

# MMBT2222A

## MMBT2222A SOT-23 Plastic-Encapsulate Transistors(NPN)

### General description

SOT-23 Plastic-Encapsulate Transistors(NPN)

### FEATURES

- Complementary to MMBT2907A
- Power Dissipation of 300mW
- High Stability and High Reliability
- SOT-23 Small Outline Plastic Package
- Epoxy UL: 94V-0



### DEVICE MARKING CODE:

Device Type	Device Marking
MMBT2222A	1P

### Maximum Ratings & Thermal Characteristics (Ratings at 25°C ambient temperature unless otherwise specified.)

Parameters	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
Junction Temperature	$T_j$	150	°C
Storage Temperature	$T_{stg}$	-55-+150	°C
Thermal resistance From junction to ambient	$R_{\theta JA}$	417	°C/W

### Electrical Characteristics (Ratings at 25°C ambient temperature unless otherwise specified).

Parameter	Symbols	Test Condition	Limits		Unit
			Min	Max	
Collector-base breakdown voltage	$V_{(BR)CBO}$	$I_C=10\mu A, I_E=0$	75		V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	$I_C=10mA, I_B=0$	40		V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	$I_E=10\mu A, I_C=0$	6		V
Collector cut-off current	$I_{CEX}$	$V_{CE}=30V, V_{EB(off)}=3V$		10	nA
Collector cut-off current	$I_{CBO}$	$V_{CB}=60V, I_E=0$		10	nA
Emitter cut-off current	$I_{EBO}$	$V_{EB}=3V, I_C=0$		100	nA
DC current gain	$h_{FE(1)*}$	$V_{CE}=10V, I_C=150mA$	100	300	
	$h_{FE(2)*}$	$V_{CE}=10V, I_C=0.1mA$	40		
	$h_{FE(3)*}$	$V_{CE}=10V, I_C=500mA$	42		
Collector-emitter saturation voltage	$V_{CE(sat)1*}$	$I_C=500mA, I_B=50mA$		1.00	V
Collector-emitter saturation voltage	$V_{CE(sat)2*}$	$I_C=150mA, I_B=15mA$		0.30	V
Base -emitter saturation voltage	$V_{BE(sat)1*}$	$I_C=500mA, I_B=50mA$		2.00	V
Base -emitter saturation voltage	$V_{BE(sat)2*}$	$I_C=150mA, I_B=15mA$		1.20	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

\*Pulse test: pulse width  $\leq 300\mu s$ , duty cycle  $\leq 2.0\%$

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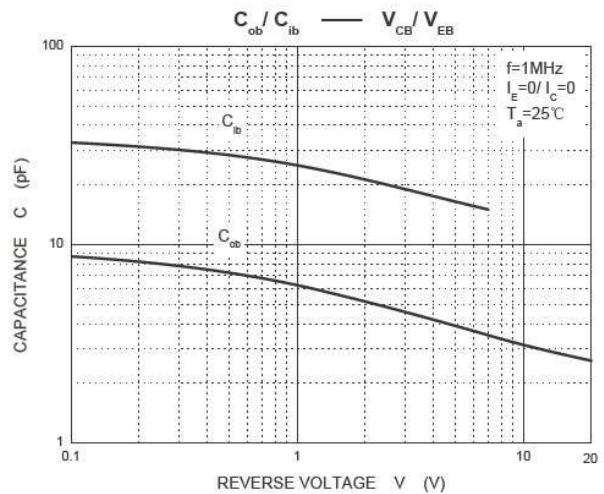
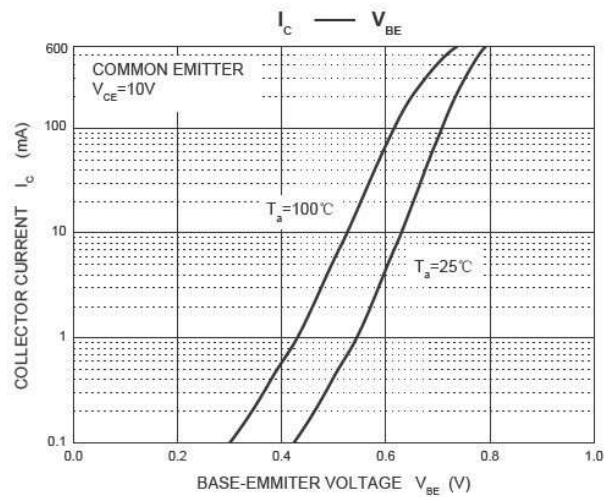
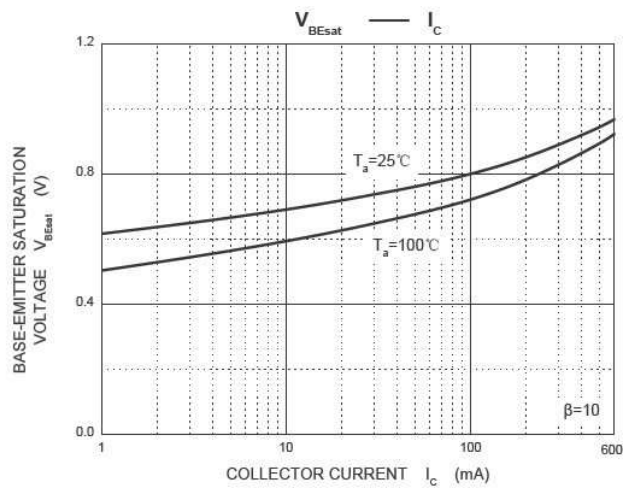
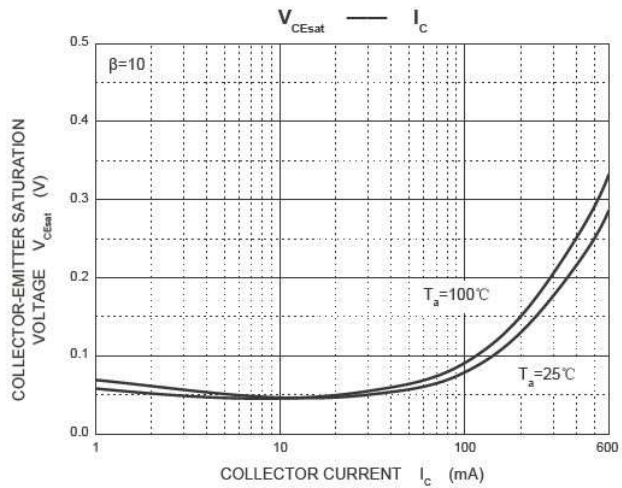
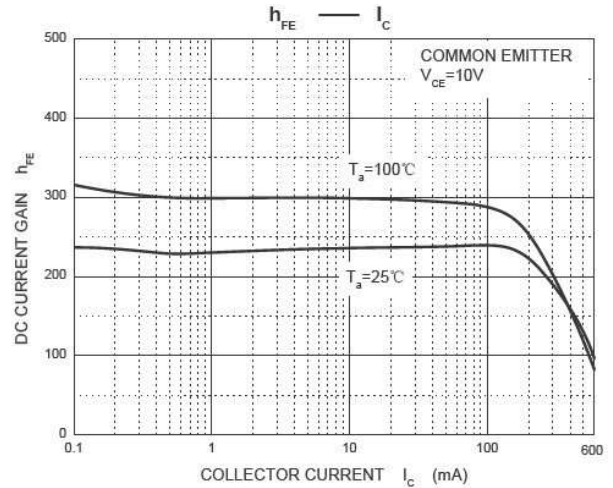
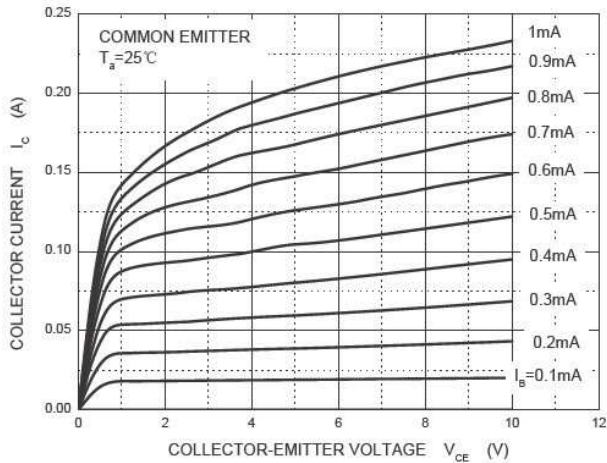


## CLASSIFICATION OF hFE(1)

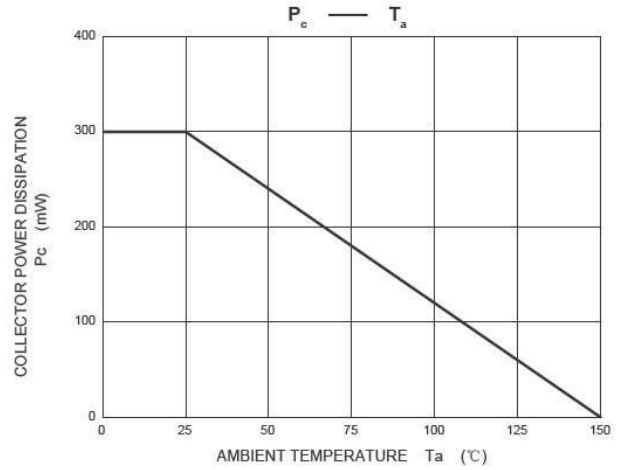
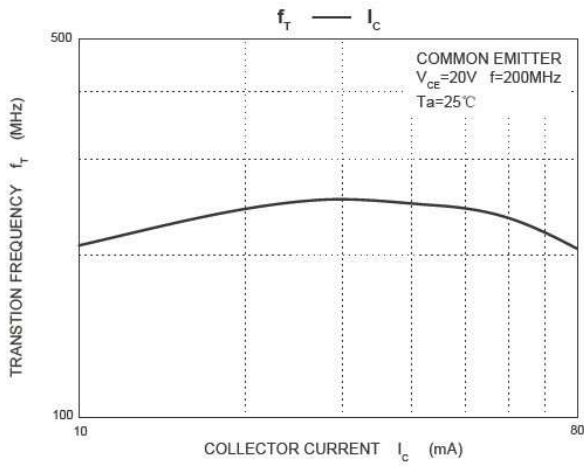
HFE	100-300	
RANK	L	H
RANGE	100-200	200-300

## RATING AND CHARACTERISTIC CURVES

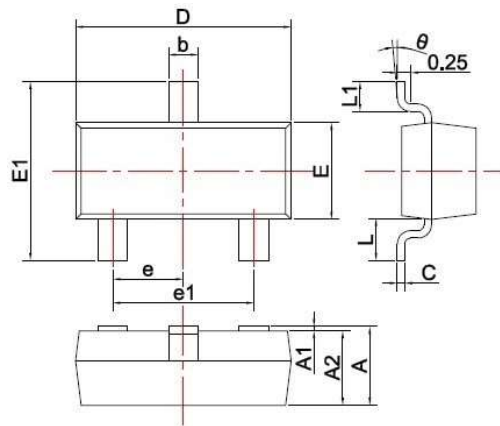
Static Characteristic



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## SOT-23 PACKAGE OUTLINE Plastic surface mounted package

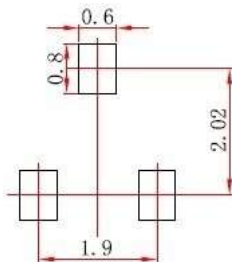


SYMBOL	DIMENSIONS	
	MIN.	MAX.
A	0.900	1.150
A1	0.000	0.100
A2	0.900	1.050
b	0.300	0.500
c	0.080	0.150
D	2.800	3.000
E	1.200	1.400
E1	2.250	2.550
e	0.950TYP	
e1	1.800	2.000
L	0.550REF	
L1	0.300	0.500
θ	0°	8°

Unit: mm

Precautions: PCB Design

Recommended land dimensions for SOT-23 diode. Electrode patterns for PCBs



Note:

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

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