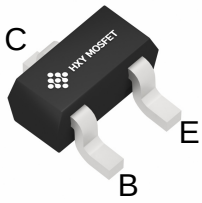
MMBT2222T / MMBT2222AT

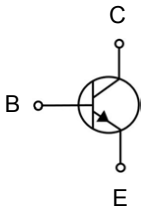
NPN Plastic-Encapsulate Transistors

Features

- Collector Current: I_C= 2A
- Power Dissipation of 500mw



SOT-523



Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
MMBT2222T/ MMBT2222AT	SOT-523	1P	3000

Maximum Ratings (Ta=25°C unless otherwise noted)

Symbl	Parameter		Value	Unit
V_{CBO}	Collector-Base Voltage	MMBT2222T MMBT2222AT	60 75	V
V_{CEO}	Collector-Emitter Voltage	MMBT2222T MMBT2222AT	30 40	V
V_{EBO}	Emitter-Base Voltage	MMBT2222T MMBT2222AT	5 6	V
I_C	Collector Current-Continuous		0.6	A
P_C	Collector Power Dissipation		150	mW
T_j	Junction Temperature		150	℃
T_{stg}	Storage Temperature		-55-150	℃

Electrical Characteristics (Ta=25°C unless otherwise specified)

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	MMBT2222T	h_{FE}	30	-	-
	MMBT2222AT	h_{FE}	40	-	-
Collector Base Cutoff Current					
at V_{CB} = 50 V	MMBT2222T	I_{CBO}	-	100	nA
at V_{CB} = 60 V	MMBT2222AT		-	100	
Emitter Base Cutoff Current					
at V_{EB} = 3 V		I_{EBO}	-	100	nA
Collector Base Breakdown Voltage					
at I_C = 10 μA	MMBT2222T	$V_{(BR)CBO}$	60	-	V
	MMBT2222AT		75	-	
Collector Emitter Breakdown Voltage					
at I_C = 10 mA	MMBT2222T	$V_{(BR)CEO}$	30	-	V
	MMBT2222AT		40	-	
Emitter Base Breakdown Voltage					
at I_E = 10 μA	MMBT2222T	$V_{(BR)EBO}$	5	-	V
	MMBT2222AT		6	-	
Collector Emitter Saturation Voltage					
at I_C = 150 mA, I_B = 15 mA	MMBT2222T		-	0.4	
	MMBT2222AT	$V_{CE(sat)}$	-	0.3	V
at I_C = 500 mA, I_B = 50 mA	MMBT2222T		-	1.6	
	MMBT2222AT		-	1	
Base Emitter Saturation Voltage					
at I_C = 150 mA, I_B = 15 mA	MMBT2222T		-	1.3	
	MMBT2222AT	$V_{BE(sat)}$	0.6	1.2	V
at I_C = 500 mA, I_B = 50 mA	MMBT2222T		-	2.6	
	MMBT2222AT		-	2	
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
Delay Time					
at V_{CC} = 30 V, $V_{BE(OFF)}$ = 0.5 V, I_C = 150 mA, I_{B1} = 15 mA		t_d	-	10	ns
Rise Time					
at V_{CC} = 30 V, $V_{BE(OFF)}$ = 0.5 V, I_C = 150 mA, I_{B1} = 15 mA		t_r	-	25	ns
Storage Time					
at V_{CC} = 30 V, I_C = 150 mA, I_{B1} = $-I_{B2}$ = 15 mA		t_{stg}	-	225	ns
Fall Time					
at V_{CC} = 30 V, I_C = 150 mA, I_{B1} = $-I_{B2}$ = 15 mA		t_f	-	60	ns

Typical Characteristics

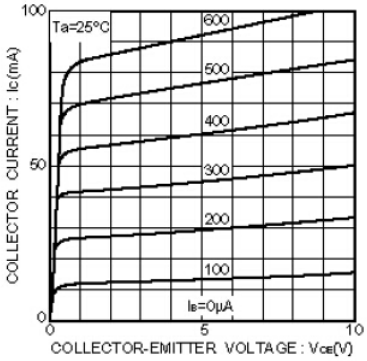


Fig.1 Grounded emitter output characteristics

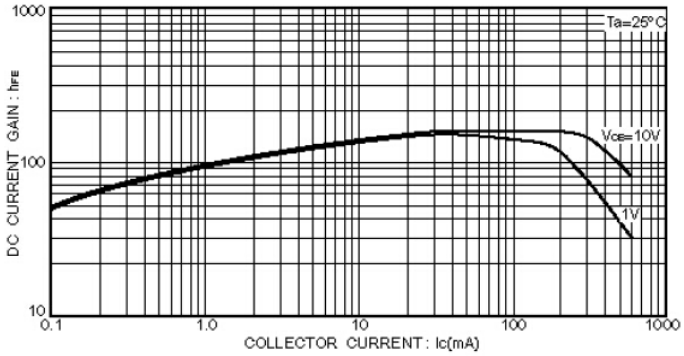


Fig.3 DC current gain vs. collector current(I)

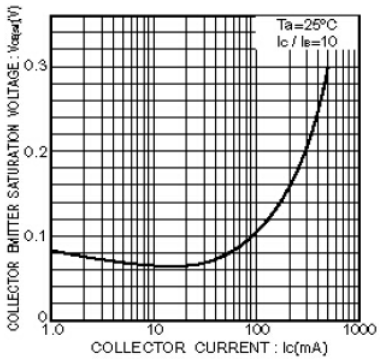


Fig.2 Collector-emitter saturation voltage vs. collector current

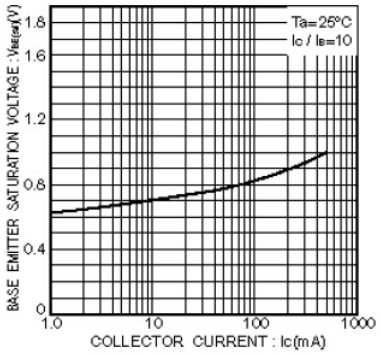
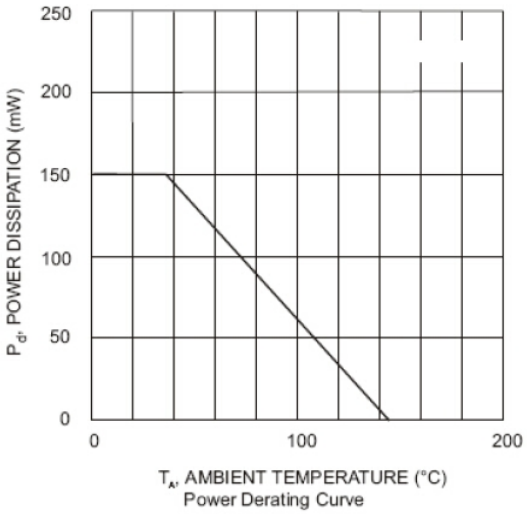


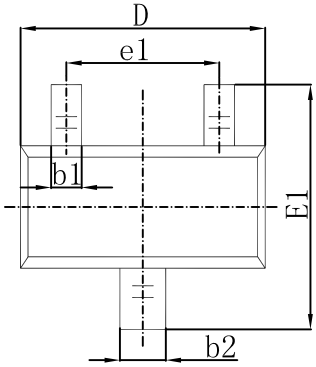
Fig.6 Base-emitter saturation voltage vs. collector current

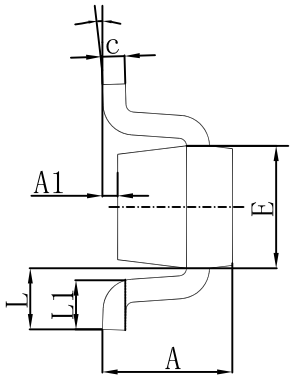


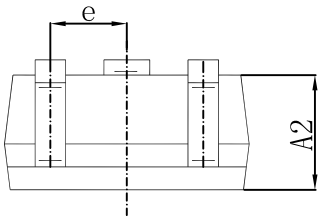
Power Derating Curve

Package Dimensions

SOT-523

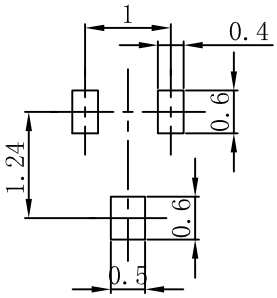






Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.700	0.900	0.028	0.035
A1	0.000	0.100	0.000	0.004
A2	0.700	0.800	0.028	0.031
b1	0.150	0.250	0.006	0.010
b2	0.250	0.350	0.010	0.014
c	0.100	0.200	0.004	0.008
D	1.500	1.700	0.059	0.067
E	0.700	0.900	0.028	0.035
E1	1.450	1.750	0.057	0.069
e	0.500 TYP.		0.020 TYP.	
e1	0.900	1.100	0.035	0.043
L	0.400 REF.		0.016 REF.	
L1	0.260	0.460	0.010	0.018
θ	0°	8°	0°	8°

Suggested Pad Layout



Note:
1.Controlling dimension:in millimeters.
2.General tolerance:±0.05mm.
3.The pad layout is for reference purposes only.

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