.5A | | | |
| V _{CEsat-3} | Collector-emitter saturation voltage | 2N5301/5302 | I _C =30A ; I _B =6A | | | V |
| | | 2N5303 | I _C =20A ; I _B =4A | | | |
| V _{BEsat-1} | Base-emitter saturation voltage | I _C =10A ; I _B =1A | | | 1.7 | V |
| V _{BEsat-2} | Base-emitter saturation voltage | 2N5301/5302 | I _C =15A ; I _B =1.5A | | | V |
| | | 2N5303 | | | | |
| V _{BEsat-3} | Base-emitter saturation voltage | 2N5301/5302 | I _C =20A ; I _B =2A | | | V |
| | | 2N5303 | I _C =20A ; I _B =4A | | | |
| V _{BE-1} | Base-emitter on voltage | 2N5301/5302 | I _C =15A ; V _{CE} =2V | | | V |
| | | 2N5303 | I _C =10A ; V _{CE} =2V | | | |
| V _{BE-2} | Base-emitter on voltage | 2N5301/5302 | I _C =30A ; V _{CE} =4V | | | V |
| | | 2N5303 | I _C =20A ; V _{CE} =4V | | | |
| I _{CEx} | Collector cut-off current | V _{CE} = Rated V _{CE0} ; V _{BE(off)} =1.5V T _C =150°C | | | 1.0 10 | mA |
| I _{CEO} | Collector cut-off current | V _{CE} =Rated V _{CE0} ; I _B =0 | | | 5.0 | mA |
| I _{CBO} | Collector cut-off current | V _{CB} =Rated V _{CBO} ; I _E =0 | | | 1.0 | mA |
| I _{EBO} | Emitter cut-off current | V _{EB} =5V ; I _C =0 | | | 5.0 | mA |
| h _{FE-1} | DC current gain | I _C =1A ; V _{CE} =2V | 40 | | | |
| h _{FE-2} | DC current gain | 2N5303 | I _C =10A ; V _{CE} =2V | 15 | 60 | |
| | | 2N5301/5302 | I _C =15A ; V _{CE} =2V | | | |
| h _{FE-3} | DC current gain | 2N5303 | I _C =20A ; V _{CE} =4V | 5 | | |
| | | 2N5301/5302 | I _C =30A ; V _{CE} =4V | | | |
| f _T | Transition frequency | I _C =1A ; V _{CE} =10V ; f=1.0MHz | 2 | | | MHz |

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PACKAGE OUTLINE

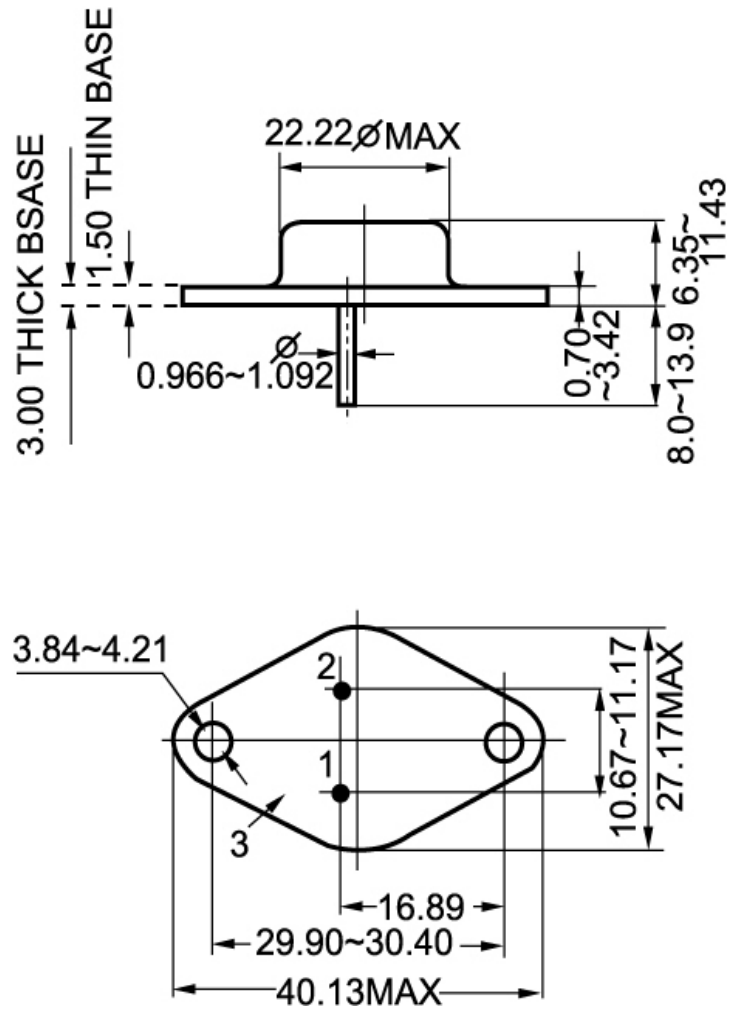


Fig.2 outline dimensions (unindicated tolerance:±0.1mm)