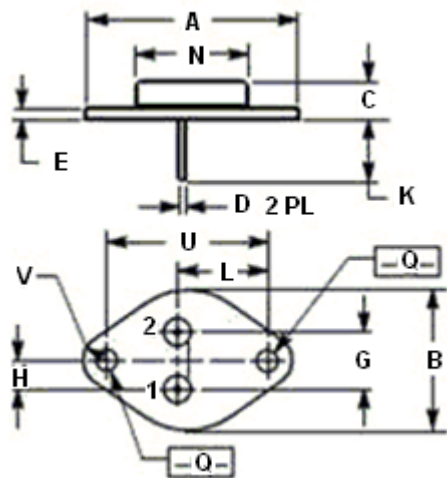
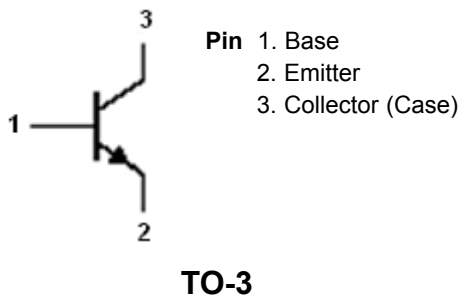


# Silicon NPN Power Transistor



### Features:

- Excellent safe operating area
- High DC current gain- $h_{FE} = 15$  (Minimum) at  $I_C = 15\text{ A}$
- Low saturation voltage :  $V_{CE(sat)} = 2\text{ V}$  (Maximum) at  $I_C = 15\text{ A}$



| Dimension | mm      |         |
|-----------|---------|---------|
|           | Minimum | Maximum |
| A         | 39      |         |
| B         | 25.3    | 26.67   |
| C         | 7.8     | 8.3     |
| D         | 0.9     | 1.1     |
| E         | 1.4     | 1.6     |
| G         | 10.92   |         |
| H         | 5.46    |         |
| K         | 11.4    | 13.5    |
| L         | 16.75   | 17.5    |
| N         | 19.4    | 19.62   |
| Q         | 4       | 4.2     |
| U         | 30      | 30.2    |
| V         | 4.3     | 4.5     |

Dimensions : Millimetres

### Absolute Maximum Ratings (T<sub>a</sub> = 25°C)

| Symbol           | Parameter                      | Value | Unit |
|------------------|--------------------------------|-------|------|
| V <sub>CBO</sub> | Collector - base voltage       | 50    | V    |
| V <sub>CEX</sub> | Collector - emitter voltage    | 50    | V    |
| V <sub>CEO</sub> | Collector - emitter voltage    | 40    | V    |
| V <sub>EBO</sub> | Emitter - base voltage         | 5     | V    |
| I <sub>C</sub>   | Collector current - continuous | 30    | A    |
| I <sub>CM</sub>  | Collector current - peak       | 30    | A    |
| I <sub>B</sub>   | Base current - continuous      | 7.5   | A    |



# Silicon NPN Power Transistor



## Absolute Maximum Ratings ( $T_a = 25^\circ\text{C}$ )

| Symbol    | Parameter                                               | Value      | Unit             |
|-----------|---------------------------------------------------------|------------|------------------|
| $I_{BM}$  | Base current - peak                                     | 15         | A                |
| $P_C$     | Collector power dissipation at $T_C = 25^\circ\text{C}$ | 150        | W                |
| $T_J$     | Junction temperature                                    | 200        | $^\circ\text{C}$ |
| $T_{stg}$ | Storage temperature                                     | -65 to 200 | $^\circ\text{C}$ |

## Thermal Characteristics

| Symbol        | Parameter                            | Maximum | Unit               |
|---------------|--------------------------------------|---------|--------------------|
| $R_{th\ j-c}$ | Thermal resistance, junction to case | 1.17    | $^\circ\text{C/W}$ |

## Electrical Characteristics ( $T_C = 25^\circ\text{C}$ Unless Otherwise Specified)

| Symbol          | Parameter                                                   | Conditions                                                                                                                        | Minimum | Maximum | Unit |
|-----------------|-------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|---------|---------|------|
| $V_{CEO(SUS)}$  | Collector - emitter sustaining voltage                      | $I_C = 200\text{ mA}; I_B = 0$                                                                                                    | 40      | -       | V    |
| $V_{CEX(SUS)}$  | Collector - emitter sustaining voltage                      | $I_C = 200\text{ mA}; V_{BE(off)} = 1.5\text{ V}; R_{BE} = 100\ \Omega$                                                           | 50      | -       | V    |
| $V_{CER(SUS)}$  | Collector - emitter sustaining voltage                      | $I_C = 200\text{ mA}; R_{BE} = 100\ \Omega$                                                                                       | 45      | -       | V    |
| $V_{CE(sat)-1}$ | Collector - emitter sustaining voltage                      | $I_C = 15\text{ A}; I_B = 1.5\text{ A}$                                                                                           | -       | 2       | V    |
| $V_{CE(sat)-2}$ | Collector - emitter sustaining voltage                      | $I_C = 30\text{ A}; I_B = 6\text{ A}$                                                                                             | -       | 4       | V    |
| $V_{BE(on)}$    | Base - emitter on voltage                                   | $I_C = 15\text{ A}; V_{CE} = 4\text{ V}$                                                                                          | -       | 2.7     | V    |
| $I_{CEO}$       | Collector cut off current                                   | $V_{CE} = 30\text{ V}; I_B = 0$                                                                                                   | -       | 10      | mA   |
| $I_{CEV}$       | Collector cut off current                                   | $V_{CE} = 50\text{ V}; V_{BE(off)} = 1.5\text{ V}$<br>$V_{CE} = 30\text{ V}; V_{BE(off)} = 1.5\text{ V}, T_C = 150^\circ\text{C}$ | -       | 2<br>10 | mA   |
| $I_{CBO}$       | Collector cut off current                                   | $V_{CB} = 50\text{ V}; I_E = 0$                                                                                                   | -       | 2       | mA   |
| $I_{EBO}$       | Emitter cut off current                                     | $V_{EB} = 5\text{ V}; I_C = 0$                                                                                                    | -       | 5       | mA   |
| $h_{FE-1}$      | DC current gain                                             | $I_C = 15\text{ A}; V_{CE} = 4\text{ V}$                                                                                          | 15      | 6       | -    |
| $h_{FE-2}$      | DC current gain                                             | $I_C = 30\text{ A}; V_{CE} = 4\text{ V}$                                                                                          | 5       | -       | -    |
| $f_T$           | Current - gain - bandwidth product                          | $I_C = 1\text{ A}; V_{CE} = 4\text{ V}; f_{test} = 50\text{ kHz}$                                                                 | 0.2     | -       | MHz  |
| $I_{s/b}$       | Second breakdown collector current with base forward biased | $V_{CE} = 40\text{ V}, t = 1\text{ s}, \text{Non repetitive}$                                                                     | 3.75    | -       | A    |

## Part Number Table

| Description                  | Part Number |
|------------------------------|-------------|
| Silicon NPN Power Transistor | 2N3771      |

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