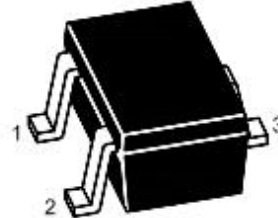


# NPN Silicon Epitaxial Planar Transistor

for switching and amplifier applications



## FEATURES

- Complementary to MMBT2907AW
- Small Package

**MARKING:K3P/1P**

1.Base 2.Emitter 3.Collector  
SOT-323 Plastic Package

## Absolute Maximum Ratings ( $T_a = 25\text{ }^{\circ}\text{C}$ )

Parameter		Symbol	Value	Unit
Collector Base Voltage	MMBT2222W	$V_{CBO}$	60	V
	MMBT2222AW		75	
Collector Emitter Voltage	MMBT2222W	$V_{CEO}$	30	V
	MMBT2222AW		40	
Emitter Base Voltage	MMBT2222W	$V_{EBO}$	5	V
	MMBT2222AW		6	
Collector Current		$I_C$	600	mA
Power Dissipation		$P_{tot}$	150	mW
Junction Temperature		$T_j$	150	$^{\circ}\text{C}$
Storage Temperature Range		$T_{stg}$	- 55 to + 150	$^{\circ}\text{C}$

**Characteristics at T<sub>a</sub> = 25 °C**

Parameter	Symbol	Min.	Max.	Unit
DC Current Gain at V <sub>CE</sub> = 10 V, I <sub>C</sub> = 0.1 mA at V <sub>CE</sub> = 10 V, I <sub>C</sub> = 1 mA at V <sub>CE</sub> = 10 V, I <sub>C</sub> = 10 mA at V <sub>CE</sub> = 1 V, I <sub>C</sub> = 150 mA at V <sub>CE</sub> = 10 V, I <sub>C</sub> = 150 mA at V <sub>CE</sub> = 10 V, I <sub>C</sub> = 500 mA	 h <sub>FE</sub> h <sub>FE</sub> h <sub>FE</sub> h <sub>FE</sub> h <sub>FE</sub> h <sub>FE</sub> h <sub>FE</sub> h <sub>FE</sub> MMBT2222W MMBT2222AW	 35 50 75 50 100 30 40	 - - - - 300 - -	 - - - - - - - -
Collector Base Cutoff Current at V <sub>CB</sub> = 50 V at V <sub>CB</sub> = 60 V	 MMBT2222W MMBT2222AW	 I <sub>CBO</sub> -	 - 100 100	 nA
Emitter Base Cutoff Current at V <sub>EB</sub> = 3 V		I <sub>EBO</sub>	- 100	nA
Collector Base Breakdown Voltage at I <sub>C</sub> = 10 μA	 MMBT2222W MMBT2222AW	 V <sub>(BR)CBO</sub> -	 60 75	 V
Collector Emitter Breakdown Voltage at I <sub>C</sub> = 10 mA	 MMBT2222W MMBT2222AW	 V <sub>(BR)CEO</sub> -	 30 40	 V
Emitter Base Breakdown Voltage at I <sub>E</sub> = 10 μA	 MMBT2222W MMBT2222AW	 V <sub>(BR)EBO</sub> -	 5 6	 V
Collector Emitter Saturation Voltage at I <sub>C</sub> = 150 mA, I <sub>B</sub> = 15 mA at I <sub>C</sub> = 500 mA, I <sub>B</sub> = 50 mA	 MMBT2222W MMBT2222AW MMBT2222W MMBT2222AW	 V <sub>CE(sat)</sub> -	 - 0.4 0.3 1.6 1	 V
Base Emitter Saturation Voltage at I <sub>C</sub> = 150 mA, I <sub>B</sub> = 15 mA at I <sub>C</sub> = 500 mA, I <sub>B</sub> = 50 mA	 MMBT2222W MMBT2222AW MMBT2222W MMBT2222AW	 V <sub>BE(sat)</sub> -	 - 0.6 1.3 1.2 2.6 2	 V
Transition Frequency at V <sub>CE</sub> = 20 V, -I <sub>E</sub> = 20 mA, f = 100 MHz		f <sub>T</sub>	300	MHz
Collector Output Capacitance at V <sub>CB</sub> = 10 V, f = 100 KHz		C <sub>ob</sub>	- 8	pF
Delay Time at V <sub>CC</sub> = 30 V, V <sub>BE(OFF)</sub> = 0.5 V, I <sub>C</sub> = 150 mA, I <sub>B1</sub> = 15 mA		t <sub>d</sub>	- 10	ns
Rise Time at V <sub>CC</sub> = 30 V, V <sub>BE(OFF)</sub> = 0.5 V, I <sub>C</sub> = 150 mA, I <sub>B1</sub> = 15 mA		t <sub>r</sub>	- 25	ns
Storage Time at V <sub>CC</sub> = 30 V, I <sub>C</sub> = 150 mA, I <sub>B1</sub> = -I <sub>B2</sub> = 15 mA		t <sub>stg</sub>	- 225	ns
Fall Time at V <sub>CC</sub> = 30 V, I <sub>C</sub> = 150 mA, I <sub>B1</sub> = -I <sub>B2</sub> = 15 mA		t <sub>f</sub>	- 60	ns

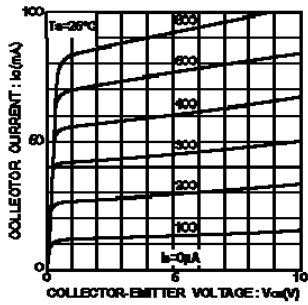


Fig.1 Grounded emitter output characteristics



Fig.3 DC current gain vs. collector current (I)

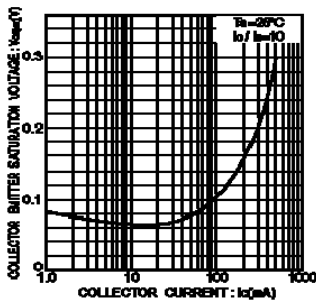


Fig.2 Collector-emitter saturation voltage vs. collector current

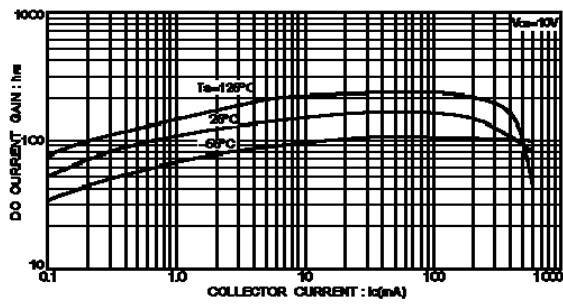


Fig.4 DC current gain vs. collector current(II)

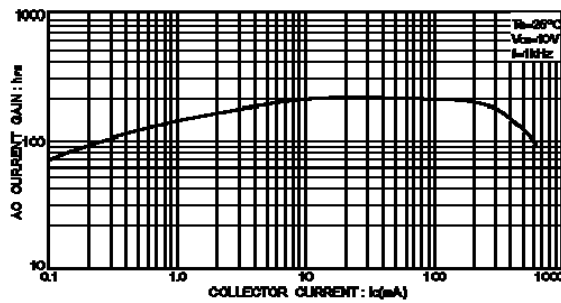


Fig.5 AC current gain vs. collector current

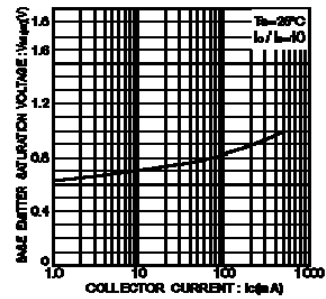
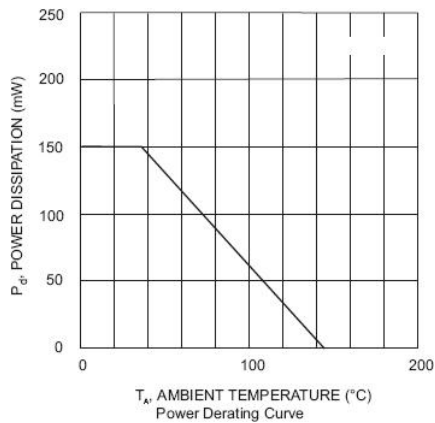


Fig.6 Base-emitter saturation voltage vs. collector current



## SOT-323 Package Outline Dimensions

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