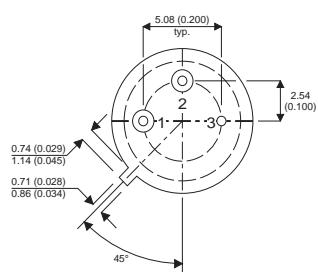
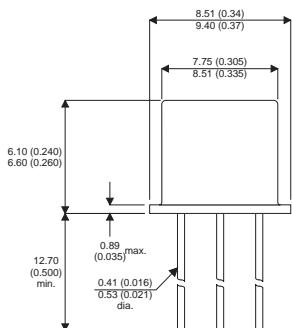


## MECHANICAL DATA

Dimensions in mm (inches)



**TO-39 (TO-205AD)**

Underside View

Pin 1 = Base      Pin 2 = Collector      Pin = 3 – Emitter

## HIGH SPEED MEDIUM VOLTAGE SWITCH

## DESCRIPTION

The 2N5154XX is a silicon epitaxial planar NPN transistor in a TO-39 metal case for use in Switching and Linear applications.

## ABSOLUTE MAXIMUM RATINGS $T_{CASE} = 25^\circ\text{C}$ unless otherwise stated

|             |  |               |
|-------------|--|---------------|
| $V_{CBO}$   | Collector – Base Voltage ( $I_E = 0$ )               | 100V          |
| $V_{CEO}$   | Collector – Emitter Voltage ( $I_B = 0$ )            | 80V           |
| $V_{EBO}$   | Emitter – Base Voltage ( $I_C = 0$ )                 | 6V            |
| $I_C$       | Continuous Collector Current                         | 5A            |
| $I_{C(PK)}$ | Peak Collector Current                               | 10A           |
| $I_B$       | Base Current   | 1A            |
| $P_{tot}$   | Total Dissipation at $T_{amb} \leq 25^\circ\text{C}$ | 1W            |
|             | $T_{case} \leq 50^\circ\text{C}$                     | 10W           |
|             | $T_{case} \leq 100^\circ\text{C}$                    | 6.7W          |
| $T_{stg}$   | Operating and Storage Temperature Range              | –65 to +200°C |
| $T_j$       | Junction temperature                                 | 200°C         |

Semelab Plc reserves the right to change test conditions, parameter limits and package dimensions without notice. Information furnished by Semelab is believed to be both accurate and reliable at the time of going to press. However Semelab assumes no responsibility for any errors or omissions discovered in its use. Semelab encourages customers to verify that datasheets are current before placing orders.

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**ELECTRICAL CHARACTERISTICS** ( $T_{case} = 25^\circ C$  unless otherwise stated)

| Parameter   | Test Conditions  | Min. | Typ. | Max. | Unit    |
|---|--|------|------|------|---------|
| $I_{CES}$<br>Collector Cut Off Current                  | $V_{CE} = 60V$ $V_{BE} = 0$                            |      |      | 1    | $\mu A$ |
|   | $V_{CE} = 100V$ $V_{BE} = 0$                           |      |      | 1    | mA      |
| $I_{CEV}$<br>Collector Cut Off Current                  | $V_{CE} = 60V$ $T_{case} = 150^\circ C$                |      |      | 500  | $\mu A$ |
|   | $V_{BE} = -2V$   |      |      |      |         |
| $I_{CEO}$<br>Collector Cut Off Current                  | $V_{CE} = 40V$ $I_B = 0$                               |      |      | 50   |         |
| $I_{EBO}$<br>Emitter Cut Off Current                    | $V_{EB} = 4V$ $I_C = 0$                                |      |      | 1    | $\mu A$ |
|   | $V_{EB} = 5.5V$ $I_C = 0$                              |      |      | 1    | mA      |
| $V_{CEO(SUS)*}$<br>Collector Emitter Saturation Voltage | $I_C = 100mA$ $I_B = 0$                                | 80   |      |      | V       |
| $V_{CE(sat)*}$<br>Collector Emitter Saturation Voltage  | $I_C = 2.5A$ $I_B = 250mA$                             |      |      | 0.75 |         |
|   | $I_C = 5A$ $I_B = 500mA$                               |      |      | 1.5  |         |
| $V_{BE(sat)*}$<br>Base Emitter Saturation Voltage       | $I_C = 2.5A$ $I_B = 250mA$                             |      |      | 1.45 |         |
|   | $I_C = 5A$ $I_B = 500mA$                               |      |      | 2.2  |         |
| $V_{BE*}$<br>Base Emitter Voltage                       | $I_C = 2.5A$ $V_{CE} = 5V$                             |      |      | 1.45 |         |
| $h_{FE*}$<br>DC Current Gain                            | $I_C = 50mA$ $V_{CE} = 5V$                             | 50   |      |      | —       |
|   | $I_C = 2.5A$ $V_{CE} = 5V$                             | 60   |      | 200  |         |
|   | $I_C = 5A$ $V_{CE} = 5V$                               | 25   |      |      |         |
| $C_{CBO}$<br>Collector Base Capacitance                 | $I_E = 0$ $V_{CB} = 10V$<br>$f = 1MHz$                 |      |      | 250  | pF      |
| $h_{FE}$<br>Small Signal Current Gain                   | $I_C = 0.1A$ $V_{CE} = 5V$<br>$f = 1KHz$               | 50   |      |      | —       |
|   | $I_C = 0.5A$ $V_{CE} = 5V$<br>$f = 20MHz$              | 3.5  |      |      |         |
| $t_{on}$<br>Turn On Time                                | $I_C = 5A$ $V_{CC} = 30V$<br>$I_{B1} = 0.5A$           |      | 0.5  |      | $\mu s$ |
| $t_{off}$<br>Turn Off Time                              | $I_C = 5A$ $V_{CC} = 30V$<br>$I_{B1} = -I_{B2} = 0.5A$ |      | 1.3  |      |         |

\* Pulse test  $t_p = 300\mu s$ ,  $\delta < 2\%$

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