



## TO-92 Plastic-Encapsulate Transistors

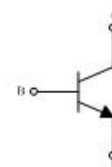
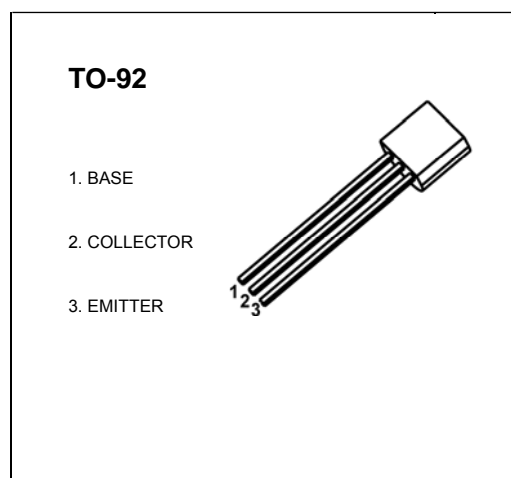
### 3DD13001B TRANSISTOR (NPN)

#### FEATURE

- power switching applications

#### MAXIMUM RATINGS (T<sub>a</sub>=25°C unless otherwise noted)

Symbol	Parameter	Value	Unit
V <sub>CB0</sub>	Collector -Base Voltage	600	V
V <sub>CE0</sub>	Collector-Emitter Voltage	400	V
V <sub>EBO</sub>	Emitter-Base Voltage	7	V
I <sub>C</sub>	Collector Current -Continuous	0.2	A
P <sub>C</sub>	Collector Power Dissipation	0.75	W
T <sub>J</sub>	Junction Temperature	150	°C
T <sub>stg</sub>	Storage Temperature	-55~150	°C



#### ELECTRICAL CHARACTERISTICS (T<sub>a</sub>=25°C unless otherwise specified)

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Collector-base breakdown voltage	V <sub>(BR)CBO</sub>	I <sub>C</sub> = 100μA, I <sub>E</sub> = 0	600			V
Collector-emitter breakdown voltage	V <sub>(BR)CEO</sub>	I <sub>C</sub> = 1mA, I <sub>B</sub> = 0	400			V
Emitter-base breakdown voltage	V <sub>(BR)EBO</sub>	I <sub>E</sub> = 100μA, I <sub>C</sub> = 0	7			V
Collector cut-off current	I <sub>CB0</sub>	V <sub>CB</sub> = 600V, I <sub>E</sub> = 0			100	μA
Collector cut-off current	I <sub>CE0</sub>	V <sub>CE</sub> = 400V, I <sub>B</sub> = 0			200	μA
Emitter cut-off current	I <sub>EBO</sub>	V <sub>EB</sub> = 7V, I <sub>C</sub> = 0			100	μA
DC current gain	h <sub>FE(1)</sub>	V <sub>CE</sub> = 20V, I <sub>C</sub> = 20mA	10		40	
	h <sub>FE(2)</sub>	V <sub>CE</sub> = 10V, I <sub>C</sub> = 0.25 mA	5			
Collector-emitter saturation voltage	V <sub>CE(sat)</sub>	I <sub>C</sub> = 50mA, I <sub>B</sub> = 10 mA			0.5	V
Base-emitter saturation voltage	V <sub>BE(sat)</sub>	I <sub>C</sub> = 50 mA, I <sub>B</sub> = 10mA			1.2	V
Transition frequency	f <sub>T</sub>	V <sub>CE</sub> = 20V, I <sub>C</sub> = 20mA f = 1MHz	8			MHz
Fall time	t <sub>f</sub>	I <sub>C</sub> = 50mA, I <sub>B1</sub> = -I <sub>B2</sub> = 5mA, V <sub>CC</sub> = 45V			0.3	μs
Storage time	t <sub>s</sub>				1.5	μs

#### CLASSIFICATION OF h<sub>FE(1)</sub>

Range	10-13	13-16	16-19	19-22	22-25	25-28	28-31	31-34	34-37	37-40
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