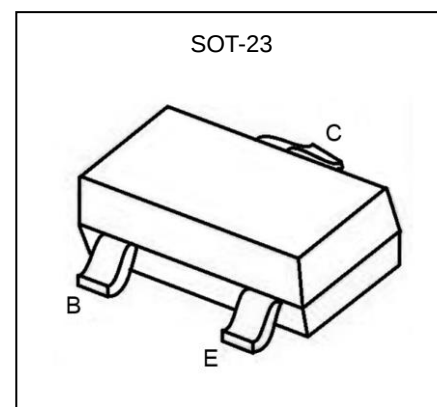


MMBT3904 Transistor(NPN)

Feature

- Switching Transistor
- Collector-emitter voltage $V_{CE}=40V$
- Collector current $I_C=0.2A$

Marking



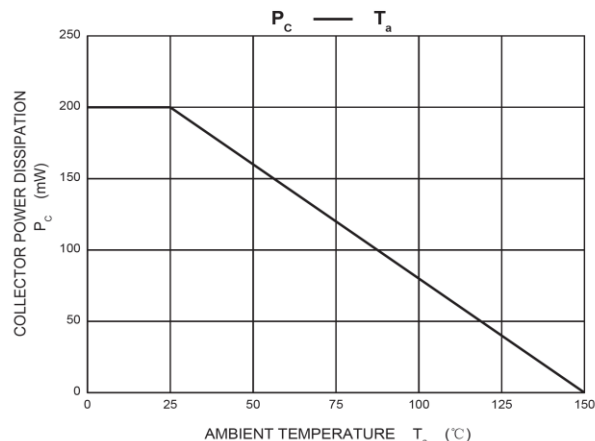
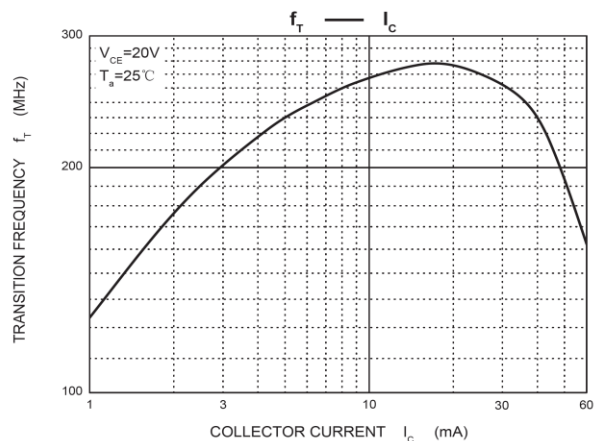
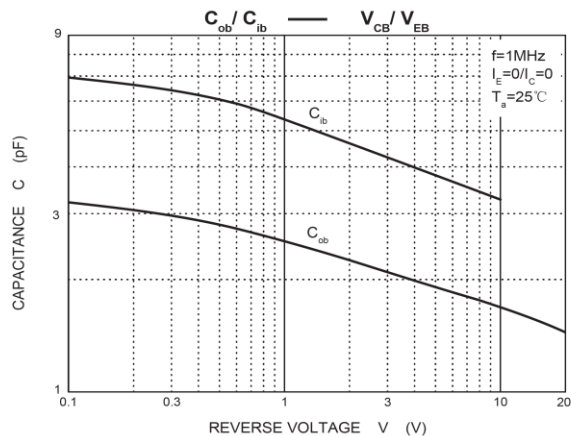
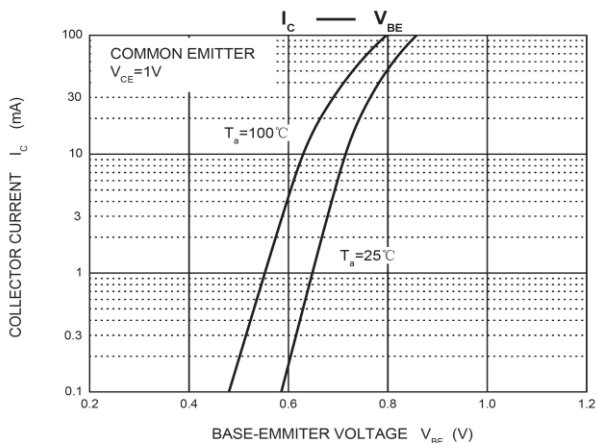
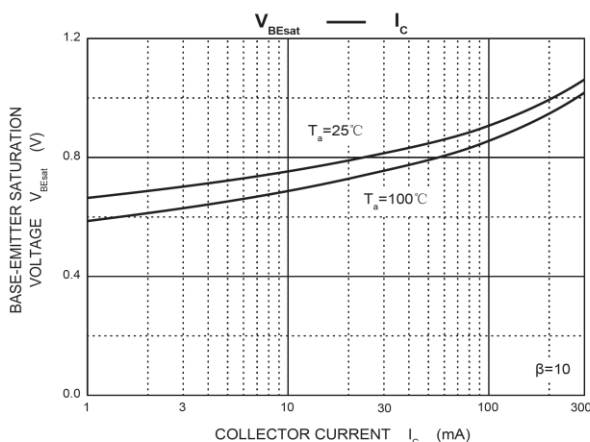
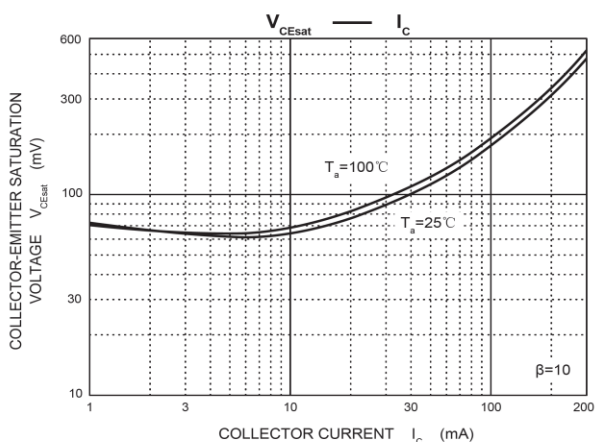
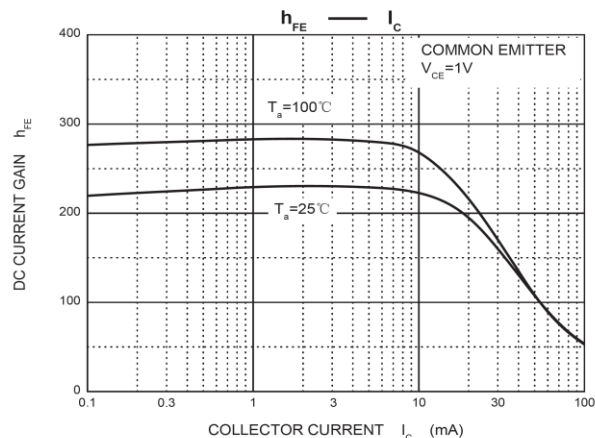
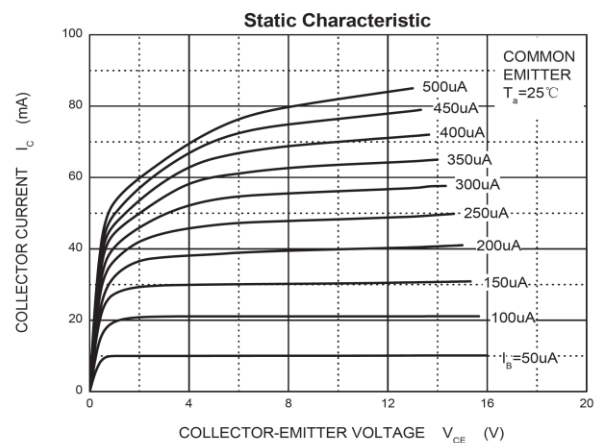
MAXIMUM RATINGS ($T_a=25^{\circ}C$ unless otherwise noted)

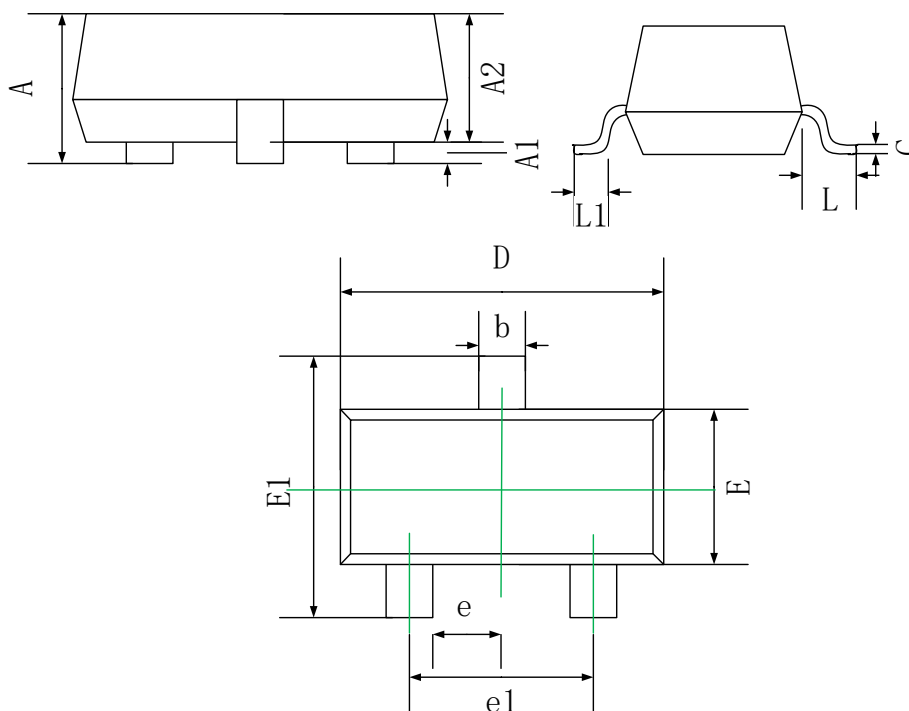
Parameter	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	60	V
Collector-Emitter Voltage	V_{CEO}	40	V
Emitter-Base Voltage	V_{EBO}	6	V
Collector Current -Continuous	I_C	0.2	A
Power Dissipation	P_d	0.35	W
Junction Temperature	T_J	150	$^{\circ}C$
Storage Temperature	T_{STG}	-55~ +150	$^{\circ}C$

ELECTRICAL CHARACTERISTICS($T_a=25^{\circ}\text{C}$ unless otherwise noted)

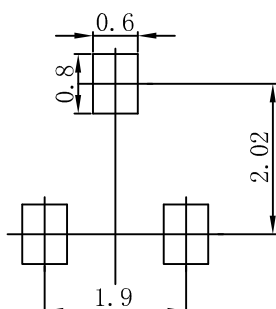
Parameter	Symbol	Test Condition	Min	Max	Unit
Collector-base breakdown voltage	$V_{(BR)CBO}$	$I_C=10\mu\text{A}, I_E=0$	60		V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	$I_C=1\text{mA}, I_B=0$	40		V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	$I_E=10\mu\text{A}, I_C=0$	6		V
Collector cut-off current	I_{CBO}	$V_{CB}=60\text{V}, I_E=0$		100	nA
Collector cut-off current	I_{CEX}	$V_{CE}=30\text{V}, V_{EB(off)}=3\text{V}$		50	nA
Base cut-off current	I_{BEX}			50	nA
Emitter cut-off current	I_{EBO}	$V_{EB}=5\text{V}, I_C=0$		100	nA
DC current gain	h_{FE1}	$V_{CE}=1\text{V}, I_C=0.1\text{mA}$	40		
	h_{FE2}	$V_{CE}=1\text{V}, I_C=1\text{mA}$	70		
	h_{FE3}	$V_{CE}=1\text{V}, I_C=10\text{mA}$	100	300	
	h_{FE4}	$V_{CE}=1\text{V}, I_C=50\text{mA}$	60		
	h_{FE5}	$V_{CE}=1\text{V}, I_C=100\text{mA}$	30		
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C=50\text{mA}, I_B=5\text{mA}$		0.3	V
Base-emitter saturation voltage	$V_{BE(sat)}$	$I_C=50\text{mA}, I_B=5\text{mA}$		0.95	V
Transition frequency	f_T	$V_{CE}=20\text{V}, I_C=10\text{mA}, f=100\text{MHz}$	300		MHZ
Delay Time	t_d	$V_{CC}=3\text{V}, I_C=10\text{mA},$		35	ns
Rise Time	t_r	$V_{BE(off)}=-0.5\text{V}, I_{B1}=1\text{mA}$		35	ns
Storage Time	t_s	$V_{CC}=3\text{V}, I_C=10\text{mA},$		200	ns
Fall Time	t_f	$I_{B1}=I_{B2}=1\text{mA}$		50	ns

Typical Characteristics



SOT-23 Package Information


Symbol	Dimensions In Millimeters	
	Min.	Max.
A	0.90	1.15
A1	0.00	0.10
A2	0.90	1.05
b	0.30	0.50
c	0.08	0.15
D	2.80	3.00
E	1.20	1.40
E1	2.25	2.55
e	0.95 REF.	
e1	1.80	2.00
L	0.55 REF.	
L1	0.30	0.50

SOT-23 Suggested Pad Layout

Note:

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