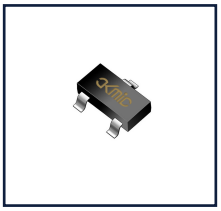
MMBT3904

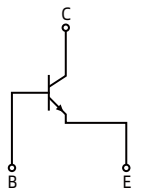
SOT23 Plastic-Encapsulate Transistors (NPN)

Features

- Low current, Low voltage.
- General purpose amplifier and switching.
- Complementary to MMBT3906.



SOT23



Equivalent Circuit

Absolute Maximum Ratings(T_A=25℃)

Symbol	Parameter	Value	Uniat
V_{CBO}	Collector-Base Voltage	60	V
V_{CEO}	Collector-Emitter Voltage	40	V
V_{EBO}	Emitter-Base Voltage	6	V
I_C	Collector Current	0.2	A
P_C	Collector Power Dissipation	200	mW
$R_{\theta JA}$	Thermal Resistance From Junction To Ambient	625	℃/W
T_J,T_{stg}	Operation Junction And Storage Temperature Range	-55 ~ +150	℃/W

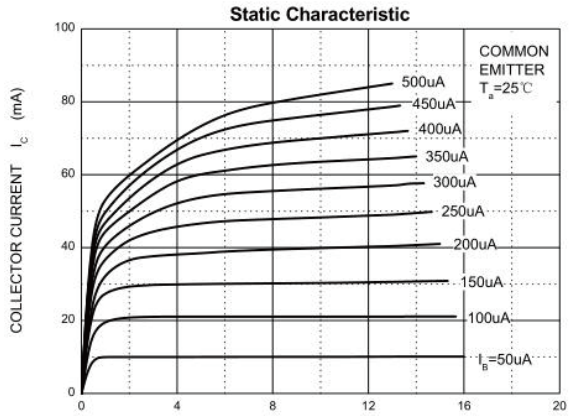
Electrical Characteristics (T_A=25℃ unless otherwise specified)

Symbol	Parameter	Test conditions	Min	Typ	Max	Unit
$V_{(BR)CBO}$	Collector-base breakdown voltage	I_C=10μA, I_E=0	60			V
$V_{(BR)CEO}$	Collector-emitter breakdown voltage	I_C=1mA, I_B=0	40			V
$V_{(BR)EBO}$	Emitter-base breakdown voltage	I_E=10μA, I_C=0	6			V
I_{CEX}	Collector cut-off current	V_{CE}=20V, I_E=0			50	nA
I_{CBO}	Collector cut-off current	V_{CB}=40V, I_E=0			100	nA
I_{EBO}	Emitter cut-off current	V_{EB}=5V, I_C=0			100	nA
$h_{FE(1)}$	DC current gain(1)	V_{CE}=1V, I_C=10mA	100		300	
$h_{FE(2)}$	DC current gain(2)	V_{CE}=1V, I_C=50mA	60			
$h_{FE(3)}$	DC current gain(3)	V_{CE}=1V, I_C=100mA	30		300	
$V_{CE(sat)}$	Collector-emitter saturation voltage	I_C=50mA, I_B=5mA			0.3	V
$V_{BE(sat)}$	Base-emitter saturation voltage				0.95	V
f_T	Transition frequency	V_{CE}=20V, I_C=10mA, f=100MHz	300			MHz
t_d	Delay time	V_{CC}=3V, $V_{BE(off)}$=0.5V, I_C=10mA, I_{B1}=I_{B2}=1mA			35	ns
t_r	Rise time				35	ns
t_s	Storage time	V_{CC}=3V, I_C=10mA, I_{B1}=I_{B2}=1mA			200	ns
t_f	Fall time				50	ns

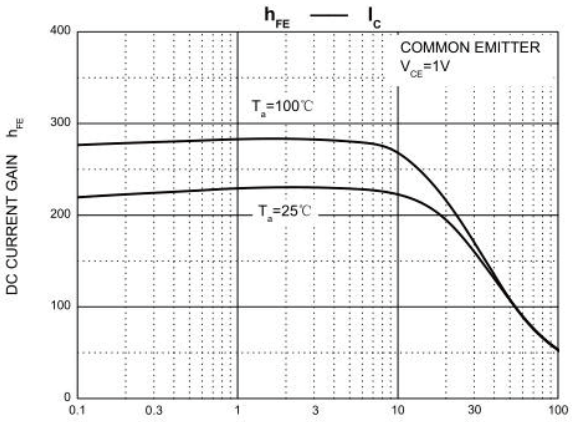
Ordering information

Product ID	Pack	Naming rule	Marking	hFE(1)	Qty(PCS)
MMBT3904	SOT23	MMBT3904 (产品名称 product name)	1AM	100 ~ 300	3000

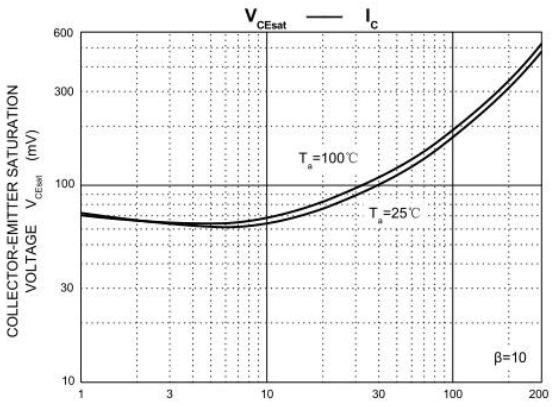
Typical Characteristics



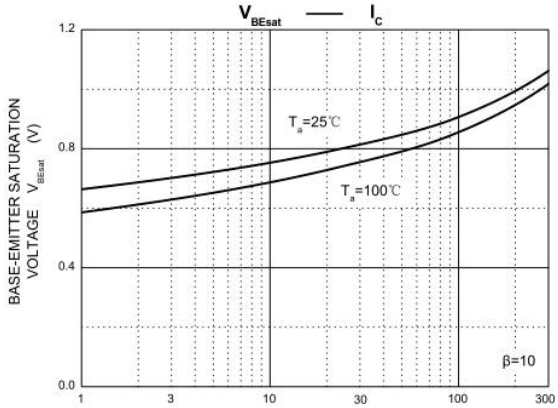
COLLECTOR-EMITTER VOLTAGE VCE(V)



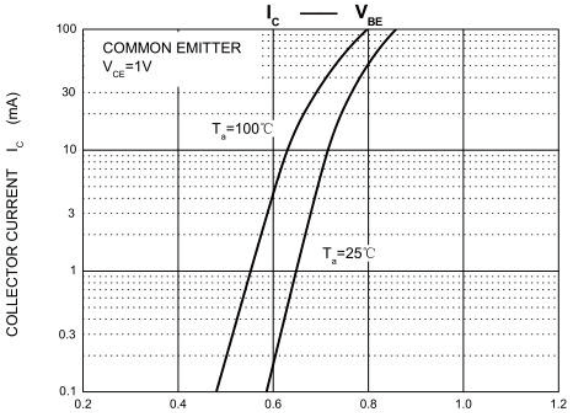
COLLECTOR CURRENT Ic(mA)



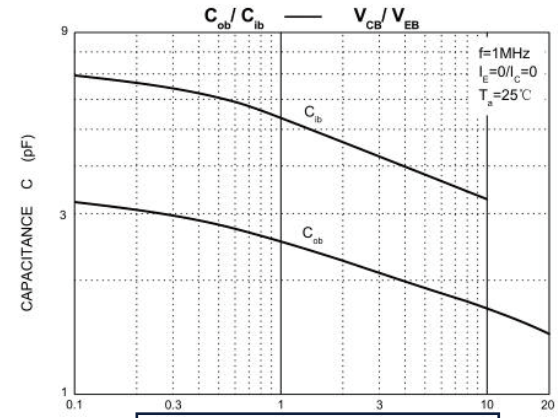
COLLECTOR CURRENT Ic(mA)



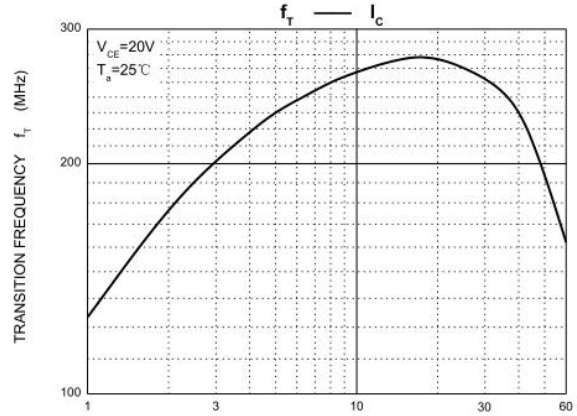
COLLECTOR CURRENT Ic(mA)



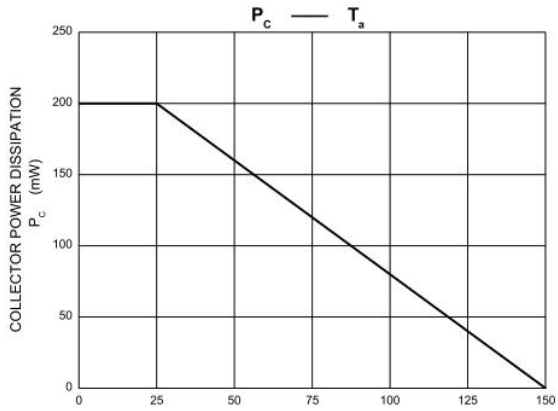
BASE-EMMITER VOLTAGE VBE(V)



OLTAGE V (V)

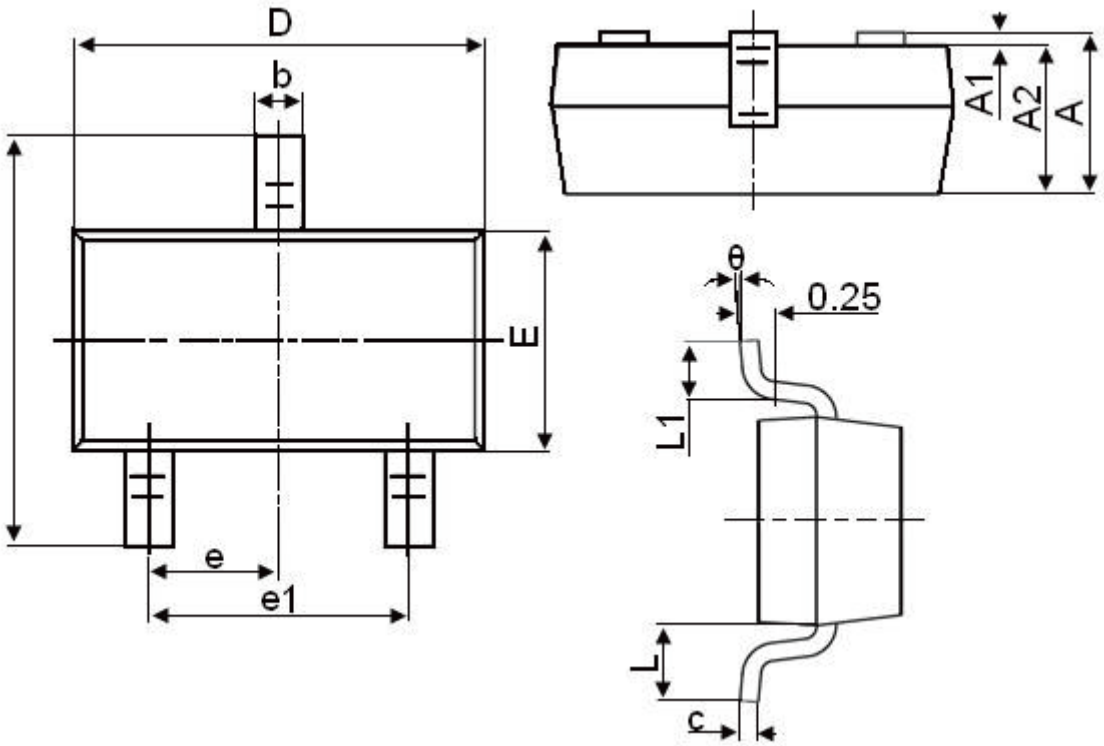


COLLECTOR CURRENT Ic(mA)



AMBIENT TEMPERATURE Ta(°C)

SOT23 Package Outline Dimensions



Symbol	Dimensions in Millimeters	
	mm	
	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°