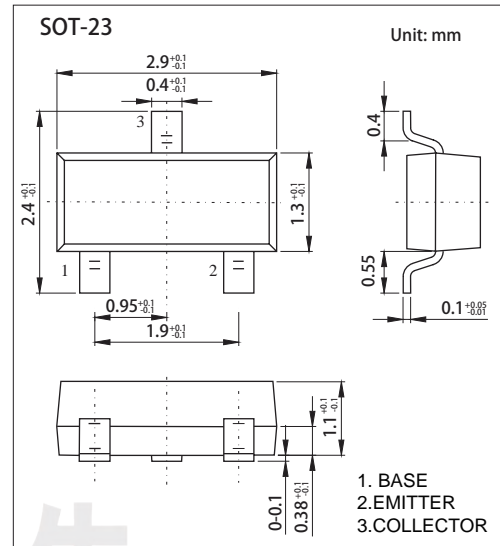


## NPN Transistors MMBT2222

### ■ Features

- Collector current:  $I_c=0.6A$
- General Purpose Amplifier



### ■ Absolute Maximum Ratings $T_a = 25^\circ C$

Parameter	Symbol	Rating	Unit
Collector - Base Voltage	$V_{CBO}$	75	V
Collector - Emitter Voltage	$V_{CEO}$	30	
Emitter - Base Voltage	$V_{EBO}$	6	
Collector Current - Continuous	$I_c$	600	mA
Collector Power Dissipation	$P_C$	250	mW
Thermal Resistance From Junction To Ambient	$R_{\theta JA}$	500	$^\circ C/W$
Junction Temperature	$T_J$	150	$^\circ C$
Storage Temperature	$T_{stg}$	-55 to 150	

# Transistor

## NPN Transistors

### MMBT2222

#### ■ Electrical Characteristics Ta = 25°C

Parameter	Symbol	Testconditions	Min	Typ	Max	Unit
Collector- base breakdown voltage	V <sub>CBO</sub>	I <sub>c</sub> = 100 μA, I <sub>E</sub> =0	75			V
Collector- emitter breakdown voltage	V <sub>CEO</sub>	I <sub>c</sub> = 10 mA, I <sub>B</sub> =0	30			
Emitter - base breakdown voltage	V <sub>EBO</sub>	I <sub>E</sub> = 100 μA, I <sub>c</sub> =0	6			
Collector cut-off current	I <sub>CBO</sub>	V <sub>CB</sub> = 60 V, I <sub>E</sub> =0			10	nA
Collector cut-off current	I <sub>CEx</sub>	V <sub>CE</sub> = 30 V, V <sub>BE(off)</sub> =3V			10	
Emitter cut-off current	I <sub>EBO</sub>	V <sub>EB</sub> = 3V, I <sub>c</sub> =0			0.1	μA
Collector-emitter saturation voltage	V <sub>CE(sat)</sub>	I <sub>c</sub> =500 mA, I <sub>B</sub> = 50mA			1	V
		I <sub>c</sub> =150 mA, I <sub>B</sub> = 15mA			0.3	
Base - emitter saturation voltage	V <sub>BE(sat)</sub>	I <sub>c</sub> =500 mA, I <sub>B</sub> = 50mA			1.2	
DC current gain	h <sub>FE(1)</sub>	V <sub>CE</sub> = 10V, I <sub>c</sub> = 150mA	100		300	
	h <sub>FE(2)</sub>	V <sub>CE</sub> = 10V, I <sub>c</sub> = 0.1mA	40			
	h <sub>FE(3)</sub>	V <sub>CE</sub> = 10V, I <sub>c</sub> = 500mA	42			
Delay time	t <sub>d</sub>	V <sub>CC</sub> =30V, V <sub>BE(off)</sub> =-0.5V I <sub>c</sub> =150mA, I <sub>B1</sub> =15mA			10	ns
Rise time	t <sub>r</sub>				25	
Storage time	t <sub>s</sub>				225	
Fall time	t <sub>f</sub>				60	
Transition frequency	f <sub>T</sub>	V <sub>CE</sub> = 20V, I <sub>c</sub> = 20mA, f=100MHz	300			MHz

#### ■ Classification of h<sub>FE(1)</sub>

Rank	L	H
Range	100-200	200-300
Marking	M1B	