



**TO-92 Plastic-Encapsulate Transistors**

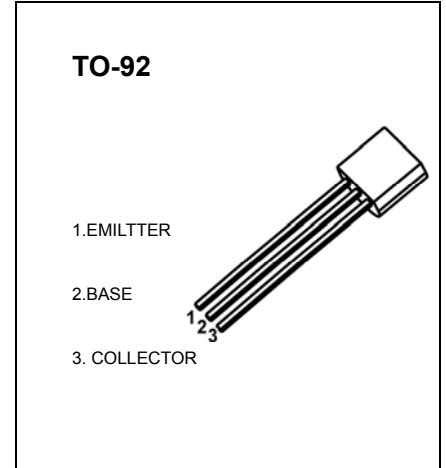
**2N4401** TRANSISTOR (NPN)

**FEATURES**

Power dissipation

**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>EBO</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

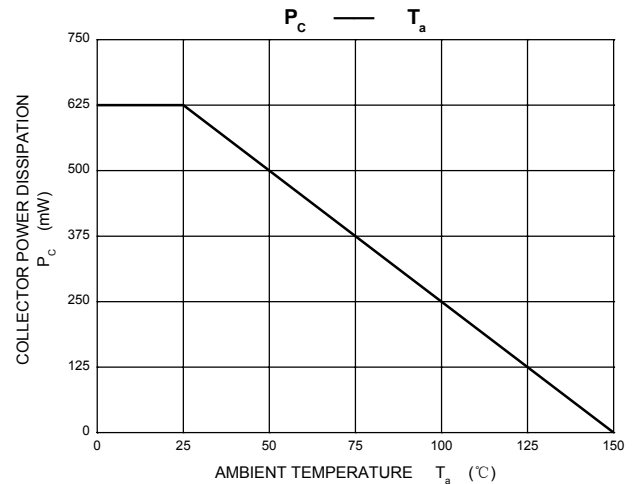
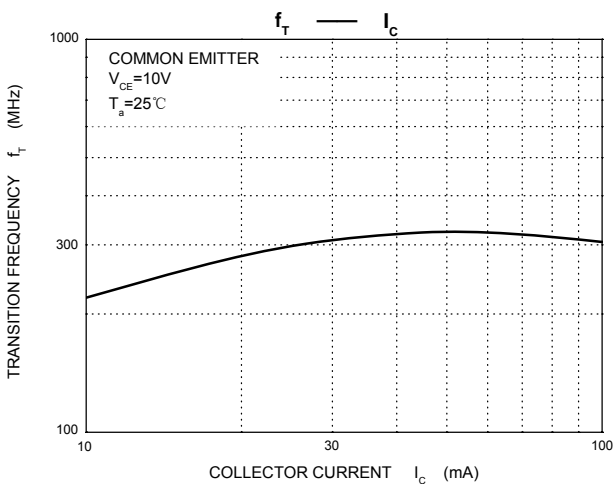
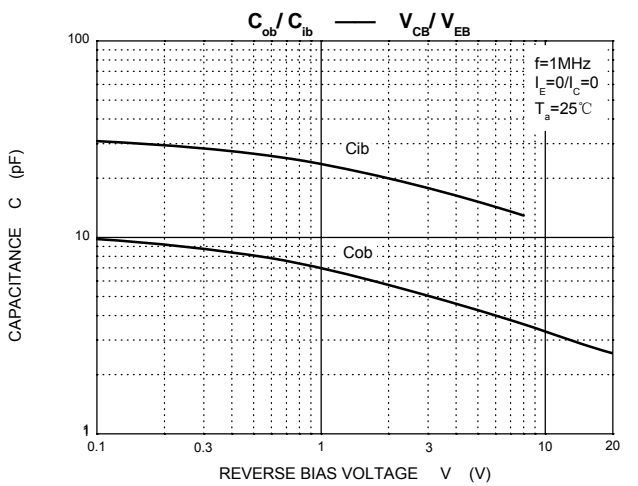
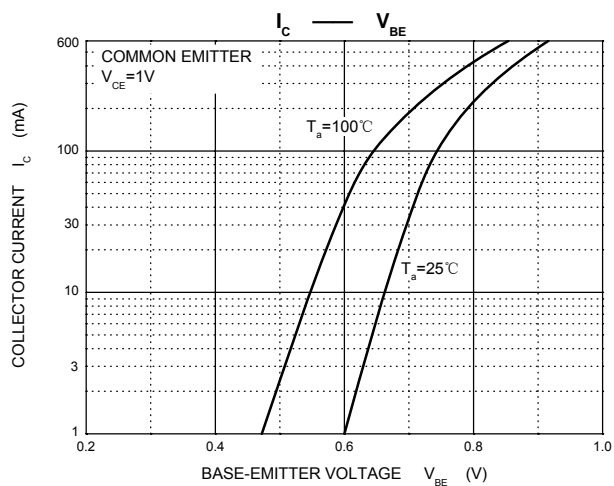
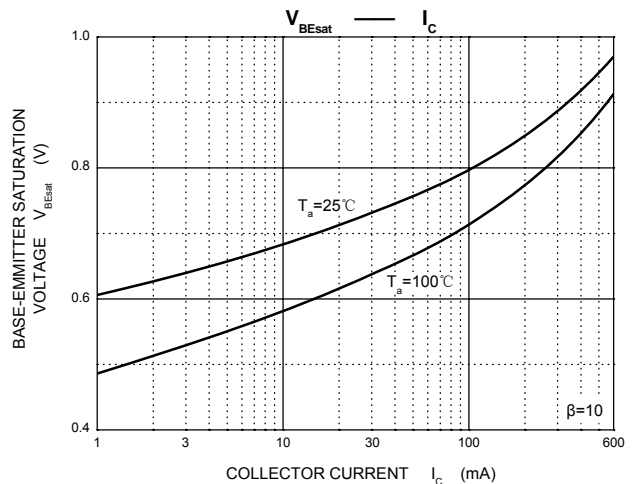
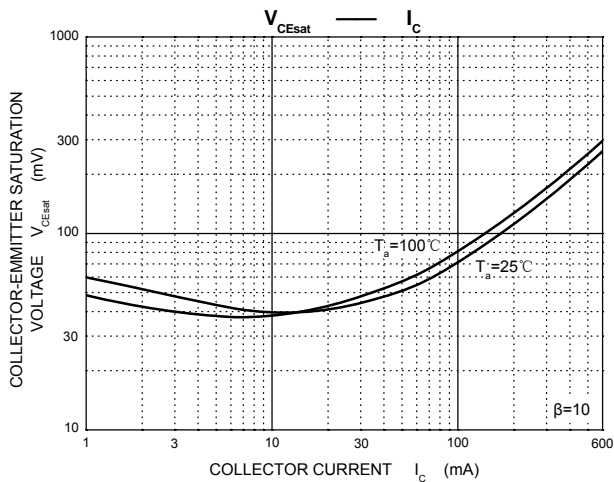
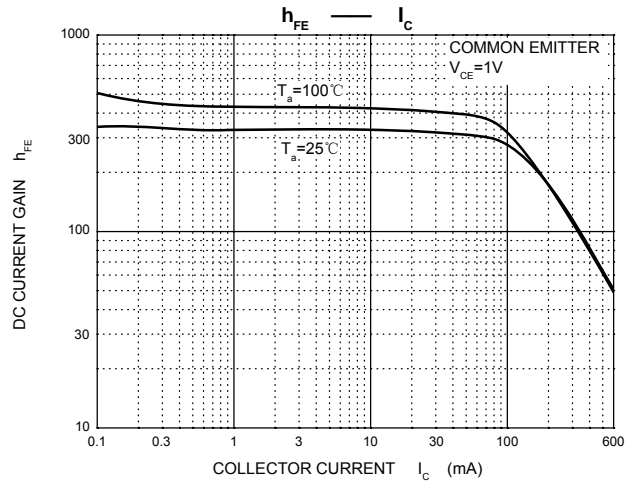
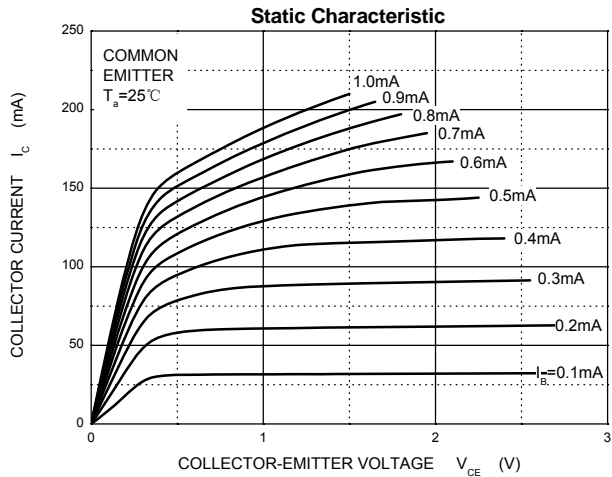


**ELECTRICAL CHARACTERISTICS (T<sub>a</sub>=25°C unless otherwise specified)**

Parameter	Symbol	Test conditions	Min	Max	Unit
<b>Collector-base breakdown voltage</b>	V <sub>(BR)CBO</sub>	I <sub>C</sub> =100μA, I <sub>E</sub> =0	60		V
<b>Collector-emitter breakdown voltage</b>	V <sub>(BR)CEO</sub>	I <sub>C</sub> = 1mA, I <sub>B</sub> =0	40		V
<b>Emitter-base breakdown voltage</b>	V <sub>(BR)EBO</sub>	I <sub>E</sub> =100μA, I <sub>C</sub> =0	6		V
<b>Collector cut-off current</b>	I <sub>CBO</sub>	V <sub>CB</sub> =35V, I <sub>E</sub> =0		0.1	μA
<b>Emitter cut-off current</b>	I <sub>EBO</sub>	V <sub>EB</sub> =5V, I <sub>C</sub> =0		0.1	μA
<b>DC current gain</b>	h <sub>FE(1)</sub>	V <sub>CE</sub> =1V, I <sub>C</sub> = 0.1mA	20		
	h <sub>FE(2)</sub>	V <sub>CE</sub> =1V, I <sub>C</sub> =1mA	40		
	h <sub>FE(3)</sub>	V <sub>CE</sub> =1V, I <sub>C</sub> = 10mA	80		
	h <sub>FE(4)</sub>	V <sub>CE</sub> =1V, I <sub>C</sub> =150mA	100	300	
	h <sub>FE(5)</sub>	V <sub>CE</sub> =2V, I <sub>C</sub> = 500mA	40		
<b>Collector-emitter saturation voltage</b>	V <sub>CE(sat)1</sub>	I <sub>C</sub> =150 mA, I <sub>B</sub> =15mA		0.4	V
	V <sub>CE(sat)2</sub>	I <sub>C</sub> =500 mA, I <sub>B</sub> =50mA		0.75	V
<b>Base-emitter saturation voltage</b>	V <sub>BE(sat)1</sub>	I <sub>C</sub> =150 mA, I <sub>B</sub> =15mA		0.95	V
	V <sub>BE(sat)2</sub>	I <sub>C</sub> =500 mA, I <sub>B</sub> =50mA		1.2	V
<b>Transition frequency</b>	f <sub>T</sub>	V <sub>CE</sub> = 10V, I <sub>C</sub> = 20mA, f=100MHz	250		MHz
<b>Output Capacitance</b>	C <sub>ob</sub>	V <sub>CB</sub> =10V, I <sub>E</sub> = 0, f=100KHz		6.5	pF
<b>Delay time</b>	t <sub>d</sub>	V <sub>CC</sub> =30V, V <sub>BE(OFF)</sub> =2V I <sub>C</sub> =150mA, I <sub>B1</sub> =15mA		15	nS
<b>Rise time</b>	t <sub>r</sub>			20	nS
<b>Storage time</b>	t <sub>s</sub>	V <sub>CC</sub> =30V, I <sub>C</sub> =150mA I <sub>B1</sub> =-I <sub>B2</sub> = 15mA		225	nS
<b>Fall time</b>	t <sub>f</sub>			30	nS

# Typical Characteristics

# 2N4401



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