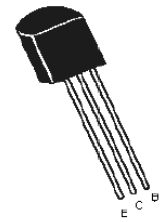


Bipolar Transistor



Pin Configuration:

1. Emitter
2. Collector
3. Base

Description:

- NPN Silicon Planar Epitaxial Transistor

Absolute Maximum Ratings

| Rating | Symbol | Value | Unit |
|--|----------------|-------------|---------------------------|
| Collector Emitter Voltage | V_{CEO} | 30 | V |
| Collector Base Voltage | V_{CBO} | 50 | |
| Emitter Base Voltage | V_{EBO} | 5 | |
| Collector Current Continuous | I_C | 600 | mA |
| Power Dissipation at $T_a = 25^\circ\text{C}$ Derate above 25°C | P_D | 625 5 | W mW/ $^\circ\text{C}$ |
| Operating and Storage Junction Temperature Range | T_j, T_{stg} | -55 to +150 | $^\circ\text{C}$ |

Thermal Resistance

| | | | |
|---------------------|---------------|-----|--------------------|
| Junction to Ambient | $R_{th(j-a)}$ | 200 | $^\circ\text{C/W}$ |
|---------------------|---------------|-----|--------------------|

Electrical Characteristics ($T_a = 25^\circ\text{C}$ unless otherwise specified)

| Characteristic | Symbol | Test Condition | Min. | Max. | Unit |
|---------------------------|-------------------|---|------|------|---------------|
| Collector Emitter Voltage | BV_{CEO}^* | $I_C = 10\text{mA}, I_B = 0$ | 30 | - | V |
| Collector Base Voltage | BV_{CBO} | $I_C = 100\mu\text{A}, I_E = 0$ | 50 | - | |
| Emitter to Base Voltage | V_{EBO} | $I_E = 100\mu\text{A}, I_C = 0$ | 5 | - | |
| DC Current Gain | 2N3704 h_{FE}^* | $I_C = 50\text{mA}, V_{CE} = 2\text{V}$ | 100 | 300 | - |
| Collector Leakage Current | I_{CBO} | $V_{CB} = 20\text{V}, I_E = 0$ | - | 0.1 | μA |

*Pulse Test : Pulse Width = $\leq 300\mu\text{s}$, Duty Cycle = $\leq 2.0\%$.

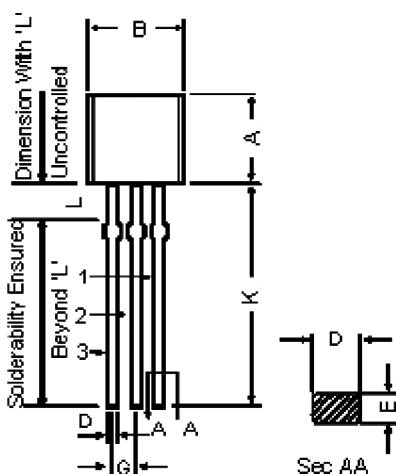
Electrical Characteristics ($T_a = 25^\circ\text{C}$ unless otherwise specified)

| Characteristic | Symbol | Test Condition | Min. | Max. | Unit |
|---|-----------------|--|------|------|---------------|
| Emitter Leakage Current | I_{EBO} | $V_{EB} = 3V, I_C = 0$ | - | 0.1 | μA |
| Collector Emitter Saturation Voltage 2N3704 | $V_{CE(sat)}^*$ | $I_C = 100\text{mA}, I_B = 5\text{mA}$ | - | 0.6 | V |
| Base Emitter On Voltage | $V_{BE(on)}^*$ | $I_C = 100\text{mA}, V_{CE} = 2V$ | 0.5 | 1 | |

Small Signal Characteristics

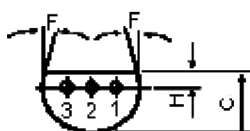
| | | | | | |
|----------------------|----------|---|-----|----|-----|
| Output Capacitance | C_{ob} | $I_E = 0, V_{CB} = 10V,$ $f = 1\text{MHz}$ | - | 12 | pF |
| Transition Frequency | f_T | $I_C = 50\text{mA}, V_{CE} = 2V,$ $f = 20\text{MHz}$ | 100 | - | MHz |

*Pulse Test : Pulse Width = $\leq 300\mu\text{s}$, Duty Cycle = $\leq 2.0\%$.



| Dimensions | Min. | Max. |
|------------|-------|-------|
| A | 4.32 | 5.33 |
| B | 4.45 | 5.2 |
| C | 3.18 | 4.19 |
| D | 0.41 | 0.55 |
| E | 0.35 | 0.5 |
| F | 5° | |
| G | 1.14 | 1.4 |
| H | | 1.53 |
| K | 12.7 | - |
| L | 1.982 | 2.082 |

Dimensions : Millimetres



Part Number Table

| Description | Part Number |
|------------------------|-------------|
| Transistor, NPN, TO-92 | 2N3704 |

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