

MMBT3906

DATASHEET

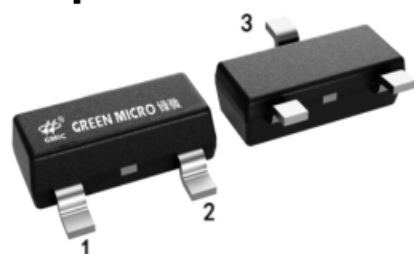
Specification Revision History:

Version	Date	Description
V1.0	2021/04	New
V1.1	2022/06	Modify Ordering Information
V1.2	2024/02	Modify Ordering Information
V1.3	2025/05	Add application precautions and overall typesetting.

Features

- ※High DC Current Gain, Low Collector to Emitter Saturation Voltage.
- ※General purpose amplifier and switching.
- ※Complementary to MMBT3904.

Simplified Outline



- 1.Base
- 2.Emitter
- 3.Collector

SOT-23

Ordering Information

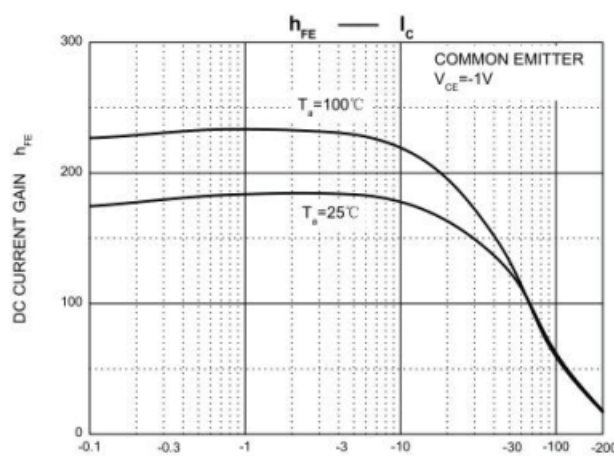
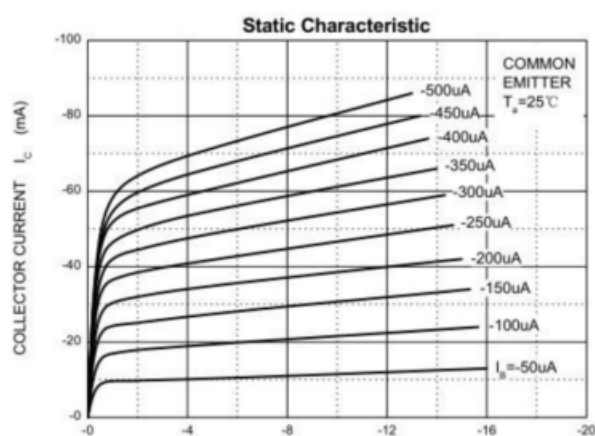
Product Model	Package Type	Marking	Packing	Packing Qty
MMBT3906-GM	SOT-23	2A	REEL	3000 PCS/REEL

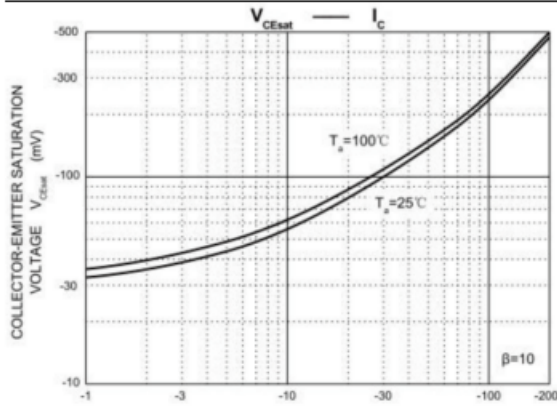
Absolute Maximum Ratings(TA=25°C)

Symbol	Parameter	Value	Unit
V _{CBO}	Collector-Base Voltage	-40	V
V _{CEO}	Collector-Emitter Voltage	-40	V
V _{EB0}	Emitter-Base Voltage	-5	V
I _C	Collector Current	-0.2	A
P _C	Collector Power Dissipation	200	mW
R _{θJA}	Thermal Resistance From Junction To Ambient	625	°C/W
T _J , T _{stg}	Operation Junction And Storage Temperature Range	-55~+150	°C/W

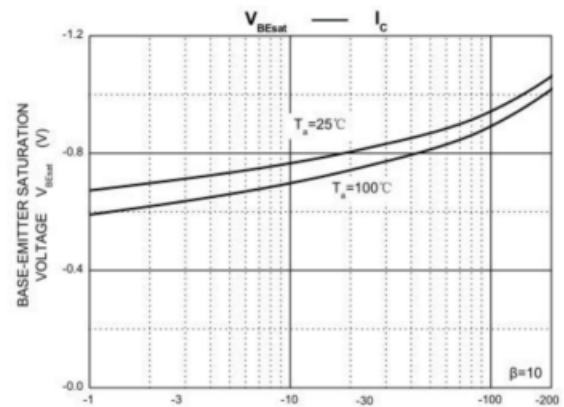
Electrical Characteristics (TA=25°C unless otherwise specified)

Symbol	Parameter	Test conditions	Min	Typ	Max	Unit
$V_{(BR)CBO}$	Collector-base breakdown voltage	$I_C = -10\mu A, I_E = 0$	-40			V
$V_{(BR)CEO}$	Collector-emitter breakdown voltage	$I_C = -1mA, I_B = 0$	-40			V
$V_{(BR)EBO}$	Emitter-base breakdown voltage	$I_E = -10\mu A, I_C = 0$	-5			V
I_{CEX}	Collector cut-off current	$V_{CE} = -30V, V_{EB(off)} = -3V$			-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			
$V_{CE(sat)}$	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	$V_{CC} = -3V, I_C = -10mA, I_{B1} = I_{B2} = -1mA$			225	ns
t_f	Fall time				75	ns

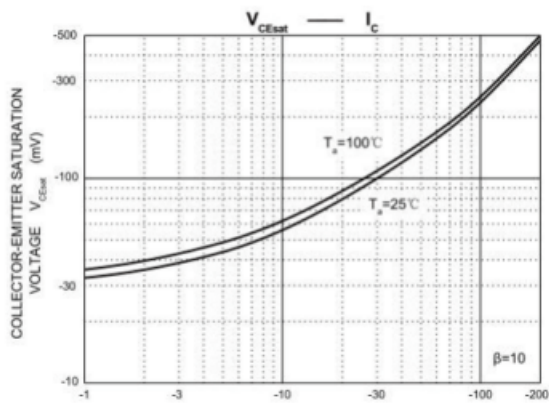
Typical Characteristics




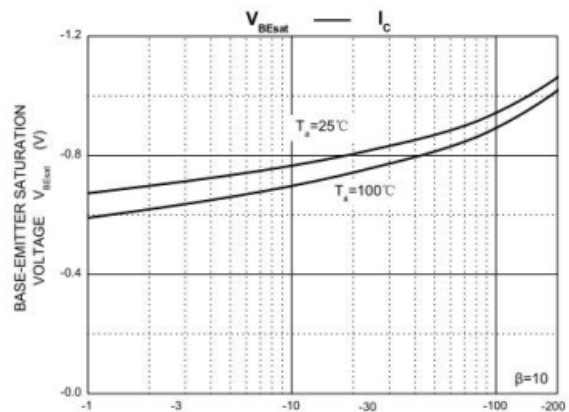
COLLECTOR CURRENT I_C (mA)



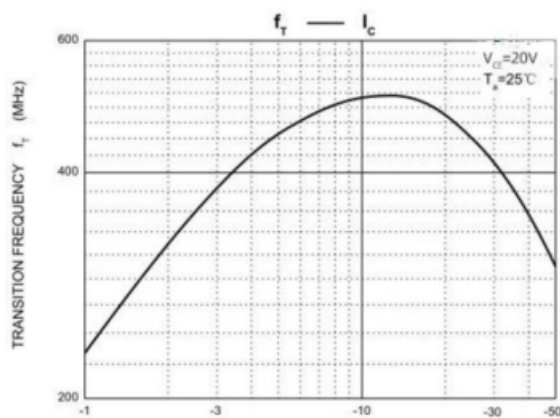
COLLECTOR CURRENT I_C (mA)



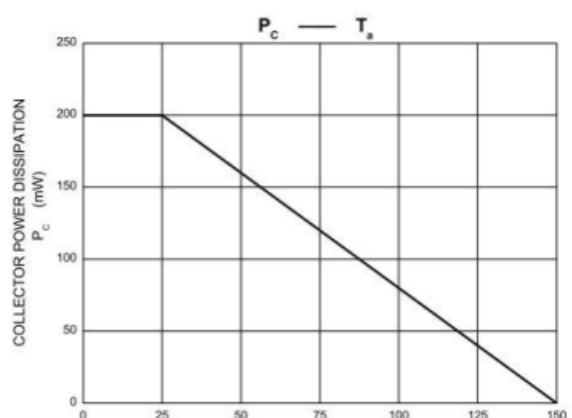
BASE-EMITTER VOLTAGE V_{BE} (V)



VOLTAGE V (V)

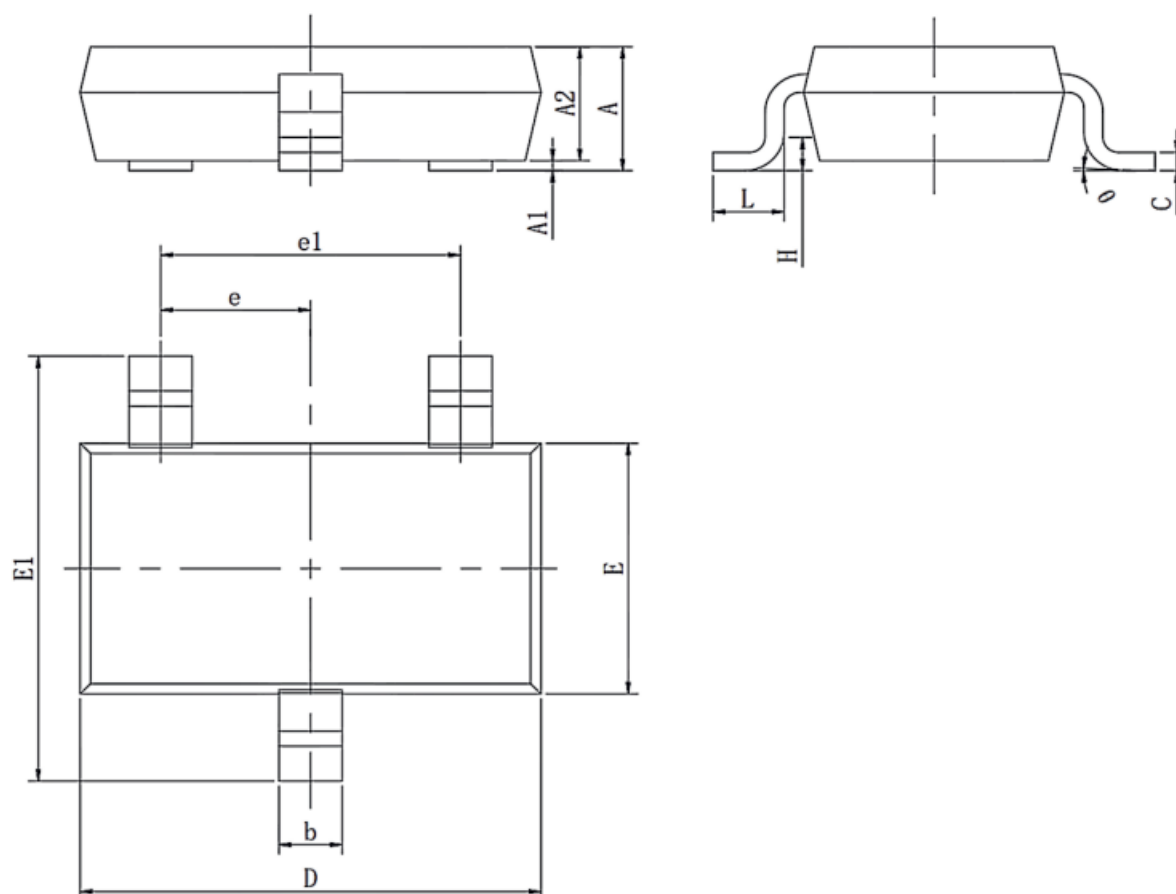


COLLECTOR CURRENT I_C (mA)



AMBIENT TEMPERATURE T_A ($^\circ\text{C}$)

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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