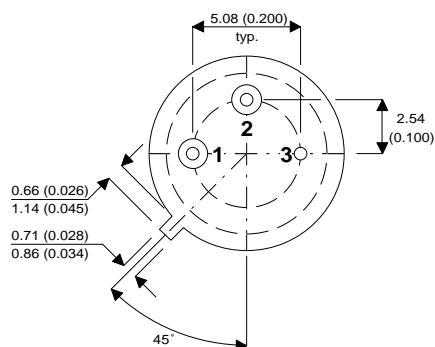
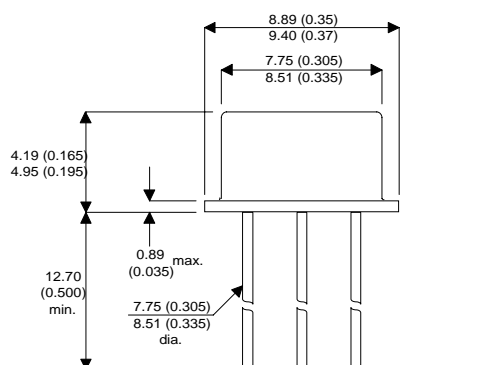


MECHANICAL DATA

Dimensions in mm (inches)



TO-39

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

$T_{CASE} = 25^{\circ}C$ 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 $T_{amb} = 25^{\circ}C$		1W
	$T_{case} = 50^{\circ}C$		10W
	$T_{case} = 100^{\circ}C$		6.7W
T_{stg}	Operating and Storage Temperature Range		-65 to +200°C
T_j	Junction temperature		200°C

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 FOR 2N5151 ($T_{case} = 25^{\circ}C$ 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		
$V_{CE(sat)}$	Collector Emitter Saturation Voltage	$I_C = -2.5A$	$I_B = -250mA$	-0.75	V	
		$I_C = -5A$	$I_B = -500mA$	-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	90	
		$I_C = -2.5A$	$V_{CE} = -5V$	30		
		$I_C = -5A$	$V_{CE} = -5v$	20		
		$T_{case} = -55^{\circ}C$				
		$I_C = 2.5A$	$V_{CE} = -5V$	15		
C_{CBO}	Collector Base Capacitance	$I_E = 0$	$V_{CB} = -10V$		250	pF
		$f = 1MHz$				
h_{FE}	Small Signal Current Gain	$I_C = -0.1A$	$V_{CE} = -5V$	20		
		$f = 1KHz$				
		$I_C = -0.5A$	$V_{CE} = -5v$	3		
		$f = 20MHz$				
t_{on}	Turn On Time	$I_C = -5A$	$V_{CC} = 30v$		0.5	μs
		$I_{B1} = -0.5A$				
t_{off}	Turn Off Time	$I_C = -5A$	$V_{CC} = 30V$		1.3	μs
		$I_{B1} = -I_{B2} = 0.5A$				

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

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	$V_{CE} = -60V$ $T_{case} = 150^{\circ}C$ $V_{BE} = 2V$			-500	μA
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			200
	$I_C = -2.5A$ $V_{CE} = -5V$	70			
	$I_C = -5A$ $V_{CE} = -5V$	40			
	$T_{case} = -55^{\circ}C$ $I_C = 2.5A$ $V_{CE} = -5V$	35			
C_{CBO} Collector Base Capacitance	$I_E = 0$ $V_{CB} = -10V$ $f = 1MHz$			250	pF
h_{FE} Small Signal Current Gain	$I_C = -0.1A$ $V_{CE} = -5V$ $f = 1KHz$	50			
	$I_C = -0.5A$ $V_{CE} = -5V$ $f = 20MHz$	3.5			
t_{on} Turn On Time	$I_C = -5A$ $V_{CC} = 30V$ $I_{B1} = -0.5A$		0.5		μs
t_{off} Turn Off Time	$I_C = -5A$ $V_{CC} = 30V$ $I_{B1} = -I_{B2} = 0.5A$		1.3		μs

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