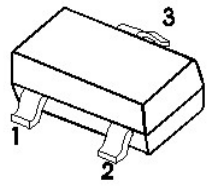
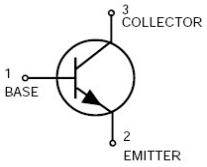
MMBT3904

SOT-23 Plastic-Encapsulate Transistors

SOT-23



1. BASE
2. EMITTER
3. COLLECTOR



Features

- Complementary to MMBT3906
- Power Dissipation of 200mW
- High Stability and High Reliability

Mechanical Data

SOT-23 Small Outline Plastic Package
Epoxy UL: 94V-0
Mounting Position: Any
Marking:1AM

Maximum Ratings & Thermal Characteristics (Ratings at 25℃ ambient temperature unless otherwise specified.)

Parameters	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	60	V
Collector-Emitter Voltage	V_{CEO}	40	V
Emitter -Base Voltage	V_{EBO}	6	V
Collector Current-Continuous	I_C	200	mA
Collector Power Dissipation	P_C	200	mW
Junction Temperature	T_j	150	℃
Storage Temperature	Tstg	-55-+150	℃
Thermal resistance From junction to ambient	$R_{\theta JA}$	625	℃/W

Electrical Characteristics (Ratings at 25℃ ambient temperature unless otherwise specified).

Parameter	Symbols	Test Condition	Limits		Unit
			Min	Max	
Collector-base breakdown voltage	**$V_{(BR)CBO}$**	I_C=10uA, I_E=0	60		V
Collector-emitter breakdown voltage	**$V_{(BR)CEO}$**	I_C=1mA, 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_{CEX}**	V_{CE}=30V, $V_{EB(off)}$=3V		50	nA
Collector cut-off current	**I_{CBO}**	V_{CB}=60V, I_E=0		100	nA
Emitter cut-off current	**I_{EBO}**	V_{EB}=5V, I_C=0		100	nA
DC current gain	$h_{FE(1)}$	V_{CE}=1V, I_C=10mA	100	300	
	$h_{FE(2)}$	V_{CE}=1V, I_C=50mA	60		
	$h_{FE(3)}$	V_{CE}=1V, I_C=100mA	30		
Collector-emitter saturation voltage	**$V_{CE(sat)}$**	I_C=50mA, I_B=5mA		0.30	V
Base -emitter saturation voltage	**$V_{BE(sat)}$**	I_C=50mA, I_B=5mA		0.95	V
Transition frequency	**f_T**	V_{CE}=20V, I_C=10mA,f=100MHz	300		MHz
Delay time	td	V_{CC}=3V, $V_{BE(off)}$=-0.5V, I_C=10mA, I_{B1}=1mA		35	nS
Rise time	tr	V_{CC}=3V, $V_{BE(off)}$=-0.5V, I_C=10mA, I_{B1}=1mA		35	nS
Storage time	ts	V_{CC}=3V, I_C=10mA, I_{B1}=I_{B2}=1mA		200	nS
Fall time	tf	V_{CC}=3V, I_C=10mA, I_{B1}=I_{B2}=1mA		50	nS

CLASSIFICATION OF $h_{FE(1)}$

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

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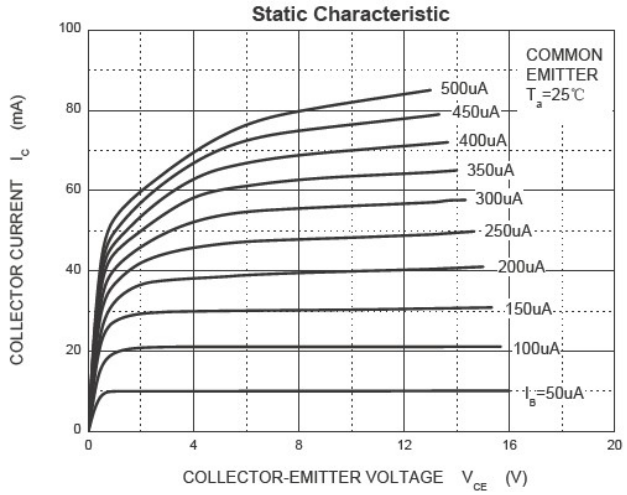
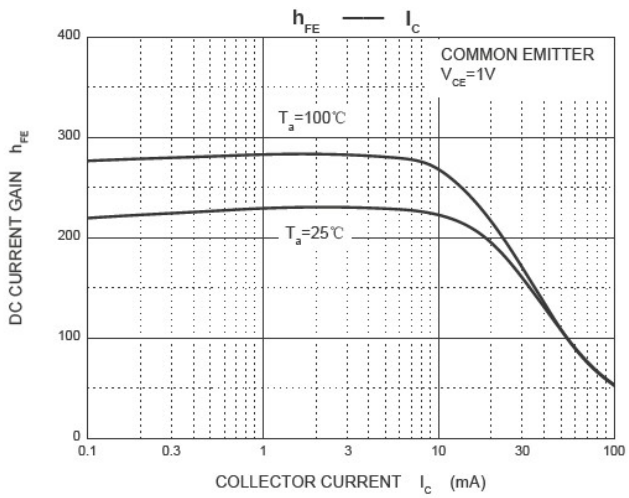
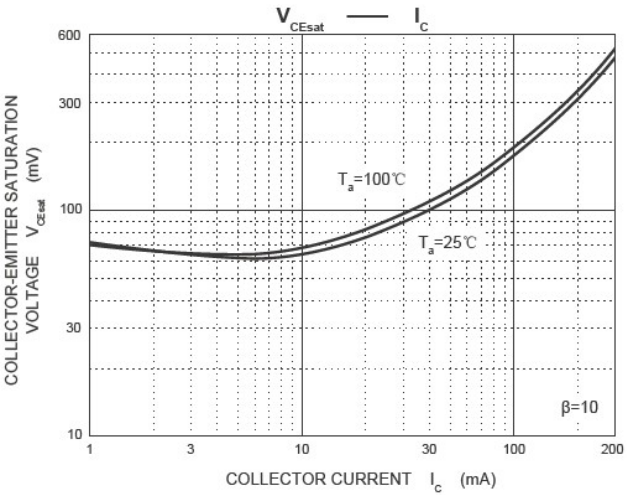
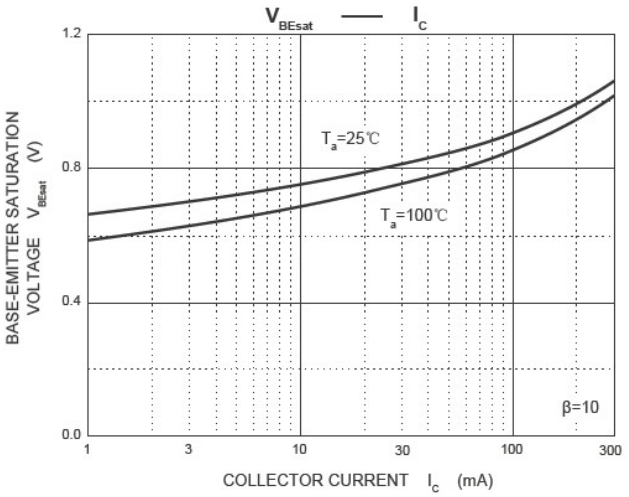
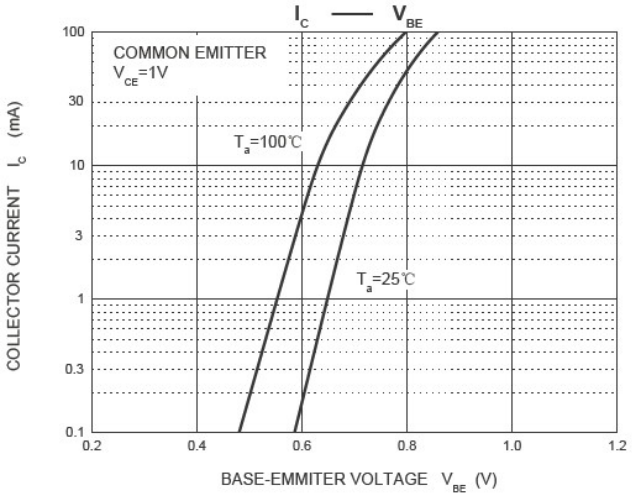
Typical Characteristics

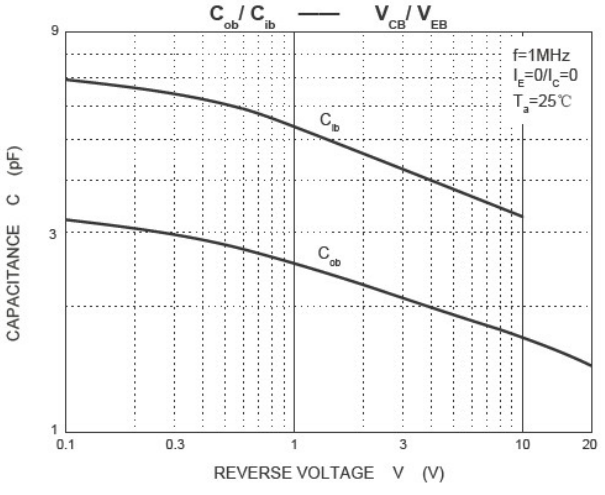












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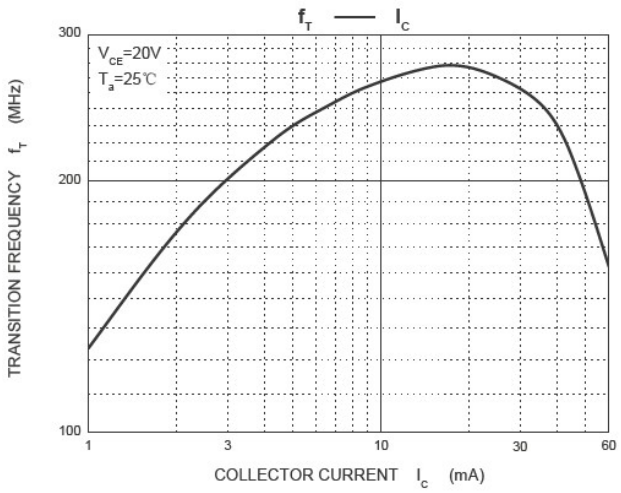
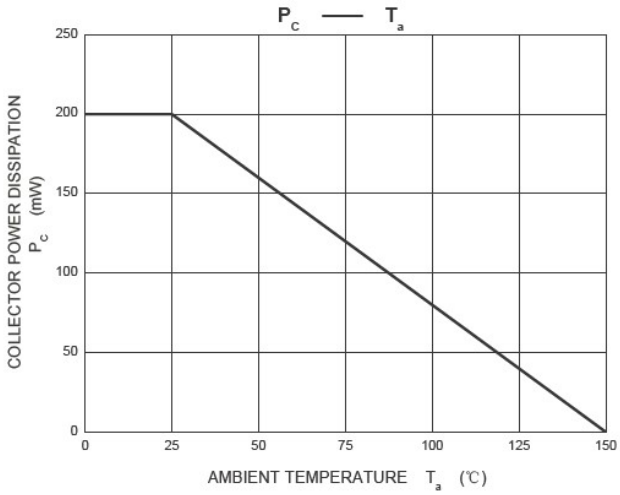
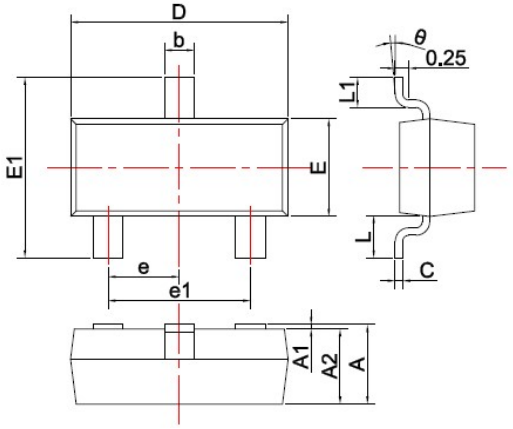
RATINGS AND CHARACTERISTIC CURVES MMBT3904





SOT-23 PACKAGE OUTLINE **Plastic surface mounted package**

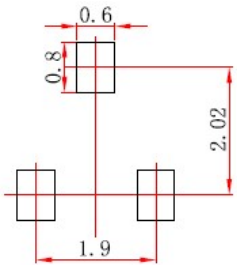


SYMBOL	DIMENSIONS	
	MIN.	MAX.
A	0.900	1.150
A1	0.000	0.100
A2	0.900	1.050
b	0.300	0.500
c	0.080	0.150
D	2.800	3.000
E	1.200	1.400
E1	2.250	2.550
e	0.950TYP	
e1	1.800	2.000
L	0.550REF	
L1	0.300	0.500
θ	0°	8°

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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