

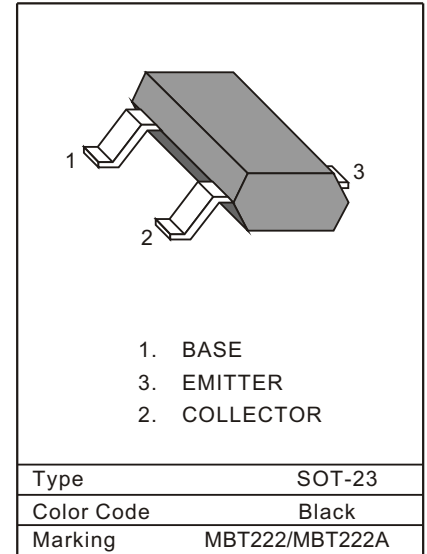
## ■ MBT222/MBT222A

SILICON PLANAR EPITAXIAL TRANSISTORS

N-P-N TRANSISTORS

## ■ ABSOLUTE MAXIMUM RATINGS

Descriptions	Symbol	Min.	Typ.	Max.	Unit
Storage Temperature	T <sub>stg</sub>	-55	-	150	°C
Junction Temperature	T <sub>j</sub>	-	-	150	°C
Maximum Power Dissipation (Ta=25°C)	P <sub>tot</sub>	-	-	250	mW
Maximum Collector to Base Voltage	V <sub>CB0</sub>	-	-	60/75	V
Maximum Collector to Emitter Voltage	V <sub>CEO</sub>	-	-	30/40	V
Maximum Emitter to Base Voltage	V <sub>EBO</sub>	-	-	5.0/6.0	V
Maximum Collector Current	I <sub>C</sub>	-	-	600	mA



## ■ ELECTRICAL CHARACTERISTICS (Ta=25°C)

Descriptions	Test Conditions	Symbol	Min.	Typ.	Max.	Unit
DC Current Gain	V <sub>CE</sub> = 10V, I <sub>C</sub> = 0.1mA	h <sub>FE1</sub>	35	-	-	-
	V <sub>CE</sub> = 10V, I <sub>C</sub> = 1mA	h <sub>FE2</sub>	50	-	-	-
	V <sub>CE</sub> = 10V, I <sub>C</sub> = 10mA	h <sub>FE3</sub>	75	-	-	-
	V <sub>CE</sub> = 10V, I <sub>C</sub> = 150mA	h <sub>FE4</sub>	100	-	300	-
	V <sub>CE</sub> = 1V, I <sub>C</sub> = 150mA	h <sub>FE5</sub>	50	-	-	-
	V <sub>CE</sub> = 10V, I <sub>C</sub> = 500mA	h <sub>FE6</sub>	30/40	-	-	-
Gain Bandwidth product	V <sub>CE</sub> = V, I <sub>C</sub> = mA	f <sub>T</sub>	250/300	-	-	MHz
Output Capacitance	V <sub>CB</sub> = V, I <sub>E</sub> = mA, f= MHz	C <sub>ob</sub>	-	-	8.0	pF
Input Capacitance	V <sub>CE</sub> = V, I <sub>C</sub> = mA, f= MHz	C <sub>ib</sub>	-	-	30/25	pF
(MBT222)	V <sub>CB</sub> = 50V, I <sub>E</sub> = 0mA	I <sub>CB0</sub>	-	-	0.01	uA
Collector Cut-off Current (MBT222A)	V <sub>CB</sub> = 60mA, I <sub>E</sub> = 0mA	I <sub>CB0</sub>	-	-	0.01	uA
(MBT222A)	V <sub>EB</sub> = V, V <sub>EB</sub> = V	I <sub>CEx</sub>	-	-	10	nA
Emitter Cut-off Current (MBT222A)	I <sub>C</sub> = 0, V <sub>EB</sub> = 3V	I <sub>EBO</sub>	-	-	10	nA
Base Current (MBT222A)	V <sub>EB</sub> = 3V, V <sub>CE</sub> = 60V	I <sub>BEx</sub>	-	-	20	nA
Collector Saturation Voltage	I <sub>C</sub> = 150mA, I <sub>B</sub> = 15mA	V <sub>CE(Sat)</sub>	-	-	400/300	mV
	I <sub>C</sub> = 500mA, I <sub>B</sub> = 50mA	V <sub>CE(Sat)</sub>	-	-	1.6/1.0	V
Base Saturation Voltage	I <sub>C</sub> = 150mA, I <sub>B</sub> = 15mA,	V <sub>BE(Sat)</sub>	-	-	1.3/0.6to1.2	V
	I <sub>C</sub> = 500mA, I <sub>B</sub> = 50mA	V <sub>BE(Sat)</sub>	-	-	2.6/2.0	V
Collector to Emitter Breakdown Voltage	I <sub>C</sub> = 1.0mA, I <sub>C</sub> = 0	BV <sub>CEO</sub>	30/40	-	-	V
	I <sub>C</sub> = 100mA, I <sub>B</sub> = 0	BV <sub>CEO</sub>	60/75	-	-	V
Emitter to Base Breakdown Voltage	I <sub>C</sub> = 0mA, I <sub>E</sub> = 10uA	BV <sub>EBO</sub>	5.0/6.0	-	-	V
Delay Time	I <sub>C</sub> = 150mA	t <sub>d</sub>	-	-	10	ns
Rise Time	I <sub>C</sub> = 150mA	t <sub>r</sub>	-	-	25	ns
Fall Time	I <sub>C</sub> = 150mA	t <sub>f</sub>	-	-	60	ns
Storage Time	I <sub>C</sub> = 150mA	t <sub>stg</sub>	-	-	225	ns
Small Signal Current Gain	V <sub>CE</sub> = 10V, I <sub>C</sub> = 1.0mA, f=1kHz	h <sub>FE</sub>	50	-	300	-
	V <sub>CE</sub> = 10mA, I <sub>C</sub> = 10mA, f=1kHz	h <sub>FE</sub>	75	-	375	-

Pulse Test ≤ 300μs, Duty Cycle ≤ 2%

## ■ THERMAL CHARACTERISTICS

Descriptions	Symbol	Min.	Typ.	Max.	Unit
Thermal Resistance at T <sub>j</sub> = P(R <sub>th j-t</sub> + R <sub>th t-s</sub> + R <sub>th s-a</sub> ) + T <sub>amb</sub>	R <sub>th j-a</sub>	-	500	-	K/W

P / N	MBT222	MBT222A
marking	1B	1P

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