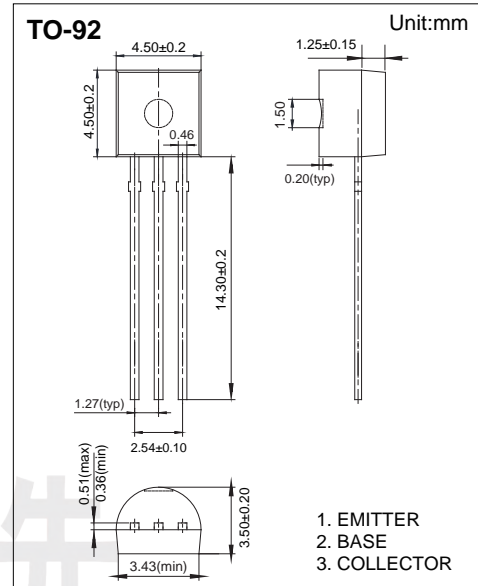


# Transistor

## NPN Transistors 2N2222

### ■ Features

- High current (max. 800 mA)
- Low voltage (max. 40 V)
- Complementary to 2N2907



### ■ Absolute Maximum Ratings Ta = 25°C

Parameter	Symbol	Rating	Unit	
Collector - Base Voltage	V <sub>CB0</sub>	60	V	
Collector - Emitter Voltage	V <sub>CE0</sub>	30		
Emitter - Base Voltage	V <sub>EB0</sub>	5		
Collector Current - Continuous	I <sub>c</sub>	0.8	A	
Peak Collector Current	I <sub>CM</sub>	0.8		
Peak Base Current	I <sub>BM</sub>	0.2		
Collector Power Dissipation	P <sub>c</sub>	T <sub>amb</sub> ≤ 25 °C	500	mW
		T <sub>case</sub> ≤ 25 °C	1.2	W
Thermal Resistance From Junction to Ambient	R <sub>θJA</sub>	350	°C/W	
Thermal Resistance From Junction to Case	R <sub>θJC</sub>	146		
Junction Temperature	T <sub>J</sub>	150	°C	
Storage Temperature	T <sub>stg</sub>	-65 to 150		

# Transistor

## NPN Transistors

### 2N2222

■ Electrical Characteristics Ta = 25°C

Parameter	Symbol	Testconditions	Min	Typ	Max	Unit
Collecto- base breakdown voltage	V <sub>CBO</sub>	I <sub>C</sub> = 100 μA, I <sub>E</sub> =0	60			V
Collector- emitter breakdown voltage	V <sub>CEO</sub>	I <sub>C</sub> = 0.1 mA, I <sub>B</sub> =0	30			
Emitter - base breakdown voltage	V <sub>EB0</sub>	I <sub>E</sub> = 100 μA, I <sub>C</sub> =0	5			
Collector cut-off current	I <sub>CBO</sub>	V <sub>CB</sub> = 50 V, I <sub>E</sub> =0			10	nA
		V <sub>CB</sub> = 50 V, I <sub>E</sub> =0, T <sub>amb</sub> =150 °C			10	μA
Emitter cut-off current	I <sub>EBO</sub>	V <sub>EB</sub> = 3V, I <sub>C</sub> =0			10	nA
Collector-emitter saturation voltage	V <sub>CE(sat)</sub>	I <sub>C</sub> =150 mA, I <sub>B</sub> = 15mA			0.4	V
		I <sub>C</sub> =500 mA, I <sub>B</sub> = 50mA			1.6	
Base - emitter saturation voltage	V <sub>BE(sat)</sub>	I <sub>C</sub> =150 mA, I <sub>B</sub> = 15mA			1.3	V
		I <sub>C</sub> =500 mA, I <sub>B</sub> = 50mA			2.6	
DC current gain	h <sub>FE</sub> (1)	V <sub>CE</sub> = 10V, I <sub>C</sub> = 0.1mA	35			
	h <sub>FE</sub> (2)	V <sub>CE</sub> = 10V, I <sub>C</sub> = 1mA	50			
	h <sub>FE</sub> (3)	V <sub>CE</sub> = 10V, I <sub>C</sub> = 10mA	75			
	h <sub>FE</sub> (4)	V <sub>CE</sub> = 1V, I <sub>C</sub> = 150mA	50			
	h <sub>FE</sub> (5)	V <sub>CE</sub> = 10V, I <sub>C</sub> = 150mA	100		300	
	h <sub>FE</sub> (6)	V <sub>CE</sub> = 10V, I <sub>C</sub> = 500mA	35			
Turn-on time	t <sub>on</sub>	I <sub>Con</sub> = 150 mA; I <sub>Bon</sub> = 15 mA; I <sub>Boff</sub> = -15 mA			35	ns
Delay time	t <sub>d</sub>				10	
Rise time	t <sub>r</sub>				25	
Turn-off time	t <sub>off</sub>				250	
Storage time	t <sub>s</sub>				200	
Fall time	t <sub>f</sub>				60	
Collector capacitance	C <sub>ob</sub>	V <sub>CB</sub> = 10V, I <sub>E</sub> =i <sub>e</sub> =0, f=1MHz			8	pF
Transition frequency	f <sub>T</sub>	V <sub>CE</sub> = 20V, I <sub>C</sub> = 20mA, f=100MHz	250			MHz