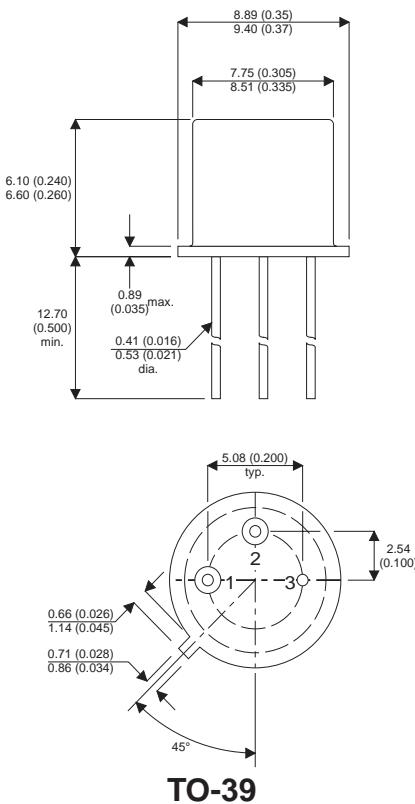


**SEME
LAB**

**2N5151
2N5153**

MECHANICAL DATA

Dimensions in mm (inches)



Pin 1 – Emitter

Pin 2 – Base

Pin 3 – Collector

HIGH SPEED MEDIUM VOLTAGE SWITCHES

DESCRIPTION

The 2N5151 and the 2N5153 are silicon epitaxial planar PNP transistors in jedec TO-39 metal case intended for use in switching applications.

The complementary NPN types are the 2N5152 and 2N5154 respectively

ABSOLUTE MAXIMUM RATINGS

$T_{CASE} = 25^\circ\text{C}$ unless otherwise stated

		2N5151	2N5153
V_{CBO}	Collector – Base Voltage	-100V	
V_{CEO}	Collector – Emitter Voltage ($I_B = 0$)	-80V	
V_{EBO}	Emitter – Base Voltage ($I_C = 0$)	-5.5V	
I_C	Continuous Collector Current	-5A	
$I_{C(PK)}$	Peak Collector Current	-10A	
I_B	Base Current	-2.5A	
P_{tot}	Total Dissipation at $T_{amb} = 25^\circ\text{C}$	1W	
	$T_{case} = 50^\circ\text{C}$	10W	
	$T_{case} = 100^\circ\text{C}$	6.7W	
T_{stg}	Operating and Storage Temperature Range	-65 to +200°C	
T_j	Junction temperature	200°C	

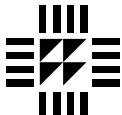
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Semelab plc. Telephone +44(0)1455 556565. Fax +44(0)1455 552612.

E-mail: sales@semelab.co.uk Website: <http://www.semelab.co.uk>

Document Number 3071

Issue 1



**SEME
LAB**

**2N5151
2N5153**

THERMAL DATA

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

ELECTRICAL CHARACTERISTICS FOR 2N5151 ($T_{case} = 25^{\circ}\text{C}$ unless otherwise stated)

Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_{CES}	$V_{CE} = -60\text{V}$ $V_{BE} = 0$			-1	μA
	$V_{CE} = -100\text{V}$ $V_{BE} = 0$			-1	mA
I_{CEV}	$V_{CE} = -60\text{V}$ $T_{case} = 150^{\circ}\text{C}$			-500	μA
	$V_{BE} = 2\text{V}$				
I_{CEO}	$V_{CE} = -40\text{V}$ $I_B = 0$			-50	
I_{EBO}	$V_{EB} = -4\text{V}$ $I_C = 0$			-1	μA
	$V_{EB} = -5.5\text{V}$ $I_C = 0$			-1	mA
$V_{CEO(SUS)}$	$I_C = -100\text{mA}$ $I_B = 0$	80			
$V_{CE(sat)}$	$I_C = -2.5\text{A}$ $I_B = -250\text{mA}$			-0.75	V
	$I_C = -5\text{A}$ $I_B = -500\text{mA}$			-1.5	
$V_{BE(sat)}$	$I_C = -2.5\text{A}$ $I_B = -250\text{mA}$			-1.45	
	$I_C = -5\text{A}$ $I_B = -500\text{mA}$			-2.2	
V_{BE}	$I_C = -2.5\text{A}$ $V_{CE} = -5\text{V}$			-1.45	
h_{FE}	$I_C = -50\text{mA}$ $V_{CE} = -5\text{V}$	20			
	$I_C = -2.5\text{A}$ $V_{CE} = -5\text{V}$	30		90	
	$I_C = -5\text{A}$ $V_{CE} = -5\text{v}$	20			
	$T_{case} = -55^{\circ}\text{C}$				
	$I_C = 2.5\text{A}$ $V_{CE} = -5\text{V}$	15			
C_{CBO}	$I_E = 0$ $V_{CB} = -10\text{V}$ $f = 1\text{MHz}$			250	pF
h_{FE}	$I_C = -0.1\text{A}$ $V_{CE} = -5\text{V}$ $f = 1\text{KHz}$	20			
	$I_C = -0.5\text{A}$ $V_{CE} = -5\text{v}$ $f = 20\text{MHz}$	3			
t_{on}	$I_C = -5\text{A}$ $V_{CC} = 30\text{v}$ $I_{B1} = -0.5\text{A}$		0.5		μs
t_{off}	$I_C = -5\text{A}$ $V_{CC} = 30\text{V}$ $I_{B1} = -I_{B2} = 0.5\text{A}$		1.3		μs

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

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**SEME
LAB**

**2N5151
2N5153**

ELECTRICAL CHARACTERISTICS FOR 2N5153 ($T_{case} = 25^\circ C$ unless otherwise stated)

Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_{CES} Collector Cut Off Current	$V_{CE} = -60V$ $V_{BE} = 0$			-1	μA
	$V_{CE} = -100V$ $V_{BE} = 0$			-1	mA
I_{CEV} Collector Cut Off Current	$V_{CE} = -60V$ $T_{case} = 150^\circ C$			-500	μA
	$V_{BE} = 2V$				
I_{CEO} Collector Cut Off Current	$V_{CE} = -40V$ $I_B = 0$			-50	
I_{EBO} Emitter Cut Off Current	$V_{EB} = -4V$ $I_C = 0$			-1	μA
	$V_{EB} = -5.5V$ $I_C = 0$			-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	
	$I_C = -5A$ $V_{CE} = -5V$	40			
	$T_{case} = -55^\circ C$				
C_{CBO} Collector Base Capacitance	$I_E = 0$ $V_{CB} = -10V$			250	pF
	$f = 1MHz$				
h_{FE} Small Signal Current Gain	$I_C = -0.1A$ $V_{CE} = -5V$	50			
	$f = 1KHz$				
t_{on} Turn On Time	$I_C = -0.5A$ $V_{CE} = -5V$	3.5			
	$f = 20MHz$				
t_{off} Turn Off Time	$I_C = -5A$ $V_{CC} = 30V$		0.5		μs
	$I_{B1} = -0.5A$				
	$I_C = -5A$ $V_{CC} = 30V$		1.3		μs
	$I_{B1} = -I_{B2} = 0.5A$				

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

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