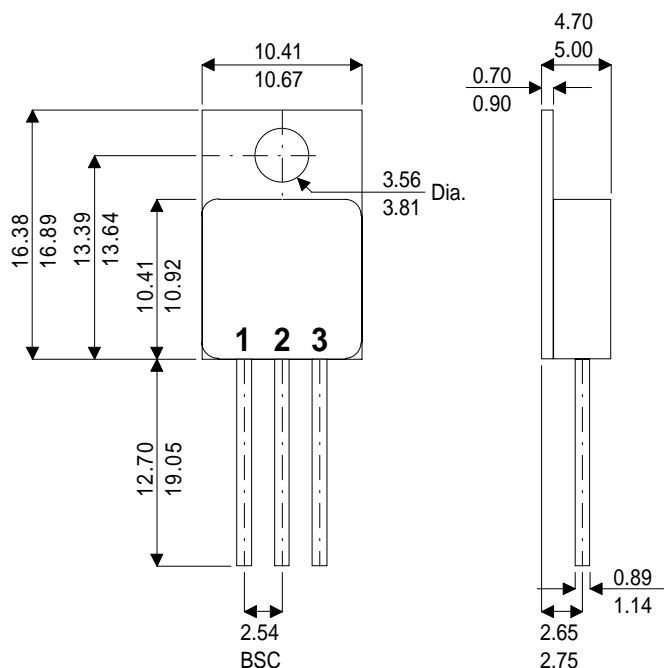


MECHANICAL DATA

Dimensions in mm (inches)



HIGH SPEED MEDIUM VOLTAGE SWITCHES

DESCRIPTION

The 2N5151-220M and the 2N5153-220M are silicon epitaxial planar PNP transistors in TO-220 (JEDEC TO-257AB) metal case intended for use in switching applications.

The complementary NPN types are the 2N5152-220M and 2N5154-220M respectively

TO-220 (TO-257AB)

Pin 1 – Base Pin 2 – Collector Pin 3 – Emitter

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 $T_{amb} = 25^{\circ}C$		4.4W
		$T_{case} = 50^{\circ}C$	21.4W
		$T_{case} = 100^{\circ}C$	14.3W
T_{stg}	Storage Temperature Range		-65 to +200°C
T_j	Operating Junction temperature		200°C

Semelab Plc reserves the right to change test conditions, parameter limits and package dimensions without notice. Information furnished by Semelab is believed to be both accurate and reliable at the time of going to press. However Semelab assumes no responsibility for any errors or omissions discovered in its use. Semelab encourages customers to verify that datasheets are current before placing orders.

THERMAL DATA

$R_{thj-case}$	Thermal Resistance Junction-case	Max	7	$^{\circ}C/W$
$R_{thj-amb}$	Thermal Resistance Junction-ambient	Max	40	$^{\circ}C/W$

ELECTRICAL CHARACTERISTICS FOR 2N5151-220M ($T_{case} = 25^{\circ}C$ 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 2N5153-220M ($T_{case} = 25^{\circ}C$ 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			
$V_{CE(sat)}$ 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	$I_C = -50mA$ $V_{CE} = -5V$	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 $t_p = 300\mu s$, $\delta < 2\%$