

SILICON NPN TRANSISTOR

- SGS-THOMSON PREFERRED SALESTYPE
- NPN TRANSISTOR

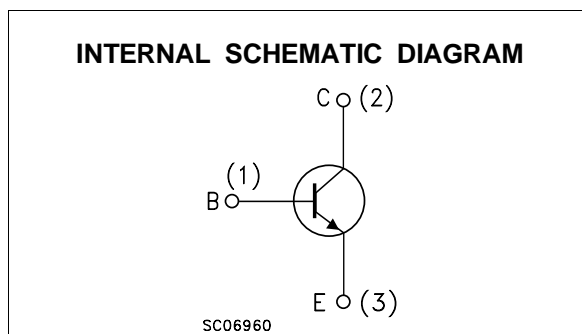
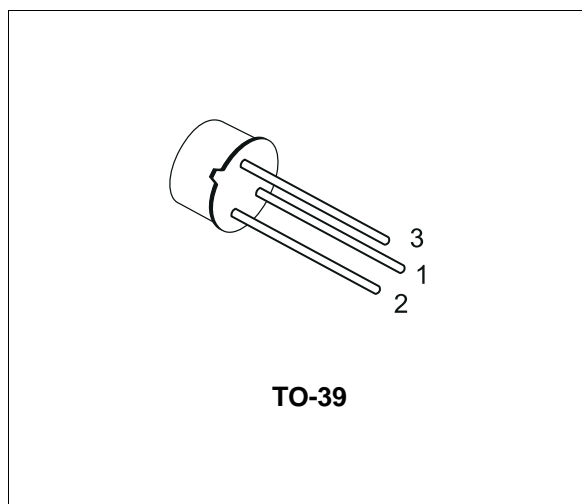
APPLICATIONS

- GENERAL PURPOSE SWITCHING

DESCRIPTION

The 2N5154 is a silicon epitaxial planar NPN transistors in Jedec TO-39 metal case intended for use in switching applications.

The complementary PNP type is the 2N5153.



ABSOLUTE MAXIMUM RATINGS

| Symbol | Parameter | Value | Unit |
|-----------|--|------------|------------------|
| V_{CBO} | Collector-Base Voltage ($I_E = 0$) | 100 | V |
| V_{CEO} | Collector-Emitter Voltage ($I_B = 0$) | 80 | V |
| V_{EBO} | Emitter-Base Voltage ($I_C = 0$) | 6 | V |
| I_C | Collector Current | 5 | A |
| I_{CM} | Collector Peak Current | 10 | A |
| I_B | Base Current | 1 | A |
| P_{tot} | Total Dissipation at $T_c \leq 50\text{ }^\circ\text{C}$ | 10 | W |
| P_{tot} | Total Dissipation at $T_c \leq 100\text{ }^\circ\text{C}$ | 6.7 | W |
| P_{tot} | Total Dissipation at $T_{amb} \leq 25\text{ }^\circ\text{C}$ | 1 | W |
| T_{stg} | Storage Temperature | -65 to 200 | $^\circ\text{C}$ |
| T_j | Max. Operating Junction Temperature | 200 | $^\circ\text{C}$ |

2N5154

THERMAL DATA

| | | | | |
|-----------------------|-------------------------------------|-----|-----|------|
| R _{thj-case} | Thermal Resistance Junction-case | Max | 15 | °C/W |
| R _{thj-amb} | Thermal Resistance Junction-ambient | Max | 175 | °C/W |

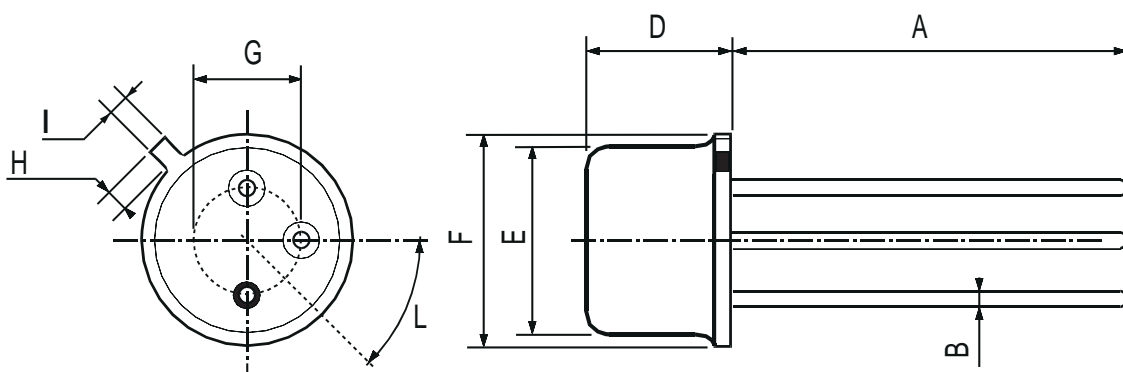
ELECTRICAL CHARACTERISTICS (T_{case} = 25 °C unless otherwise specified)

| Symbol | Parameter | Test Conditions | Min. | Typ. | Max. | Unit |
|------------------------|---|--|----------------------|------|-------------|----------|
| I _{CES} | Collector Cut-off Current (V _{BE} = 0) | V _{CE} = 60 V V _{CE} = 100 V | | | 1 1 | μA mA |
| I _{CEO} | Collector Cut-off Current (I _B = 0) | V _{CE} = 40 V | | | 50 | μA |
| I _{CEV} | Collector Cut-off Current (V _{BE} = -2V) | V _{CE} = 60 V T _C = 150 °C | | | 500 | μA |
| I _{EBO} | Emitter Cut-off Current (I _C = 0) | V _{EB} = 5 V V _{EB} = 6 V | | | 1 1 | μA mA |
| V _{CEO(sus)*} | Collector-Emitter Sustaining Voltage | I _C = 100 mA | 80 | | | V |
| V _{CE(sat)*} | Collector-Emitter Saturation Voltage | I _C = 2.5 A I _B = 250 mA I _C = 5 A I _B = 500 mA | | | 0.75 1.5 | V V |
| V _{BE(sat)*} | Base-Emitter Saturation Voltage | I _C = 2.5 A I _B = 250 mA I _C = 5 A I _B = 500 mA | | | 1.45 2.2 | V V |
| V _{BE*} | Base-Emitter Voltage | I _C = 2.5 A V _{CE} = 5 V | | | 1.45 | V |
| h _{FE*} | DC Current Gain | I _C = 50 mA V _{CE} = 5 V I _C = 2.5 A V _{CE} = 5 V I _C = 5 A V _{CE} = 5 V I _C = 2.5 A V _{CE} = 5 V T _C = -55 °C | 50 70 40 35 | | 200 | |
| h _{FE} | Small Signal Current Gain | I _C = 0.1 A V _{CE} = 5 V f = 1KHz I _C = 0.5 A V _{CE} = 5 V f = 20MHz | 50 3.5 | | | |
| C _{CB0} | Collector-Base Capacitance | I _E = 0 V _{CB} = 10 V f = 1MHz | | | 250 | pF |
| t _{on} | Turn on Time | I _C = 5 A V _{CC} = 30 V I _{B1} = 0.5 A | | 0.5 | | μs |
| t _{off} | Turn off Time | I _C = 5 A V _{CC} = 30 V I _{B1} = -I _{B2} = 0.5A | | 1.3 | | μs |

* Pulsed: Pulse duration = 300 μs, duty cycle 1.5 %

TO-39 MECHANICAL DATA

| DIM. | mm | | | inch | | |
|------|------------|------|------|-------|------|-------|
| | MIN. | TYP. | MAX. | MIN. | TYP. | MAX. |
| A | 12.7 | | | 0.500 | | |
| B | | | 0.49 | | | 0.019 |
| D | | | 6.6 | | | 0.260 |
| E | | | 8.5 | | | 0.334 |
| F | | | 9.4 | | | 0.370 |
| G | 5.08 | | | 0.200 | | |
| H | | | 1.2 | | | 0.047 |
| I | | | 0.9 | | | 0.035 |
| L | 45° (typ.) | | | | | |



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