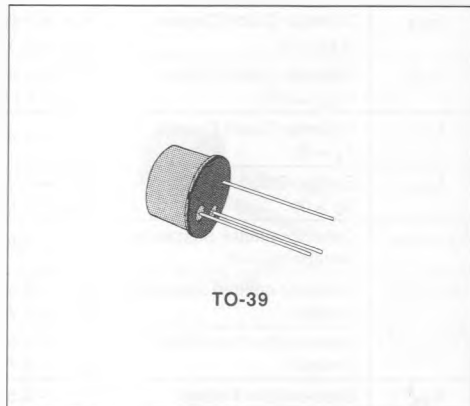


HIGH SPEED MEDIUM VOLTAGE SWITCHES

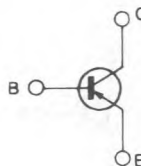
DESCRIPTION

The 2N5151 and 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.



INTERNAL SCHEMATIC DIAGRAM



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value		Unit
		2N5151	2N5153	
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 ($I_C = 0$)	- 5.5		V
I_C	Collector Current	- 5		A
I_{CM}	Collector Peak Current	- 10		A
I_B	Base Current	- 2.5		A
P_{tot}	Total Power Dissipation at $T_{case} \leq 50^\circ\text{C}$ $T_{case} \leq 100^\circ\text{C}$ $T_{amb} \leq 25^\circ\text{C}$	10		W
		6.7		W
		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 ($T_{case} = 25\text{ °C}$ unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_{CES}	Collector Cutoff Current ($V_{BE} = 0$)	$V_{CE} = -60\text{ V}$ $V_{CE} = -100\text{ V}$			-1 -1	μA mA
I_{CEV}	Collector Cutoff Current ($V_{BE} = 2\text{ V}$)	$V_{CE} = -60\text{ V}$ $T_{case} = 150\text{ °C}$			-500	μA
I_{CEO}	Collector Cutoff Current ($I_B = 0$)	$V_{CE} = -40\text{ V}$			-50	μA
I_{EBO}	Emitter Cutoff Current ($I_C = 0$)	$V_{EB} = -4\text{ V}$ $V_{EB} = -5.5\text{ V}$			-1 -1	μA mA
$V_{CEO(sus)}^*$	Collector-emitter Sustaining Voltage ($I_B = 0$)	$I_C = -100\text{ mA}$	-80			V
$V_{CE(sat)}^*$	Collector-emitter Saturation Voltage	$I_C = -2.5\text{ A}$ $I_B = -250\text{ mA}$ $I_C = -5\text{ A}$ $I_B = -500\text{ mA}$			-0.75 -1.5	V V
$V_{BE(sat)}^*$	Base-emitter Saturation Voltage	$I_C = -2.5\text{ A}$ $I_B = -250\text{ mA}$ $I_C = -5\text{ A}$ $I_B = -500\text{ mA}$			-1.45 -2.2	V V
V_{BE}^*	Base-emitter Voltage	$I_C = -2.5\text{ A}$ $V_{CE} = -5\text{ V}$			-1.45	V
h_{FE}^*	DC Current Gain	for 2N5151 $I_C = -50\text{ mA}$ $V_{CE} = -5\text{ V}$ $I_C = -2.5\text{ A}$ $V_{CE} = -5\text{ V}$ $I_C = -5\text{ A}$ $V_{CE} = -5\text{ V}$ $T_{case} = -55\text{ °C}$ $I_C = 2.5\text{ A}$ $V_{CE} = -5\text{ V}$ for 2N5153 $I_C = -50\text{ mA}$ $V_{CE} = -5\text{ V}$ $I_C = -2.5\text{ A}$ $V_{CE} = -5\text{ V}$ $I_C = -5\text{ mA}$ $V_{CE} = -5\text{ V}$ $T_{case} = -55\text{ °C}$ $I_C = 2.5\text{ A}$ $V_{CE} = -5\text{ V}$	20 30 20 15 50 70 40 35		90 200	
C_{CBO}	Collector-base Capacitance	$I_E = 0$ $V_{CB} = -10\text{ V}$ $f = 1\text{ MHz}$			250	pF
h_{fe}	Small Signal Current Gain	$I_C = -0.1\text{ A}$ $V_{CE} = -5\text{ V}$ $f = 1\text{ KHz}$ for 2N5151 for 2N5153 $I_C = -0.5\text{ A}$ $V_{CE} = -5\text{ V}$ $f = 20\text{ MHz}$ for 2N5151 for 2N5153	20 50 3 3.5			
t_{on}	Turn on Time	$I_C = -5\text{ A}$ $I_{B1} = -0.5\text{ A}$ $V_{CC} = 30\text{ V}$		0.5		μs
t_{off}	Turn off Time	$I_C = -5\text{ A}$ $I_{B1} = -I_{B2} = 0.5\text{ A}$ $V_{CC} = 30\text{ V}$		1.3		μs

* Pulsed : pulse duration = 300 μs , duty cycle $\leq 2\%$.