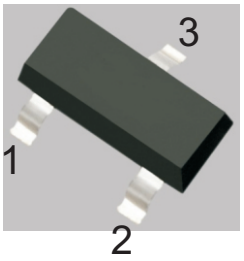
MMBT2222A

NPN TRANSISTOR

SOT-23



1.BASE
2.EMITTER
3.COLLECTOR

FEATURES
- Epitaxial planar die construction
- Complementary PNP Type available(MMBT2907A)

MAXIMUM RATINGS (Ta=25℃ unless otherwise noted)

Parameter	Symbol	Value	Unit
Collector–Base Voltage	V_{CBO}	75	V
Collector–Emitter Voltage	V_{CEO}	40	V
Emitter–Base Voltage	V_{EBO}	6	V
Collector Current — Continuous	I_C	600	mA
Collector Power Dissipation	P_C	300	mW
Thermal Resistance From Junction To Ambient	R_{thJA}	417	℃/W
Operation Junction and Storage Temperature Range	T_J, T_{stg}	-55~+150	℃

CLASSIFICATION OF h_{FE}

Rank	L	H
Range	100-200	200-300
Marking	1P	

ELECTRICAL CHARACTERISTICS (TA = 25°C unless otherwise noted.)

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Collector-base breakdown voltage	$V_{(BR)CBO}$	I_C = 10uA, I_E = 0	75			V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	I_C = 10 mA, I_B = 0	40			V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	I_E = 10uA, I_C = 0	6			V
Collector cut-off current	I_{CBO}	V_{CB} = 60V, I_E = 0			0.01	uA
Collector cut-off current	I_{CEX}	V_{CE} = 30V, $V_{BE(off)}$ =3V			0.01	uA
Emitter cut-off current	I_{EBO}	V_{EB} = 3V, I_C =0			0.1	uA
DC current gain	h_{FE1}	V_{CE} = 10V, I_C=150mA	100		300	
	h_{FE2}	V_{CE} = 10V, I_C = 0.1mA	40			
	h_{FE3}	V_{CE} = 10V, I_C = 500mA	42			
Collector-emitter saturation voltage	$V_{CE(sat)}$	I_C = 500mA, I_B = 50mA			1.0 0.3	V
Base-emitter saturation voltage	$V_{BE(sat)}$	I_C = 150mA, I_B = 15mA			2.0 1.2	V
Transition frequency	f_T	V_{CE} = 20V, I_C = 20mA, f=100MHz	300			MHz
Delay time	t_d	V_{CC}=30V,$V_{BE(off)}$=-0.5V I_C=150mA,I_{B1}=15mA			10	ns
Rise time	t_r				25	ns
Storage time	t_s	V_{CC} = 30V, I_C = 150mA I_{b1}=-I_{B2}=15mA			225	ns
Fall time	t_f				60	ns

TYPICAL CHARACTERICS

Fig.1 Static characteristics

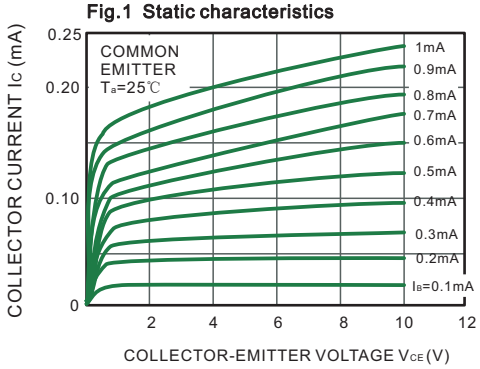


Fig.2 P_C —— T_a

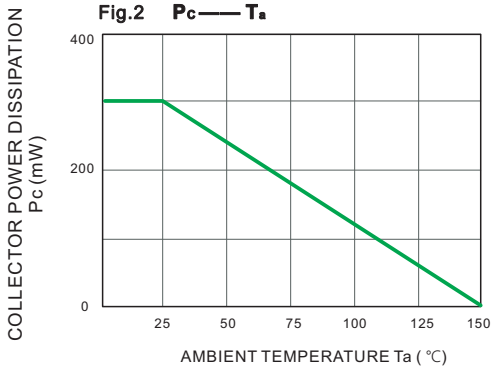


Fig.3 C_{ob} / C_{ib} —— V_{CB} / V_{EB}

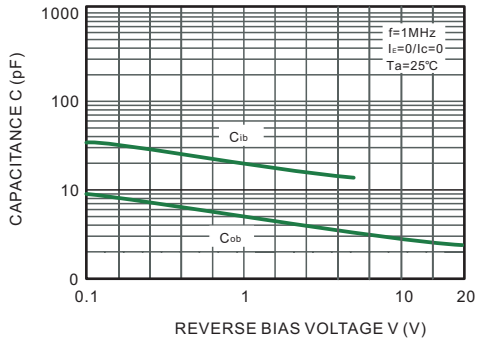


Fig.4 V_{CEsat} —— I_C

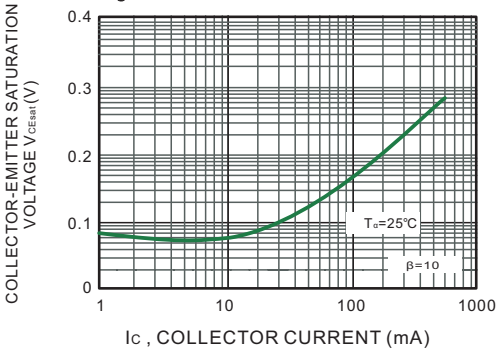


Fig.5 h_{FE}--I_C

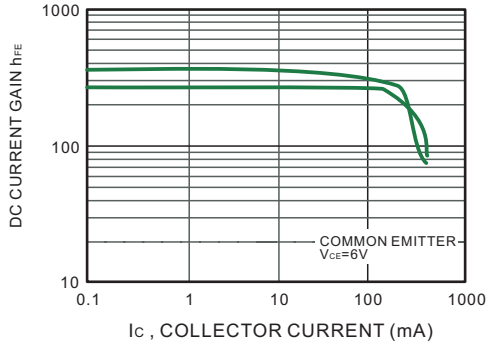


Fig.6 V_{BEsat} —— I_C

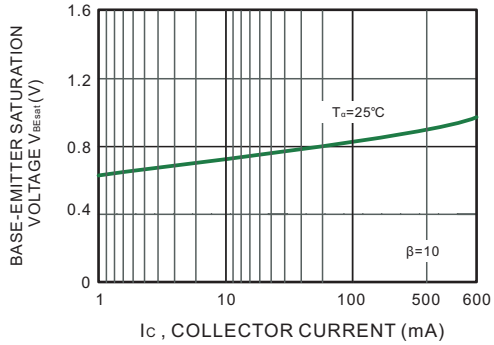


Fig.7 I_C —— V_{BE}

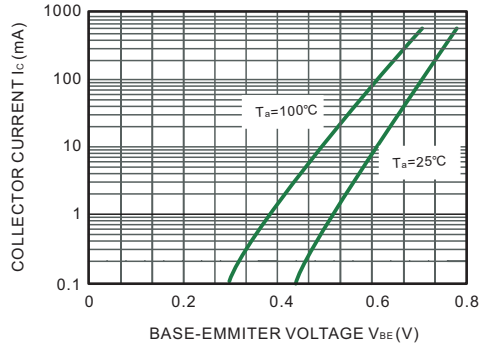
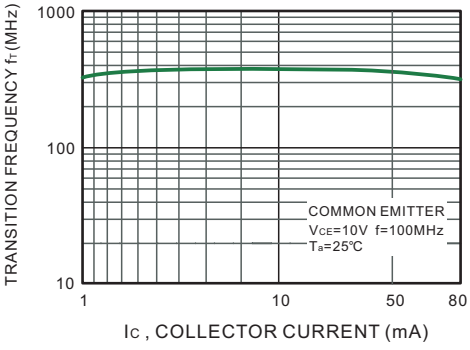
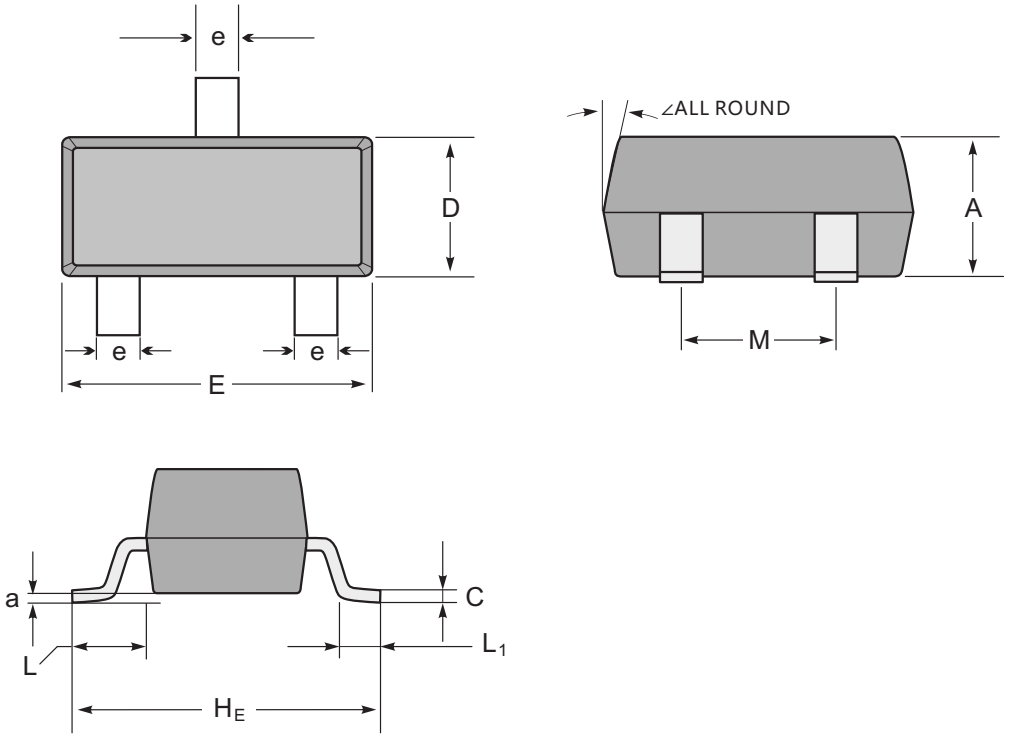


Fig.8 f_T —— I_C



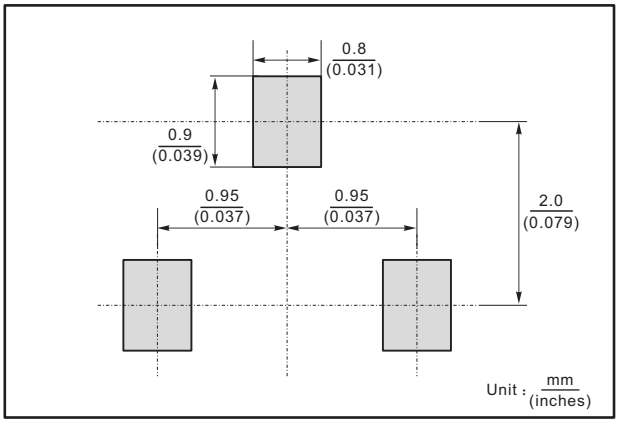
SOT-23 Package Outline Dimensions



SOT-23 mechanical data

UNIT		A	C	D	E	H_E	e	M	L	L_1	a	∠
mm	max	1.1	0.15	1.4	3.0	2.6	0.5	1.95	0.55 (ref)	0.36 (ref)	0.0	12°
	min	0.9	0.08	1.2	2.8	2.2	0.3	1.7			0.15	
mil	max	43	6	55	118	102	20	77	22 (ref)	14 (ref)	0.0	
	min	35	3	47	110	87	12	67			6	

The recommended mounting pad size

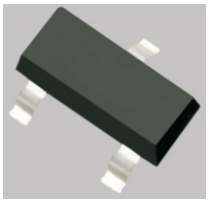


Marking

Type number	Marking code
MMBT2222A	1P

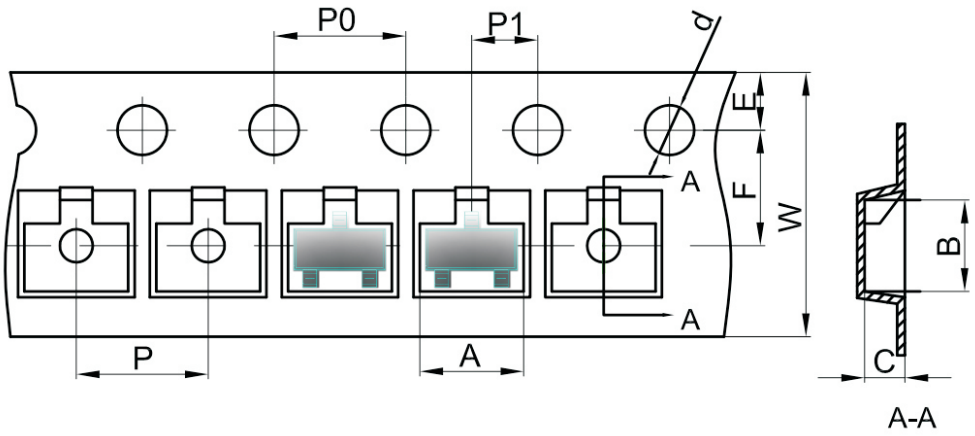
SOT-23 Packing

1.The method of packaging and dimension are shown as below figure. (Dimension in mm)



SOT-23

SOT-23 Embossed Carrier Tape



Dimensions are in millimeter										
Pkg type	A	B	C	d	E	F	P0	P	P1	W
SOT-23	3.15	2.77	1.22	Ø1.50	1.75	3.50	4.00	4.00	2.00	8.00

SOT-23 Tape Leader and Trailer

