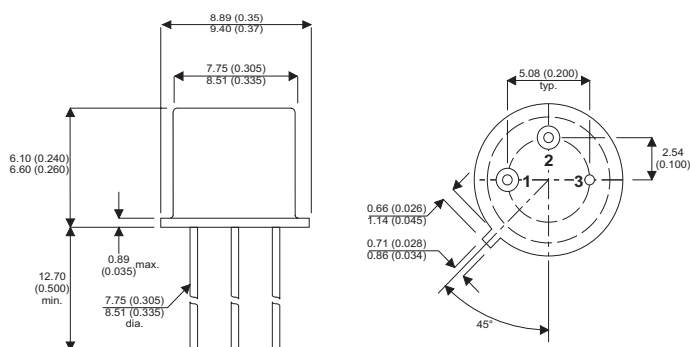


MECHANICAL DATA

Dimensions in mm (inches)



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

TO-39

Pin 1 – Emitter

Pin 2 – Base

Pin 3 – Collector

ABSOLUTE MAXIMUM RATINGS

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

		2N5152	2N5154
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 $T_{case} = 25^{\circ}C$	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	

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	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	$V_{EB} = 5V$ $I_C = 0$			1	μA
	$V_{EB} = 6V$ $I_C = 0$			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		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	$I_E = 0$ $V_{CB} = 10V$ $f = 1MHz$			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		μs
t_{off} Turn Off Time	$I_C = 5A$ $V_{CC} = 30V$ $I_{B1} = -I_{B2} = 0.5A$		1.3		μs

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

THERMAL DATA

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

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	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	$V_{EB} = 5V$ $I_C = 0$			1	μA
	$V_{EB} = 6V$ $I_C = 0$			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		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 $t_p = 300\mu s$, $\delta < 2\%$

THERMAL DATA

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