



TO-92 Plastic-Encapsulate Transistors

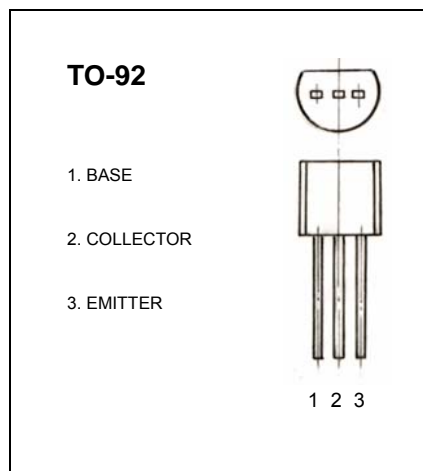
13001 TRANSISTOR (NPN)

FEATURES

power switching applications

MAXIMUM RATINGS ($T_A=25^{\circ}\text{C}$ unless otherwise noted)

Symbol	Parameter	Value	Units
V_{CBO}	Collector -Base Voltage	600	V
V_{CEO}	Collector-Emitter Voltage	400	V
V_{EBO}	Emitter-Base Voltage	7	V
I_C	Collector Current -Continuous	0.2	A
P_C	Collector Power Dissipation	0.75	W
T_J	Junction Temperature	150	$^{\circ}\text{C}$
T_{stg}	Storage Temperature	-55-150	$^{\circ}\text{C}$



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

Parameter	Symbol	Test conditions	MIN	TYP	MAX	UNIT
Collector-base breakdown voltage	$V_{(BR)CBO}$	$I_C = 100\mu\text{A}$, $I_E = 0$	600			V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	$I_C = 1\text{mA}$, $I_B = 0$	400			V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	$I_E = 100\mu\text{A}$, $I_C = 0$	7			V
Collector cut-off current	I_{CBO}	$V_{CB} = 600\text{V}$, $I_E = 0$			100	μA
Collector cut-off current	I_{CEO}	$V_{CE} = 400\text{V}$, $I_B = 0$			200	μA
Emitter cut-off current	I_{EBO}	$V_{EB} = 7\text{V}$, $I_C = 0$			100	μA
DC current gain	$h_{FE(1)}$	$V_{CE} = 20\text{V}$, $I_C = 20\text{mA}$	10		40	
	$h_{FE(2)}$	$V_{CE} = 10\text{V}$, $I_C = 0.25\text{mA}$	5			
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C = 50\text{mA}$, $I_B = 10\text{mA}$			0.5	V
Base-emitter saturation voltage	$V_{BE(sat)}$	$I_C = 50\text{mA}$, $I_B = 10\text{mA}$			1.2	V
Transition frequency	f_T	$V_{CE} = 20\text{V}$, $I_C = 20\text{mA}$ $f = 1\text{MHz}$	8			MHz
Fall time	t_f	$V_{CC} = 45\text{V}$, $I_C = 50\text{mA}$ $I_{B1} = -I_{B2} = 5\text{mA}$			0.3	μs
Storage time	t_s				1.5	μs

CLASSIFICATION OF $h_{FE(1)}$

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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