

MMBT3904

MMBT3904 SOT-23 Plastic-Encapsulate Transistors(NPN)

General description

SOT-23 Plastic-Encapsulate Transistors(NPN)

FEATURES

- Complementary to MMBT3906
- Power Dissipation of 200mW
- High Stability and High Reliability
- SOT-23 Small Outline Plastic Package
- Epoxy UL: 94V-0



DEVICE MARKING CODE:

Device Type	Device Marking
MMBT3904	1AM

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

Parameters	Symbol	Value	Unit
Collector-Base Voltage	VCBO	60	V
Collector-Emitter Voltage	VCEO	40	V
Emitter -Base Voltage	VEBO	6	V
Collector Current-Continuous	IC	200	mA
Collector Power Dissipation	PC	200	mW
Junction Temperature	T _J	150	°C
Storage Temperature	T _{stg}	-55-+150	°C
Thermal resistance From junction to ambient	R _{θJA}	625	°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	IC=10uA, IE=0	60		V
Collector-emitter breakdown voltage	V(BR)CEO	IC=1mA, IB=0	40		V
Emitter-base breakdown voltage	V(BR)EBO	IE=10uA, IC=0	6		V
Collector cut-off current	ICEX	VCE=30V, VEB(off)=3V		50	nA
Collector cut-off current	ICBO	VCE=60V, IE=0		100	nA
Emitter cut-off current	IEBO	VEB=5V, IC=0		100	nA
DC current gain	hFE(1)	VCE=1V, IC=10mA	100	300	
	hFE(2)	VCE=1V, IC=50mA	60		
	hFE(3)	VCE=1V, IC=100mA	30		
Collector-emitter saturation voltage	VCE(sat)	IC=50mA, IB=5mA		0.30	V
Base -emitter saturation voltage	VBE(sat)	IC=50mA, IB=5mA		0.95	V
Transition frequency	f _T	VCE=20V, IC=10mA, f=100MHz	300		MHz
Delay time	t _d	VCC=3V, VBE(off)=-0.5V, IC=10mA, IB1=1mA		35	nS
Rise time	t _r	VCC=3V, VBE(off)=-0.5V, IC=10mA, IB1=1mA		35	nS
Storage time	t _s	VCC=3V, IC=10mA, IB1=IB2=1mA		200	nS
Fall time	t _f	VCC=3V, IC=10mA, IB1=IB2=1mA		50	nS

*Pulse test: pulse width ≤ 300us, duty cycle ≤ 2.0%



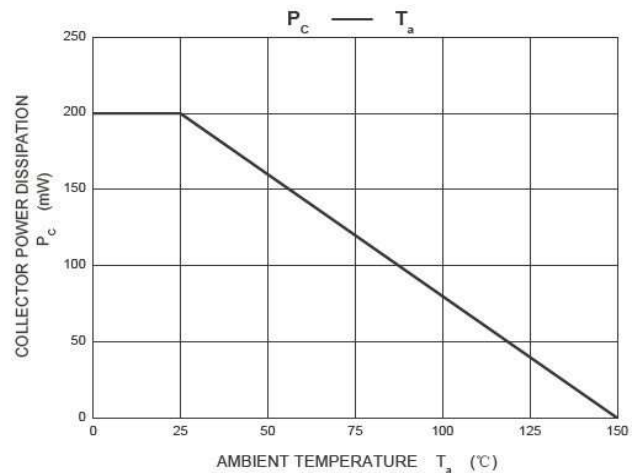
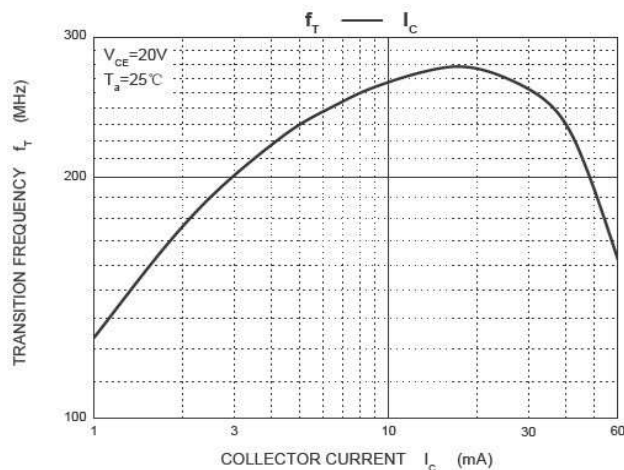
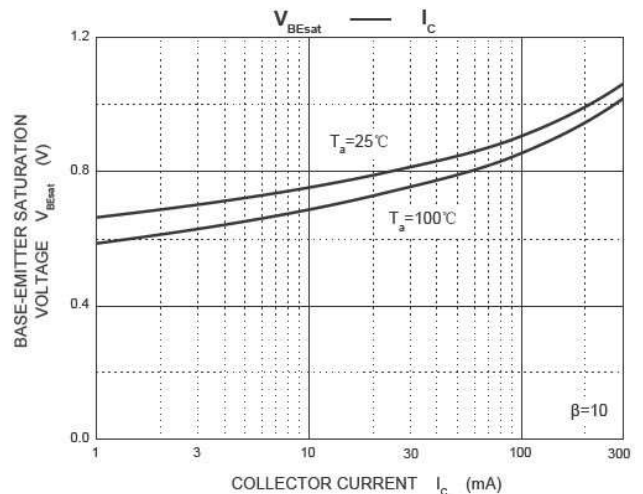
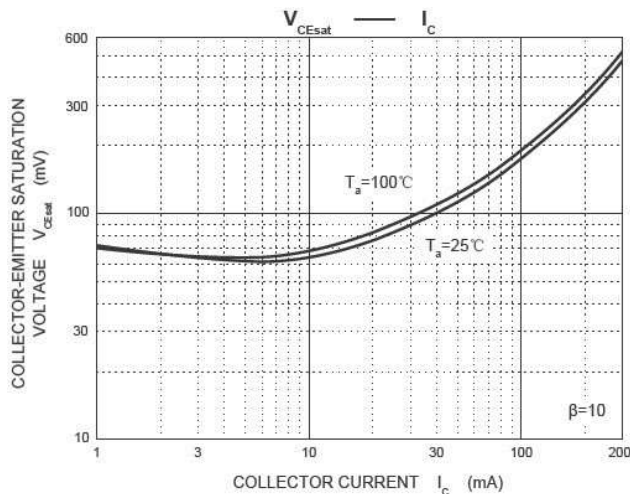
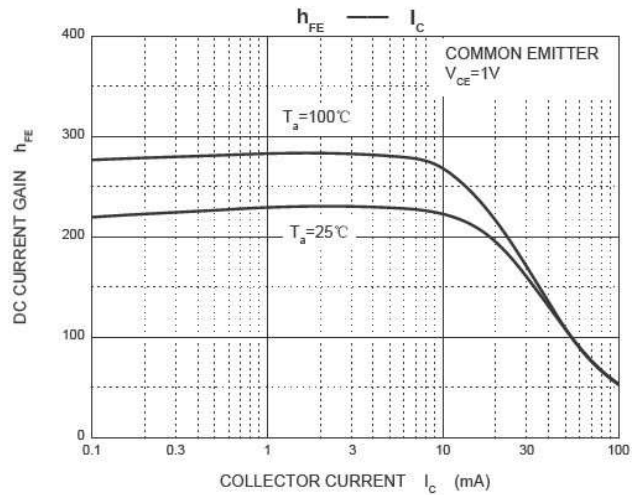
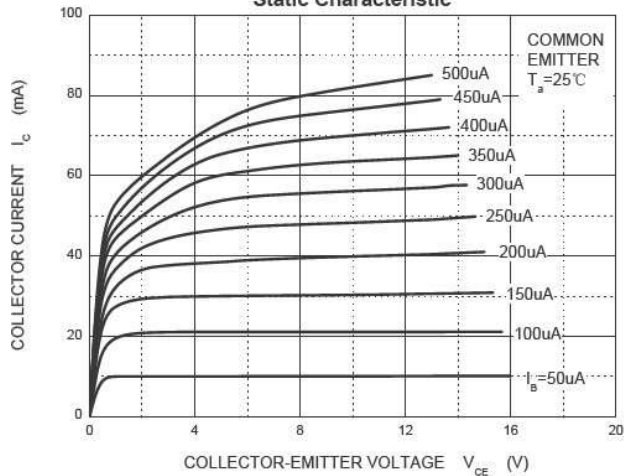
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CLASSIFICATION OF hFE(1)

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

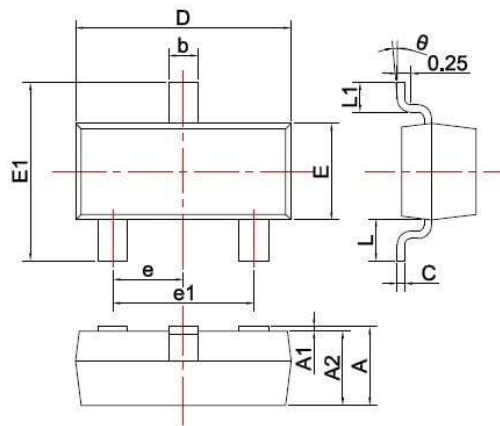
RATING AND CHARACTERISTIC CURVES

Static Characteristic



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SOT-23 PACKAGE OUTLINE Plastic surface mounted package

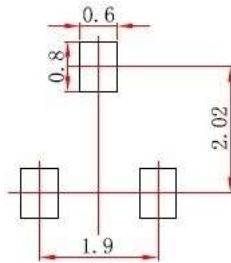


SYMBOL	DIMENSIONS	
	MIN.	MAX.
A	0.900	1.150
A1	0.000	0.100
A2	0.900	1.050
b	0.300	0.500
c	0.080	0.150
D	2.800	3.000
E	1.200	1.400
E1	2.250	2.550
e	0.950TYP	
e1	1.800	2.000
L	0.550REF	
L1	0.300	0.500
θ	0°	8°

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: ± 0.05 mm.
3. The pad layout is for reference purposes only.

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