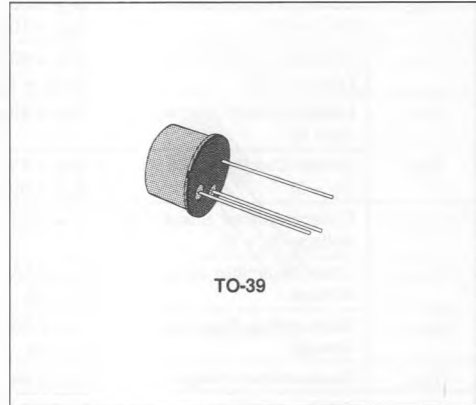


HIGH SPEED MEDIUM VOLTAGE SWITCHES

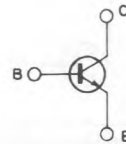
DESCRIPTION

The 2N5152 and 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.



INTERNAL SCHEMATIC DIAGRAM



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit	
V_{CBO}	Collector-base Voltage ($I_E = 0$)	100	V	
V_{CEO}	Collector-emitter Voltage ($I_B = 0$)	80	V	
V_{EBO}	Emitter-base Voltage ($I_C = 0$)	6	V	
I_C	Collector Current	2	A	
I_{CM}	Collector Peak Current	10	A	
I_B	Base Current	1	A	
P_{tot}	Total Power Dissipation at	$T_{case} \leq 50^\circ\text{C}$	10	W
		$T_{case} \leq 100^\circ\text{C}$	6.7	W
		$T_{amb} \leq 25^\circ\text{C}$	1	W
T_{stg}	Storage Temperature	- 65 to 200	$^\circ\text{C}$	
T_j	Junction Temperature	200	$^\circ\text{C}$	

THERMAL DATA

$R_{th\ j-case}$	Thermal Resistance Junction-case	Max	15	°C/W
$R_{th\ j-amb}$	Thermal Resistance Junction-ambient	Max	175	°C/W

ELECTRICAL CHARACTERISTICS ($T_{case} = 25^{\circ}C$ unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_{CES}	Collector Cutoff Current ($V_{BE} = 0$)	$V_{CE} = 60V$ $V_{CE} = 100V$			1 1	μA mA
I_{CEV}	Collector Cutoff Current ($V_{BE} = -2V$)	$V_{CE} = 60V$ $T_{case} = 150^{\circ}C$			500	μA
I_{CEO}	Collector Cutoff Current ($I_B = 0$)	$V_{CE} = 40V$			50	μA
I_{EBO}	Emitter Cutoff Current ($I_C = 0$)	$V_{EB} = 5V$ $V_{EB} = 6V$			1 1	μA mA
$V_{CEO(sus)}^*$	Collector-emitter Sustaining Voltage ($I_B = 0$)	$I_C = 100mA$	80			V
$V_{CE(sat)}^*$	Collector-emitter Saturation Voltage	$I_C = 2.5A$ $I_B = 250mA$ $I_C = 5A$ $I_B = 500mA$			0.75 1.5	V V
$V_{BE(sat)}^*$	Base-emitter Saturation Voltage	$I_C = 2.5A$ $I_B = 250mA$ $I_C = 5A$ $I_B = 500mA$			1.45 2.2	V V
V_{BE}^*	Base-emitter Voltage	$I_C = 2.5A$ $V_{CE} = 5V$			1.45	V
h_{FE}^*	DC Current Gain	for 2N5152 $I_C = 50mA$ $V_{CE} = 5V$ $I_C = 2.5A$ $V_{CE} = 5V$ $I_C = 5A$ $V_{CE} = 5V$ $T_{case} = -55^{\circ}C$ $I_C = 2.5A$ $V_{CE} = 5V$ for 2N5154 $I_C = 50mA$ $V_{CE} = 5V$ $I_C = 2.5A$ $V_{CE} = 5V$ $I_C = 5A$ $V_{CE} = 5V$ $T_{case} = -55^{\circ}C$ $I_C = 2.5A$ $V_{CE} = 5V$	20 30 20 15 50 70 40 35		90 200	
C_{CBO}	Collector-base Capacitance	$I_E = 0$ $V_{CB} = 10V$ $f = 1MHz$			250	pF
h_{fe}	Small Signal Current Gain	$I_C = 0.1A$ $V_{CE} = 5V$ $f = 1KHz$ for 2N5152 for 2N5154 $I_C = 0.5A$ $V_{CE} = 5V$ $f = 20MHz$ for 2N5152 for 2N5154	20 50 3 3.5			
t_{on}	Turn on Time	$I_C = 5A$ $I_{B1} = 0.5A$ $V_{CC} = 30V$		0.5		μs
t_{off}	Turn off Time	$I_C = 5A$ $I_{B1} = -I_{B2} = 0.5A$ $V_{CC} = 30V$		1.3		μs

* Pulsed : pulse duration = 300 μs , duty cycle < 2%.