MMBT3904

DATASHEET

Specification Revision History:

Version	Date	Description
V1.0	2021/08	New
V1.1	2022/05	Modify Ordering Information
V1.2	2023/02	Modify Ordering Information
V1.3	2025/05	Add application precautions and overall typesetting.

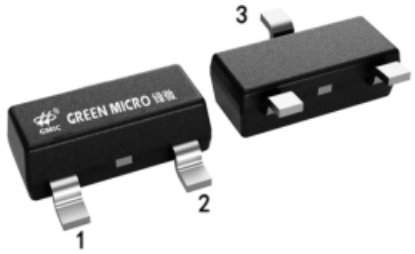
FEATURES

※Epitaxial Planar Die Construction

※Complementary PNP Type Available (MMBT3906)

※Ideal for Medium Power Amplification and Switching

The appearance of the product



1.Base
2.Emitter
3.Collector

SOT-23

Ordering Information

Product Model	Package Type	Marking	Packing	Packing Qty
MMBT3904-GM	SOT-23	1AM	REEL	3000PCS/REEL

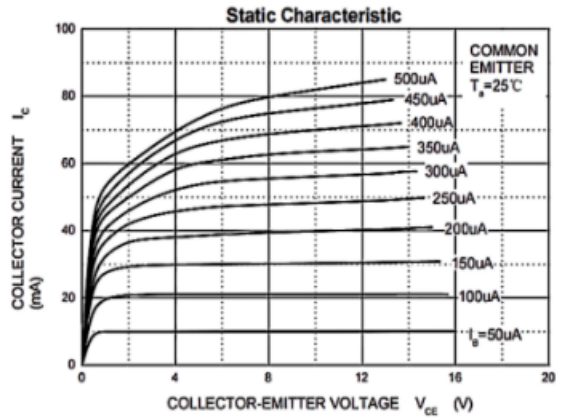
MAXIMUM RATINGS (Ta=25°C unless otherwise noted)

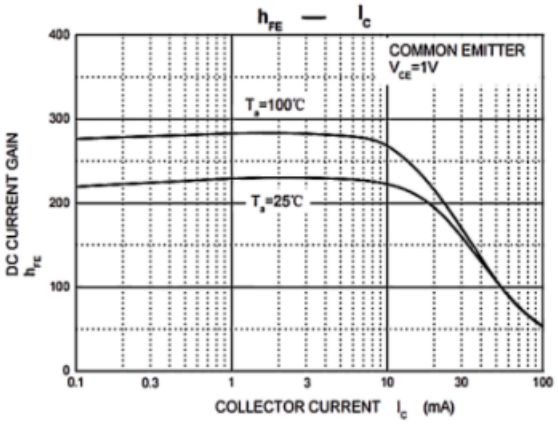
Symbol	Parameter	Value	Unit
V_{CBO}	Collector-Base Voltage	60	V
V_{CEO}	Collector-Emitter Voltage	40	V
V_{EBO}	Emitter-Base Voltage	6	V
I_C	Collector Current	200	mA
P_C	Total Device Dissipation	200	mW
$R_{\theta JA}$	ThermalResistanceFromJunction toAmbient	625	°C/W
T_J	Junction Temperature	150	°C
T_{stg}	Storage Temperature	-55 ~ +150	°C

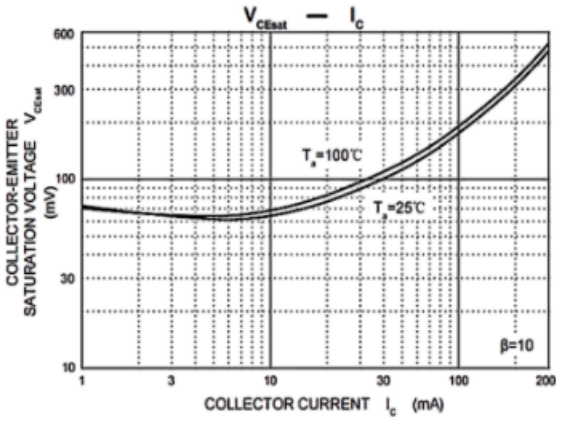
ELECTRICAL CHARACTERISTICS (Ta=25°C unless otherwise specified)

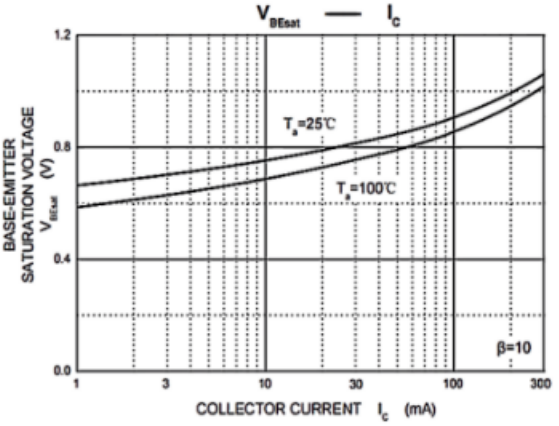
Parameter	Symbol	Test conditions	Min	Max	Unit
Collector-base breakdown voltage	$V_{(BR)CBO}$	I_C= 10μA, I_E=0	60		V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	I_C= 1mA, I_B=0	40		V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	I_E=10μA, I_C=0	6		V
Collector cut-off current	I_{CBO}	V_{CB}=60V, I_E=0		0.1	μA
Collector cut-off current	I_{CEX}	V_{CE}=30V, $V_{BE(off)}$=3V		50	nA
Emitter cut-off current	I_{EBO}	V_{EB}=5V, I_C=0		0.1	μA
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}=-0.5V		35	nS
Rise Time	t_r	I_C=10mA, I_{B1}=-I_{B2}=1.0mA		35	nS
Storage Time	t_s	V_{CC}=3V, I_C=10mA,		200	nS
Fall Time	t_f	I_{B1}=-I_{B2}=1mA		50	nS

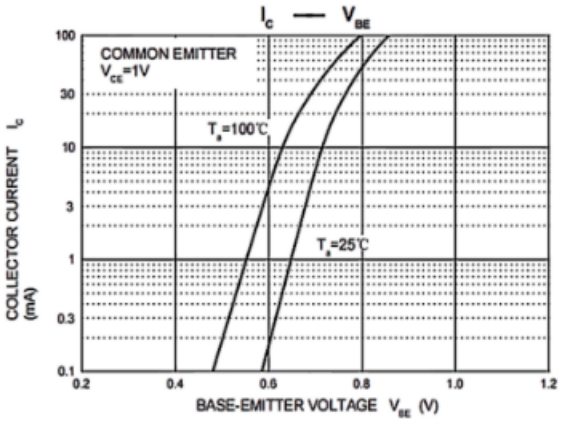
Typical Characteristics

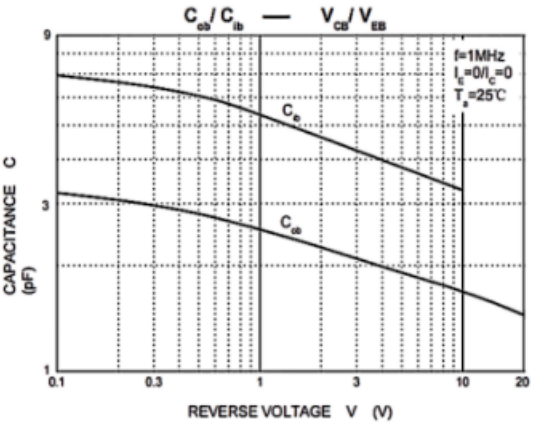


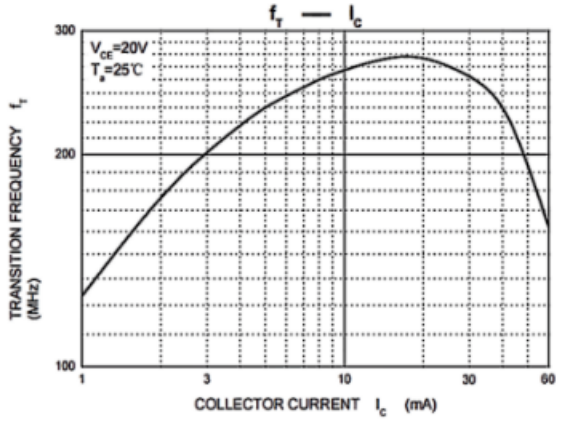


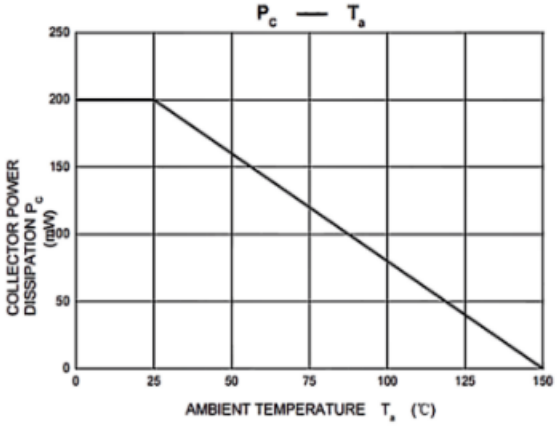






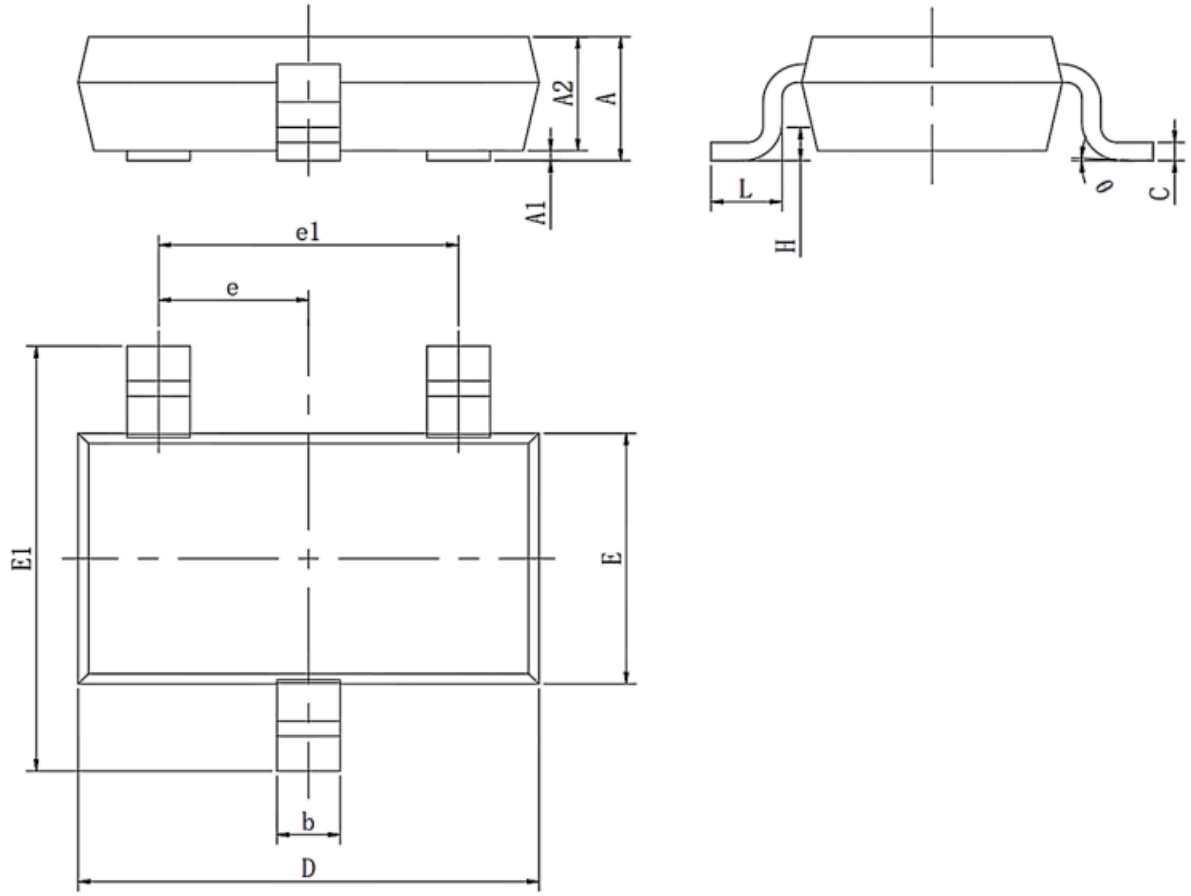






Outline Dimensions

SOT-23 Unit : mm



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
C	0.080	0.200	0.003	0.008
D	2.800	3.020	0.110	0.119
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.95 (BSC)		0.037(BSC)	
e1	1.90 (BSC)		0.075(BSC)	
L	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°

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