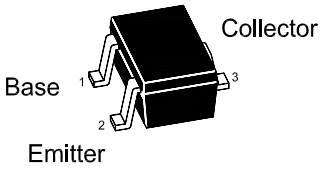
迈拓电子
MAITUO ELECTRONIC

MMBT2222W/AW NPN Silicon Epitaxial Planar Medium Power Transistor

for switching and amplifier applications

Marking : 1P



SOT-323

Absolute Maximum Ratings (T_a = 25 °C)

Parameter	Symbol	Value		Unit
		MMBT2222W	MMBT2222AW	
Collector Base Voltage	V_{CBO}	60	75	V
Collector Emitter Voltage	V_{CEO}	30	40	V
Emitter Base Voltage	V_{EBO}	5	6	V
Collector Current	I_C	600		mA
Total Power Dissipation	P_{tot}	200		mW
Junction Temperature	T_j	150		°C
Storage Temperature Range	T_S	-55 to +150		°C

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Characteristics at T_a = 25 °C

Parameter		Symbol	Min.	Max.	Unit
DC Current Gain					
at V_{CE} = 10 V, I_C = 0.1 mA		h_{FE}	35	-	-
at V_{CE} = 10 V, I_C = 1 mA		h_{FE}	50	-	-
at V_{CE} = 10 V, I_C = 10 mA		h_{FE}	75	-	-
at V_{CE} = 1 V, I_C = 150 mA		h_{FE}	50	-	-
at V_{CE} = 10 V, I_C = 150 mA		h_{FE}	100	300	-
at V_{CE} = 10 V, I_C = 500 mA	MMBT2222W	h_{FE}	30	-	-
	MMBT2222AW	h_{FE}	40	-	-
Collector Base Voltage at I_C = 10 µA	MMBT2222W MMBT2222AW	V_{CBO}	60 75	- -	V
Collector Emitter Voltage at I_C = 10 mA	MMBT2222W MMBT2222AW	V_{CEO}	30 40	- -	V
Emitter Base Voltage at I_E = 10 µA	MMBT2222W MMBT2222AW	V_{EBO}	5 6	- -	V
Collector Base Cutoff Current at V_{CB} = 50 V at V_{CB} = 60 V	MMBT2222W MMBT2222AW	I_{CBO}	- -	100 100	nA
Emitter Base Cutoff Current at V_{EB} = 3 V		I_{EBO}	-	100	nA
Collector Emitter Saturation Voltage at I_C = 150 mA, I_B = 15 mA at I_C = 500 mA, I_B = 50 mA	MMBT2222W MMBT2222AW MMBT2222W MMBT2222AW	$V_{CE(sat)}$	- - - -	0.4 0.3 1.6 1	V
Base Emitter Saturation Voltage at I_C = 150 mA, I_B = 15 mA at I_C = 500 mA, I_B = 50 mA	MMBT2222W MMBT2222AW MMBT2222W MMBT2222AW	$V_{BE(sat)}$	- 0.6 - -	1.3 1.2 2.6 2	V
Transition Frequency at V_{CE} = 20 V, $-I_E$ = 20 mA, f = 100 MHz		f_T	300	-	MHz
Collector Output Capacitance at V_{CB} = 10 V, f = 100 KHz		C_{ob}	-	8	pF
Emitter Input Capacitance at V_{EB} = 0.5 V, f = 100 KHz		C_{ib}	-	25	pF
Delay Time at V_{CC} = 30 V, $V_{BE(OFF)}$ = 0.5 V, I_C = 150 mA, I_{B1} = 15 mA		td	-	10	ns
Rise Time at V_{CC} = 30 V, $V_{BE(OFF)}$ = 0.5 V, I_C = 150 mA, I_{B1} = 15 mA		tr	-	25	ns
Storage Time at V_{CC} = 30 V, I_C = 150 mA, I_{B1} = $-I_{B2}$ = 15 mA		tstg	-	225	ns
Fall Time at V_{CC} = 30 V, I_C = 150 mA, I_{B1} = $-I_{B2}$ = 15 mA		tf	-	60	ns

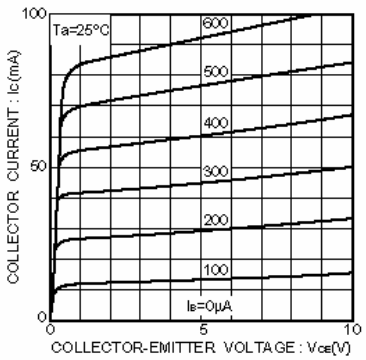

Fig.1 Grounded emitter output characteristics

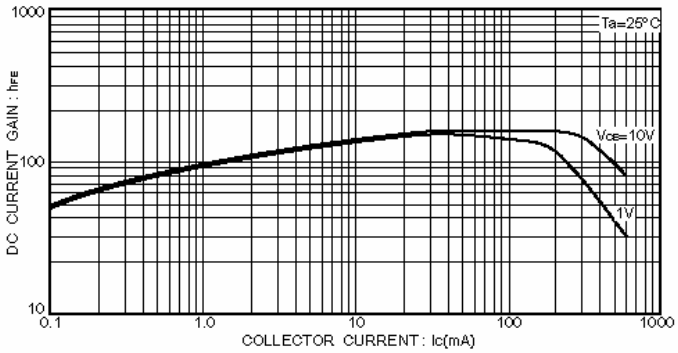

Fig.3 DC current gain vs. collector current(I)

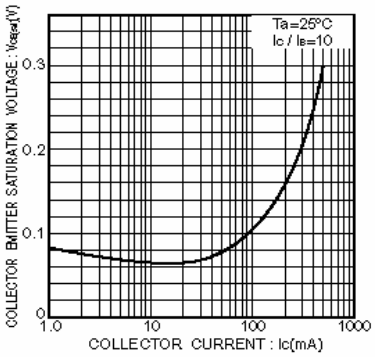

Fig.2 Collector-emitter saturation voltage vs. collector current

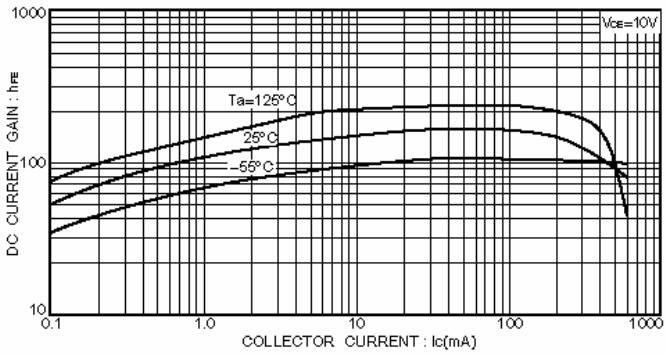

Fig.4 DC current gain vs. collector current(II)

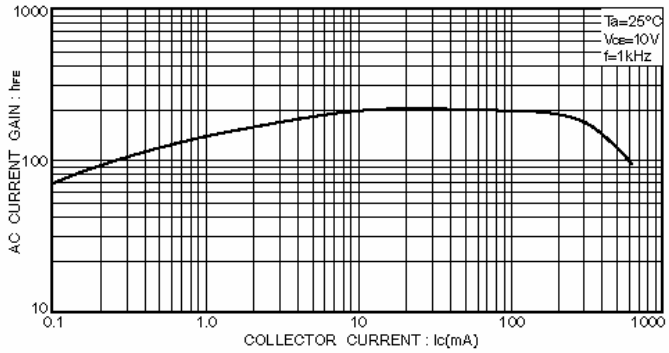

Fig.5 AC current gain vs. collector current

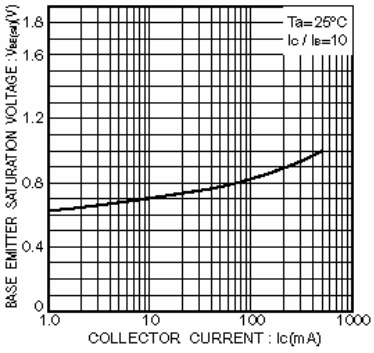

Fig.6 Base-emitter saturation voltage vs. collector current

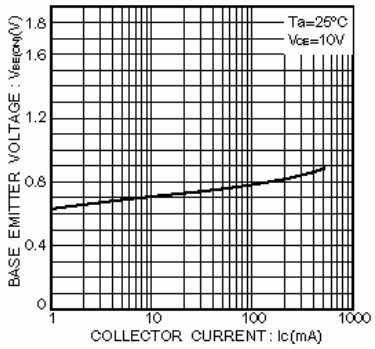

Fig.7 Grounded emitter propagation characteristics

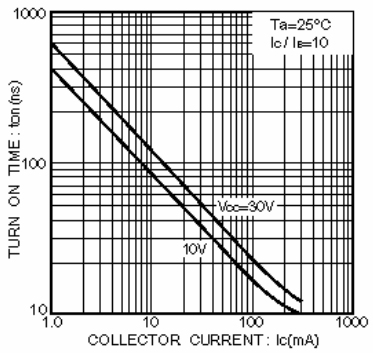

Fig.8 Turn-on time vs. collector current

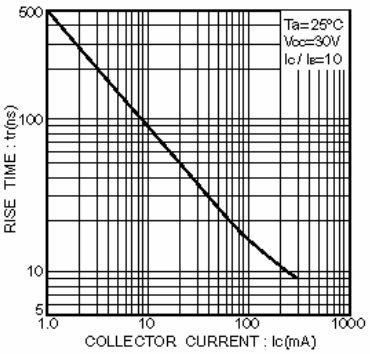

Fig.9 Rise time vs. collector current

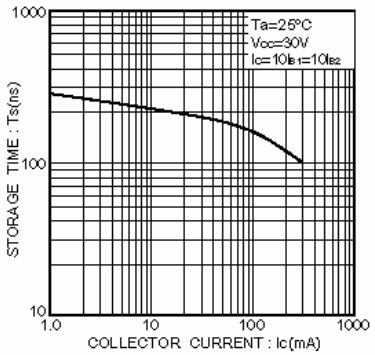

Fig.10 Storage time vs. collector current

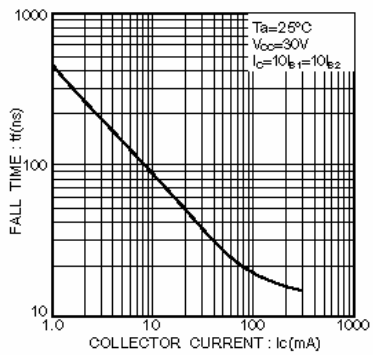

Fig.11 Fall time vs. collector current

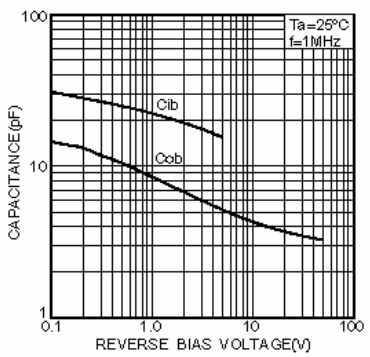

Fig.12 Input / output capacitance vs. voltage

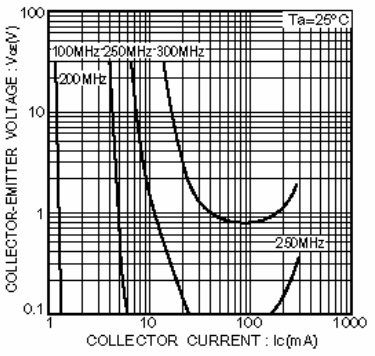

Fig.13 Gain bandwidth product

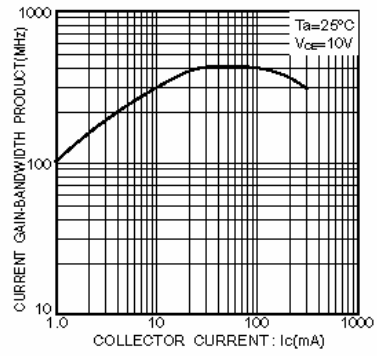

Fig.14 Gain bandwidth product vs. collector current

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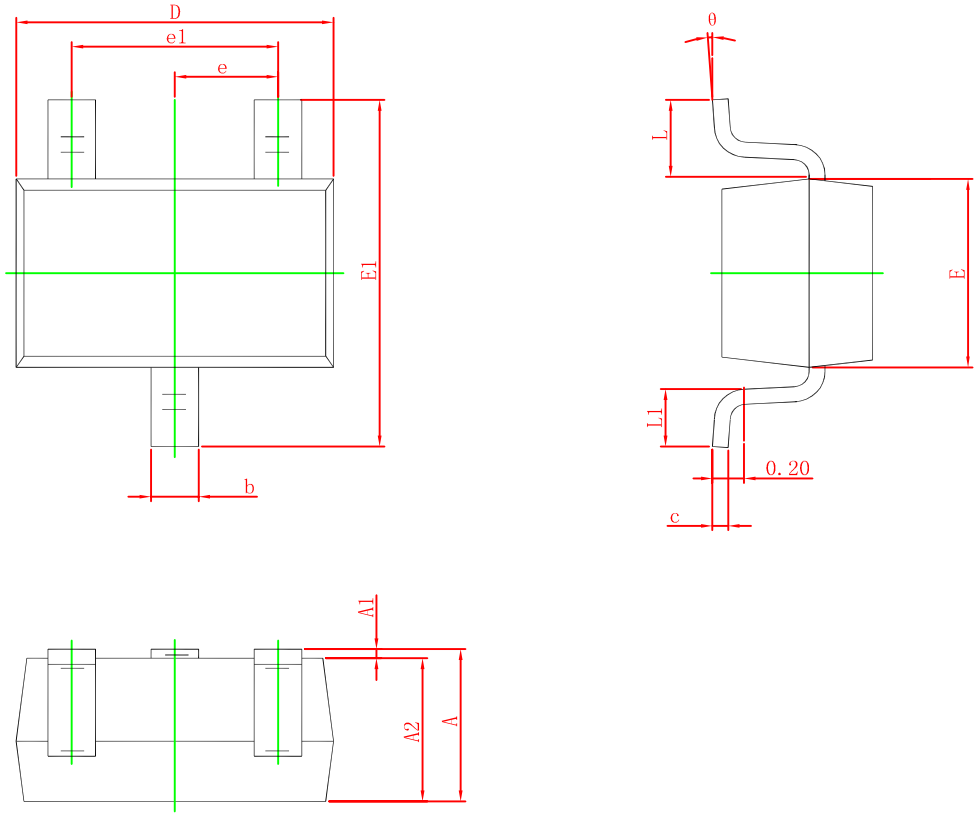
SOT-323 Package Outline Dimensions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.100	0.035	0.043
A1	0.000	0.100	0.000	0.004
A2	0.900	1.000	0.035	0.039
b	0.200	0.400	0.008	0.016
c	0.080	0.150	0.003	0.006
D	2.000	2.200	0.079	0.087
E	1.150	1.350	0.045	0.053
E1	2.150	2.450	0.085	0.096
e	0.650 TYP.		0.026 TYP.	
e1	1.200	1.400	0.047	0.055
L	0.525 REF.		0.021 REF.	
L1	0.260	0.460	0.010	0.018
θ	0°	8°	0°	8°