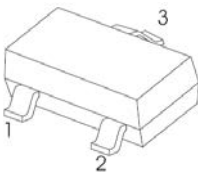
SOT-23 Plastic-Encapsulate Transistors
MMBT3904

MMBT3904 TRANSISTOR (NPN)

FEATURES

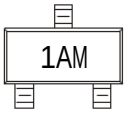
- Complementary to MMBT3906

SOT－23



1. BASE
2. EMITTER
3. COLLECTOR

MAXIMUM RATINGS (T_a=25℃ unless otherwise noted)



1AM= Device code
Solid dot = Green molding compound device, if none, the normal device.
X= Code

Symbol	Parameter	Value	Unit
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	200	mA
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	℃

ELECTRICAL CHARACTERISTICS (T_a=25℃ unless otherwise specified)

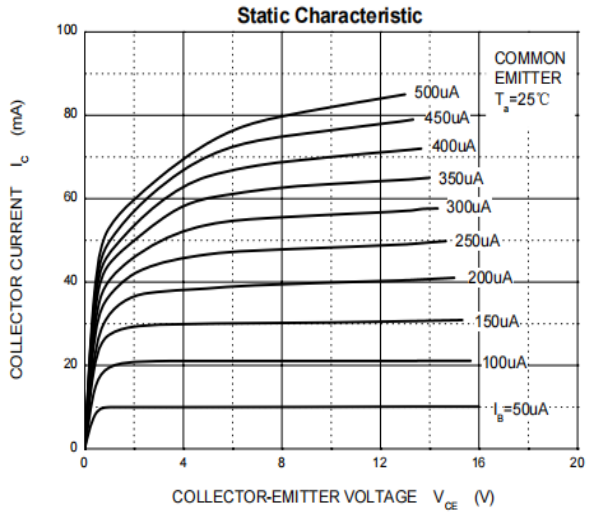
Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Collector-base breakdown voltage	$V_{(BR)CBO}$	I_C=10μA, I_E=0	60			V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	I_C=1mA, I_B=0	40			V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	I_E=10μA, I_C=0	6			V
Collector cut-off current	I_{CEX}	V_{CE}=30V, $V_{EB(off)}$=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			0.3	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	t_d	V_{CC}=3V, $V_{BE(off)}$=-0.5V I_C=10mA, I_{B1}=1mA			35	ns
Rise time	t_r	V_{CC}=3V, $V_{BE(off)}$=-0.5V I_C=10mA, I_{B1}=1mA			35	ns
Storage time	t_s	V_{CC}=3V, I_C=10mA, I_{B1}= I_{B2}=1mA			200	ns
Fall time	t_f	V_{CC}=3V, I_C=10mA, I_{B1}= I_{B2}=1mA			50	ns

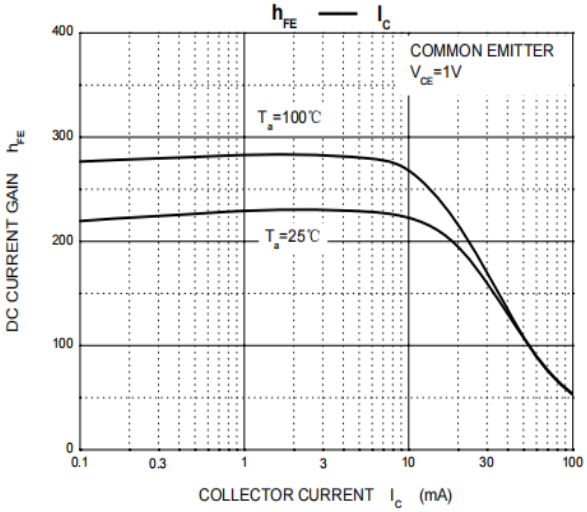
CLASSIFICATION OF $h_{FE(1)}$

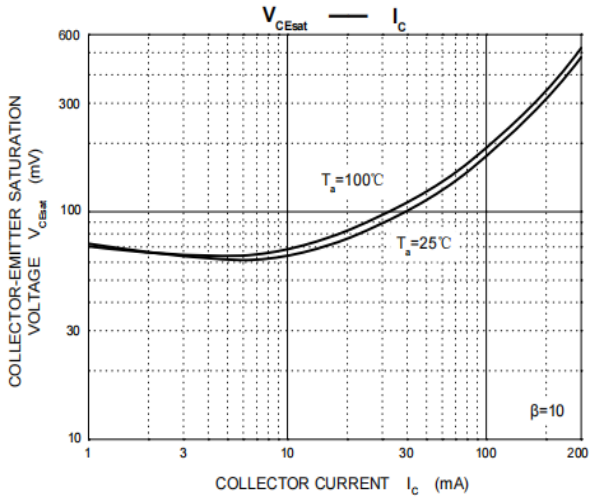
HFE	100-300	
RANK	L	H
RANGE	100－200	200－300

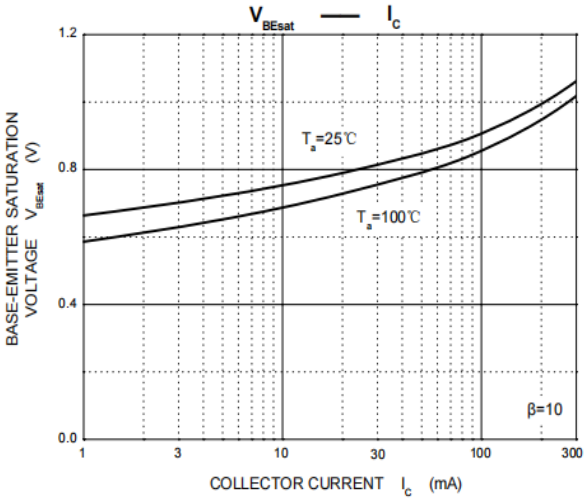
SOT-23 Plastic-Encapsulate Transistors
MMBT3904

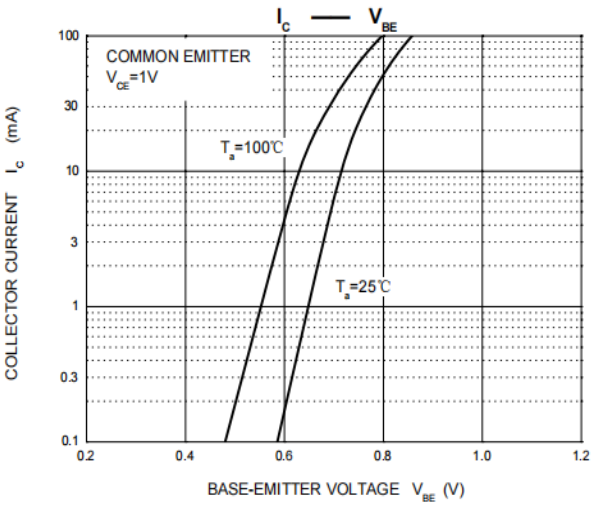
Typical Characteristics

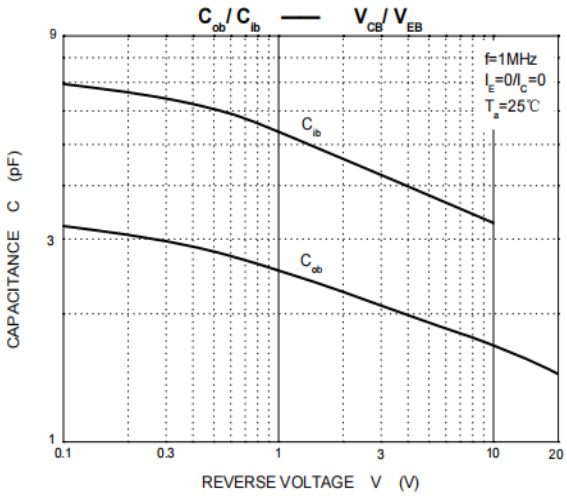






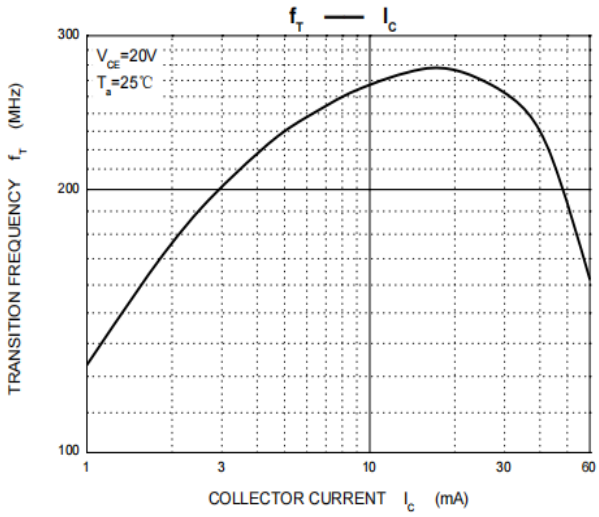


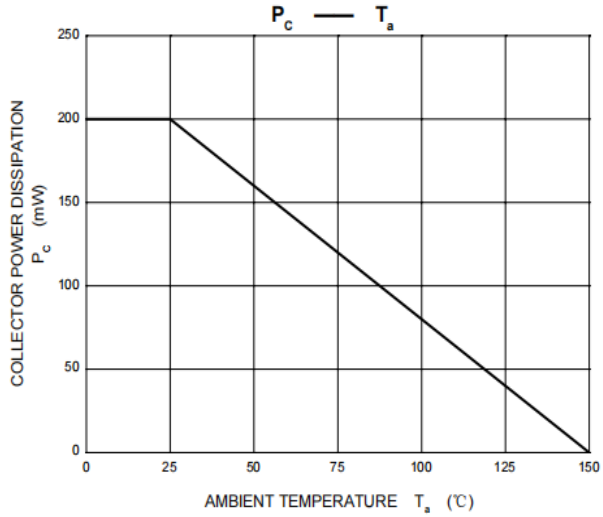




SOT-23 Plastic-Encapsulate Transistors
MMBT3904

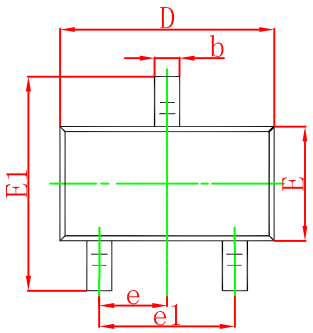
Typical Characteristics

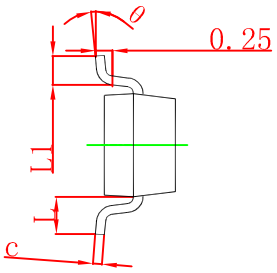


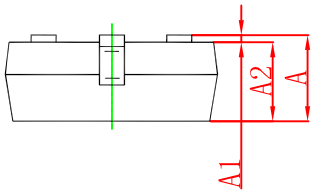


SOT-23 Plastic-Encapsulate Transistors
MMBT3904

SOT-23 Package Outline Dimensions

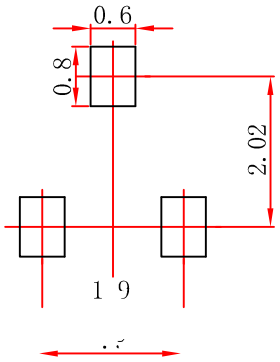






Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.	1.	0.	0.045
A1	9000.	1500.	0350.	0.004
A2	0000.	1001.	0000.	0.041
b	9000.	0500.	0350.	0.020
c	3000.	5000.	0120.	0.006
D	0802.	1503.	0030.	0.118
E	8001.	0001.	1100.	0.055
E1	2002.	4002.	0470.	0.100
e	0.950 TYP		0.037 TYP	
e1	2501.	5502.	0890.	0.079
L	0.550 REF		0.022 REF	
L1	8000.	0000.	0710.	0.020
θ				8°
	300 0°	500 8°	012 0°	

SOT-23 Suggested Pad Layout



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