



ShenzhenTaimaoTechnology Co.,Ltd.
TO-92 Plastic-Encapsulate Transistors

2N4400 TRANSISTOR (NPN)

FEATURES

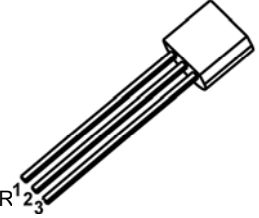
- General Purpose Amplifier Transistor

TO – 92

1. EMITTER

2. BASE

3. COLLECTOR¹₂₃



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

Symbol	Parameter	Value	Unit
V_{CBO}	Collector-Base Voltage	60	V
V_{CEO}	Collector-Emitter Voltage	40	V
V_{EBO}	Emitter-Base Voltage	6	V
I_C	Collector Current	0.6	A
P_C	Collector Power Dissipation	625	mW
$R_{\theta JA}$	Thermal Resistance From Junction To Ambient	200	$^{\circ}\text{C}/\text{W}$
T_j	Junction Temperature	150	$^{\circ}\text{C}$
T_{stg}	Storage Temperature	-55~+150	$^{\circ}\text{C}$

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

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Collector-base breakdown voltage	$V_{(BR)CBO}$	$I_C=0.1\text{mA}, I_E=0$	60			V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	$I_C=1\text{mA}, I_B=0$	40			V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	$I_E=0.1\text{mA}, I_C=0$	6			V
Collector cut-off current	I_{CBO}	$V_{CB}=60\text{V}, I_E=0$			0.1	μA
Emitter cut-off current	I_{EBO}	$V_{EB}=6\text{V}, I_C=0$			0.1	μA
DC current gain	h_{FE}^*	$V_{CE}=1\text{V}, I_C=1\text{mA}$	20			
		$V_{CE}=1\text{V}, I_C=10\text{mA}$	40			
		$V_{CE}=1\text{V}, I_C=150\text{mA}$	50		150	
		$V_{CE}=2\text{V}, I_C=500\text{mA}$	20			
Collector-emitter saturation voltage	$V_{CE(sat)}^*$	$I_C=150\text{mA}, I_B=15\text{mA}$			0.4	V
		$I_C=500\text{mA}, I_B=50\text{mA}$			0.75	V
Base-emitter saturation voltage	$V_{BE(sat)}^*$	$I_C=150\text{mA}, I_B=15\text{mA}$	0.75		0.95	V
		$I_C=500\text{mA}, I_B=50\text{mA}$			1.2	V
Collector output capacitance	C_{ob}	$V_{CB}=5\text{V}, I_E=0, f=1\text{MHz}$			6.5	pF
Emitter input capacitance	C_{ib}	$V_{EB}=5\text{V}, I_C=0, f=1\text{MHz}$			30	pF
Transition frequency	f_T	$V_{CE}=10\text{V}, I_C=20\text{mA}, f=100\text{MHz}$	200			MHz

*Pulse test: pulse width $\leq 300\mu\text{s}$, duty cycles 2.0%.