



## 2N4401 TRANSISTOR (NPN)

### FEATURES

Power dissipation



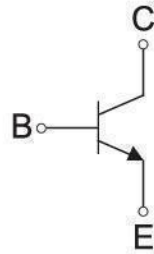
TO-92

1. EMITTER

2. BASE

3. COLLECTOR

### Equivalent Circuit



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

Symbol	Parameter	Value	Unit
V <sub>CB0</sub>	Collector-Base Voltage	60	V
V <sub>CEO</sub>	Collector-Emitter Voltage	40	V
V <sub>EB0</sub>	Emitter-Base Voltage	6	V
I <sub>C</sub>	Collector Current -Continuous	600	mA
P <sub>C</sub>	Collector Power dissipation	0.625	W
T <sub>J</sub>	Junction Temperature	150	°C
T <sub>stg</sub>	Storage Temperature	-55 ~ +150	°C
R <sub>θJA</sub>	Thermal Resistance, junction to Ambient	357	°C/mW

## ELECTRICAL CHARACTERISTICS

$T_a=25^\circ\text{C}$  unless otherwise specified

Parameter	Symbol	Test conditions	Min	Max	Unit
Collector-base breakdown voltage	$V_{(BR)CBO}$	$I_C=100\mu\text{A}$ , $I_E=0$	60		V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	$I_C=1\text{mA}$ , $I_B=0$	40		V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	$I_E=100\mu\text{A}$ , $I_C=0$	6		V
Collector cut-off current	$I_{CBO}$	$V_{CB}=35\text{V}$ , $I_E=0$		0.1	$\mu\text{A}$
Emitter cut-off current	$I_{EBO}$	$V_{EB}=5\text{V}$ , $I_C=0$		0.1	$\mu\text{A}$
DC current gain	$h_{FE(1)}$	$V_{CE}=1\text{V}$ , $I_C=0.1\text{mA}$	20		
	$h_{FE(2)}$	$V_{CE}=1\text{V}$ , $I_C=1\text{mA}$	40		
	$h_{FE(3)}$	$V_{CE}=1\text{V}$ , $I_C=10\text{mA}$	80		
	$h_{FE(4)}$	$V_{CE}=1\text{V}$ , $I_C=150\text{mA}$	100	300	
	$h_{FE(5)}$	$V_{CE}=2\text{V}$ , $I_C=500\text{mA}$	40		
Collector-emitter saturation voltage	$V_{CE(sat)1}$	$I_C=150\text{mA}$ , $I_B=15\text{mA}$		0.4	V
	$V_{CE(sat)2}$	$I_C=500\text{mA}$ , $I_B=50\text{mA}$		0.75	V
Base-emitter saturation voltage	$V_{BE(sat)1}$	$I_C=150\text{mA}$ , $I_B=15\text{mA}$		0.95	V
	$V_{BE(sat)2}$	$I_C=500\text{mA}$ , $I_B=50\text{mA}$		1.2	V
Transition frequency	$f_T$	$V_{CE}=10\text{V}$ , $I_C=20\text{mA}$ , $f=100\text{MHz}$	250		MHz
Output Capacitance	$C_{ob}$	$V_{CB}=10\text{V}$ , $I_E=0$ , $f=100\text{KHz}$		6.5	pF
Delay time	$t_d$	$V_{CC}=30\text{V}$ , $V_{BE(OFF)}=2\text{V}$		15	ns
Rise time	$t_r$		$I_C=150\text{mA}$ , $I_{B1}=15\text{mA}$		20
Storage time	$t_s$	$V_{CC}=30\text{V}$ , $I_C=150\text{mA}$		225	ns
Fall time	$t_f$		$I_{B1}=-I_{B2}=15\text{mA}$		30

# Typical Characteristics

