

2SD2153

- 1) Low saturation voltage,
typically $V_{CE(sat)} = 0.12V$ at $I_C = I_B = 1A / 20mA$
- 2) Excellent DC current gain characteristics.

[illegible]

Parameter	Symbol	Limits	Unit
Collector-base voltage	V _{CB0}	30	V
Collector-emitter voltage	V _{CE0}	25	V
Emitter-base voltage	V _{EB0}	6	V
Collector current	I _c	2	A(DC)
		3	A(Pulse) *1
Collector power dissipation	P _C	0.5	W
		2 *2	
Junction temperature	T _j	150	°C
Storage temperature	T _{stg}	-55 to +150	°C

*1 Single pulse, Pw=10ms
*2 Mounted on a 40×40×0.7mm Ceramic substrate

Type	2SD2153
Package	MPT3
hFE	UVW
Marking	DN *
Code	T100
Basic ordering unit (pieces)	1000

* Denotes h_{EE}

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	BV_{CBO}	30	—	—	V	$I_C = 50\mu A$
Collector-emitter breakdown voltage	BV_{CEO}	25	—	—	V	$I_C = 1mA$
Emitter-base breakdown voltage	BV_{EBO}	6	—	—	V	$I_E = 50\mu A$
Collector cutoff current	I_{CBO}	—	—	0.5	μA	$V_{CB} = 20V$
Emitter cutoff current	I_{EBO}	—	—	0.5	μA	$V_{EB} = 5V$
Collector-emitter saturation voltage	$V_{CE(sat)}$	—	0.12	0.5	V	$I_C/I_E = 1A/20mA$ *
DC current transfer ratio	h_{FE}	560	—	2700	—	$V_{CE}/I_C = 6V/0.5A$
Transition frequency	f_T	—	110	—	MHz	$V_{CE} = 10V, I_E = -10mA, f = 100MHz$
Output capacitance	C_{ob}	—	22	—	pF	$V_{CB} = 10V, I_E = 0A, f = 1MHz$

* Measured using pulse current.

Graph of Collector Current (I_c) versus Collector to Emitter Voltage (V_{CE}) for various base currents (I_b). The graph shows that I_c increases with V_{CE} and is approximately equal to I_b for $V_{CE} > 1V$. The curves are labeled for $I_b = 1mA, 2mA, 3mA, 4mA, 5mA, 6mA, 7mA, 8mA, 9mA, 10mA$.

This graph shows the relationship between Collector Current (I_c) and Base to Emitter Voltage (V_{BE}) for the 2SA1000 transistor. The y-axis represents Collector Current in Amperes (A) on a logarithmic scale from 1m to 10. The x-axis represents Base to Emitter Voltage in Volts (V) on a linear scale from 0 to 1.5. Three curves are plotted for different ambient temperatures: $T_a = 100^\circ\text{C}$, 25°C , and -25°C . The curves show that for a given collector current, the base-emitter voltage decreases as the temperature increases. A note in the graph states: "These data are made from representative value of specific lot. The data do not indicate the worst value or guaranteed value. And you can not guarantee the value based on the data."

Graph showing Collector Saturation Voltage ($V_{CE(sat)}$) versus Collector Current (I_C) for the 2N2222A transistor. The curves are plotted for different values of the current gain β (50, 40, 30, 10). The voltage is on a logarithmic scale (1mV to 1V) and the current is on a logarithmic scale (1mA to 5A). The curves show that $V_{CE(sat)}$ increases with I_C and decreases as β increases.

The graph shows the Collector Saturation Voltage ($V_{CE(sat)}$) on the y-axis versus the Collector Current (I_C) on the x-axis for the 2N4350 JFET. The y-axis is logarithmic, ranging from 1mV to 500mV. The x-axis is also logarithmic, ranging from 1mA to 5A. Three curves are plotted for different temperatures: $T_a = 100^\circ\text{C}$, 25°C , and -25°C . The curves show that $V_{CE(sat)}$ increases with I_C and is higher at higher temperatures. A note in the graph states: "This data are made from representative value of specific lot. The data do not indicate the worst value or guaranteed value. And we can not guarantee the value based on the data."

Graph showing Transition Frequency (f_T) in MHz versus Emitter Current (I_E) in mA for the 2N4350 JFET. The graph is plotted on a logarithmic scale for both axes. The y-axis (f_T) ranges from 1 to 1000 MHz, and the x-axis (I_E) ranges from 1 to 1000 mA. The curve shows that f_T increases with I_E up to approximately 150 mA, after which it slightly decreases. The conditions are $V_{CE}=6V$ and $T_a=25^\circ C$.

Emitter Current (I_E) [mA]	Transition Frequency (f_T) [MHz]
1	~50
2	~70
5	~120
10	~150
20	~180
50	~190
100	~200
150	~200
200	~180

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And we can not guarantee the value based on the data.

Graph showing Collector Output Capacitance (C_{ob}) in pF versus Collector to Base Voltage (V_{cb}) in V for the 2N4350 JFET. The graph is plotted on a logarithmic scale for both axes. The y-axis (C_{ob}) ranges from 10 to 1000 pF, and the x-axis (V_{cb}) ranges from 0.1 to 100 V. The curve shows that C_{ob} decreases as V_{cb} increases. Test conditions: $T_a = 25^\circ\text{C}$, $f = 1\text{MHz}$, $I_c = 0\text{A}$.

Collector to Base Voltage (V_{cb}) (V)	Collector Output Capacitance (C_{ob}) (pF)
0.1	~80
0.2	~70
0.5	~60
1.0	~50
2.0	~35
5.0	~20
10.0	~15
20.0	~12
30.0	~10

Graph showing Emitter Input Capacitance (pF) versus Emitter to Base Voltage (V_{EB} (V)). The Y-axis is logarithmic, ranging from 10 to 1000 pF. The X-axis is logarithmic, ranging from 0.1 to 10 V. The curve shows that the capacitance decreases as the voltage increases, starting around 180 pF at 0.1 V and dropping sharply after 2 V to about 50 pF at 10 V.

Test conditions:
 $T_a = 25^\circ\text{C}$
 $f = 1\text{MHz}$
 $I_c = 0\text{A}$

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