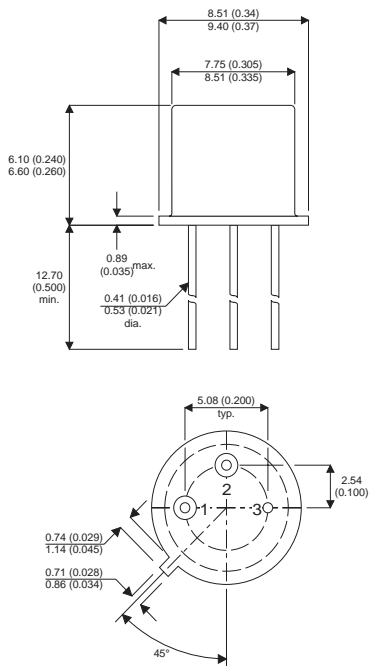


**MECHANICAL DATA**

Dimensions in mm (inches)



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

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

**ABSOLUTE MAXIMUM RATINGS**

(T<sub>CASE</sub> = 25°C unless otherwise stated)

		2N5152	2N5154
V <sub>CBO</sub>	Collector – Base Voltage (I <sub>E</sub> = 0)	100V	
V <sub>CEO</sub>	Collector – Emitter Voltage (I <sub>B</sub> = 0)	80V	
V <sub>EBO</sub>	Emitter – Base Voltage (I <sub>C</sub> = 0)	6V	
I <sub>C</sub>	Continuous Collector Current	5A	
I <sub>C(PK)</sub>	Peak Collector Current	10A	
I <sub>B</sub>	Base Current	1A	
P <sub>tot</sub>	Total Dissipation at T <sub>amb</sub> = 25°C	1W	
	T <sub>case</sub> = 50°C	10W	
	T <sub>case</sub> = 100°C	6.7W	
T <sub>stg</sub>	Operating and Storage Temperature Range	-65 to +200°C	
T <sub>j</sub>	Junction temperature	200°C	

**HIGH SPEED  
MEDIUM VOLTAGE  
SWITCHES**

**DESCRIPTION**

The 2N5152 and the 2N5154 are silicon epitaxial planar NPN transistors in jedec TO-39 metal case intended for use in switching applications.

The complementary PNP types are the 2N5151 and 2N5153 respectively

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.

**ELECTRICAL CHARACTERISTICS FOR 2N5152** ( $T_{case} = 25^{\circ}C$  unless otherwise stated)

Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$I_{CES}$ Collector Cut Off Current	$V_{CE} = 60V$ $V_{BE} = 0$			1	$\mu A$
	$V_{CE} = 100V$ $V_{BE} = 0$			1	mA
$I_{CEV}$ Collector Cut Off Current	$V_{CE} = 60V$ $T_{case} = 150^{\circ}C$ $V_{BE} = -2V$			500	$\mu A$
$I_{CEO}$ Collector Cut Off Current	$V_{CE} = 40V$ $I_B = 0$			50	
$I_{EBO}$ Emitter Cut Off Current	$V_{EB} = 5V$ $I_C = 0$			1	$\mu A$
	$V_{EB} = 6V$ $I_C = 0$			1	mA
$V_{CEO(SUS)}^*$ Collector Emitter Saturation Voltage	$I_C = 100mA$ $I_B = 0$	80			V
$V_{CE(sat)}^*$ Collector Emitter Saturation Voltage	$I_C = 2.5A$ $I_B = 250mA$			0.75	
	$I_C = 5A$ $I_B = 500mA$			1.5	
$V_{BE(sat)}^*$ Base Emitter Saturation Voltage	$I_C = 2.5A$ $I_B = 250mA$			1.45	
	$I_C = 5A$ $I_B = 500mA$			2.2	
$V_{BE}^*$ Base Emitter Voltage	$I_C = 2.5A$ $V_{CE} = 5V$			1.45	
$h_{FE}^*$ DC Current Gain	$I_C = 50mA$ $V_{CE} = 5V$	20			
	$I_C = 2.5A$ $V_{CE} = 5V$		30	90	
		$T_C = -55^{\circ}C$	15		
$I_C = 5A$ $V_{CE} = 5V$	20				
$C_{CBO}$ Collector Base Capacitance	$I_E = 0$ $V_{CB} = 10V$ $f = 1MHz$			250	pF
$h_{FE}$ Small Signal Current Gain	$I_C = 0.1A$ $V_{CE} = 5V$ $f = 1KHz$	20			
	$I_C = 0.5A$ $V_{CE} = 5V$ $f = 20MHz$	3			
$t_{on}$ Turn On Time	$I_C = 5A$ $V_{CC} = 30V$ $I_{B1} = 0.5A$		0.5		$\mu s$
$t_{off}$ Turn Off Time	$I_C = 5A$ $V_{CC} = 30V$ $I_{B1} = -I_{B2} = 0.5A$		1.3		$\mu s$

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

**THERMAL DATA**

$R_{thj-case}$ Thermal Resistance Junction-case	Max	15	$^{\circ}C/W$
$R_{thj-amb}$ Thermal Resistance Junction-ambient	Max	175	$^{\circ}C/W$

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.

**Semelab plc.** Telephone +44(0)1455) 556565. Fax +44(0)1455) 552612.

E-mail: [sales@semelab.co.uk](mailto:sales@semelab.co.uk) Website: <http://www.semelab.co.uk>

Document Number 3072  
Issue 3

**ELECTRICAL CHARACTERISTICS FOR 2N5154** ( $T_{case} = 25^{\circ}C$  unless otherwise stated)

Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$I_{CES}$ Collector Cut Off Current	$V_{CE} = 60V$ $V_{BE} = 0$			1	$\mu A$
	$V_{CE} = 100V$ $V_{BE} = 0$			1	mA
$I_{CEV}$ Collector Cut Off Current	$V_{CE} = 60V$ $T_{case} = 150^{\circ}C$ $V_{BE} = -2V$			500	$\mu A$
$I_{CEO}$ Collector Cut Off Current	$V_{CE} = 40V$ $I_B = 0$			50	
$I_{EBO}$ Emitter Cut Off Current	$V_{EB} = 5V$ $I_C = 0$			1	$\mu A$
	$V_{EB} = 6V$ $I_C = 0$			1	mA
$V_{CEO(SUS)}^*$ Collector Emitter Saturation Voltage	$I_C = 100mA$ $I_B = 0$	80			V
$V_{CE(sat)}^*$ Collector Emitter Saturation Voltage	$I_C = 2.5A$ $I_B = 250mA$			0.75	
	$I_C = 5A$ $I_B = 500mA$			1.5	
$V_{BE(sat)}^*$ Base Emitter Saturation Voltage	$I_C = 2.5A$ $I_B = 250mA$			1.45	
	$I_C = 5A$ $I_B = 500mA$			2.2	
$V_{BE}^*$ Base Emitter Voltage	$I_C = 2.5A$ $V_{CE} = 5V$			1.45	
$h_{FE}^*$ DC Current Gain	$I_C = 50mA$ $V_{CE} = 5V$	50			
	$I_C = 2.5A$ $V_{CE} = 5V$	70		200	
	$I_C = 5A$ $V_{CE} = 5V$ $T_C = -55^{\circ}C$	35			
$C_{CBO}$ Collector Base Capacitance	$I_E = 0$ $V_{CB} = 10V$ $f = 1MHz$			250	pF
	$I_C = 0.1A$ $V_{CE} = 5V$ $f = 1KHz$	50			
$h_{FE}$ Small Signal Current Gain	$I_C = 0.5A$ $V_{CE} = 5V$ $f = 20MHz$	3.5			
	$I_C = 5A$ $V_{CC} = 30V$ $I_{B1} = 0.5A$		0.5		$\mu s$
$t_{off}$ Turn Off Time	$I_C = 5A$ $V_{CC} = 30V$ $I_{B1} = -I_{B2} = 0.5A$		1.3		$\mu s$

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

**THERMAL DATA**

$R_{thj-case}$	Thermal Resistance Junction-case	Max	15	$^{\circ}C/W$
$R_{thj-amb}$	Thermal Resistance Junction-ambient	Max	175	$^{\circ}C/W$

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.

**Semelab plc.** Telephone +44(0)1455) 556565. Fax +44(0)1455) 552612.

E-mail: [sales@semelab.co.uk](mailto:sales@semelab.co.uk) Website: <http://www.semelab.co.uk>

Document Number 3072  
Issue 3