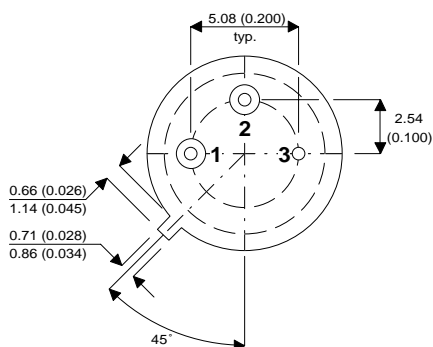
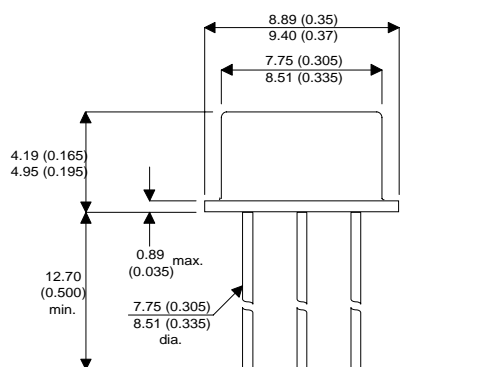


MECHANICAL DATA

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°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°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°C				
		I _C = 2.5A	V _{CE} = -5V	15		
C _{CBO}	Collector Base Capacitance	I _E = 0	V _{CB} = -10V		250	pF
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 = 300μs , δ < 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 $t_p = 300\mu s$, $\delta < 2\%$