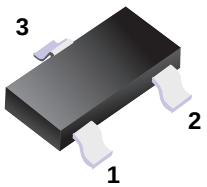
MMBT3906M

PNP Transistors

■ Features

- Complementary to MMBT3904M
- Small Package



1. Base
2. Emitter
3. Collector

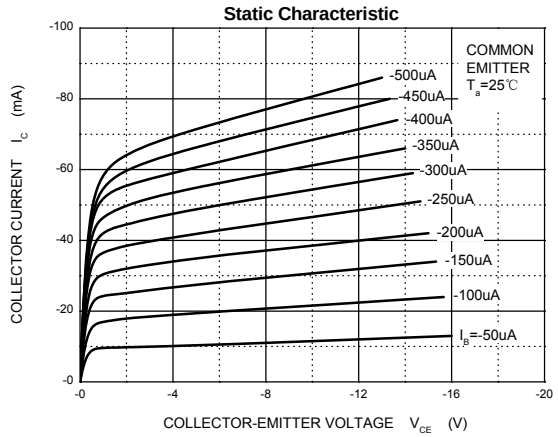
■ **Simplified outline(SOT-723)**

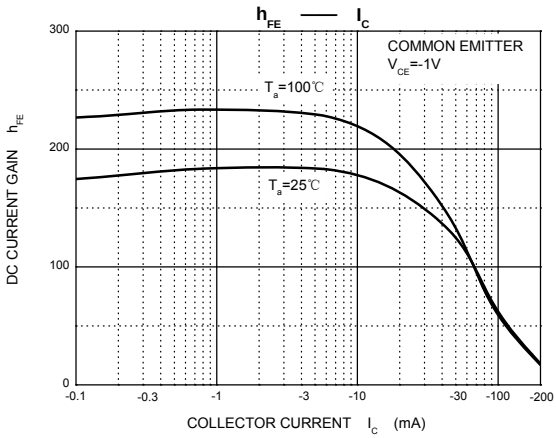
■ Absolute Maximum Ratings Ta = 25℃

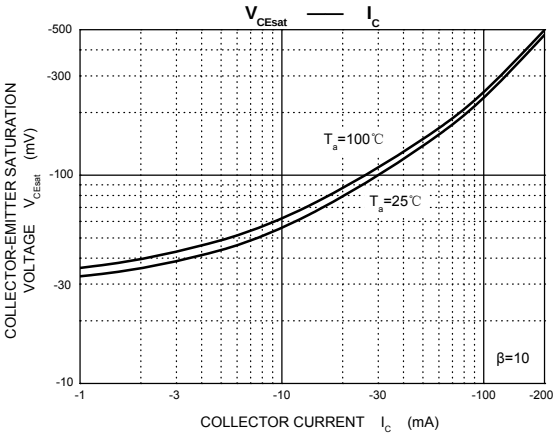
Symbol	Parameter	Value	Unit
V_{CBO}	Collector-Base Voltage	-40	V
V_{CEO}	Collector-Emitter Voltage	-40	V
V_{EBO}	Emitter-Base Voltage	-5	V
I_C	Collector Current -Continuous	-0.2	A
P_C	Power Dissipation	100	mW
$R_{\Theta JA}$	Thermal Resistance from Junction to Ambient	1250	℃/W
T_J	Junction Temperature	150	℃
T_{stg}	storage Temperature	-55~+150	℃

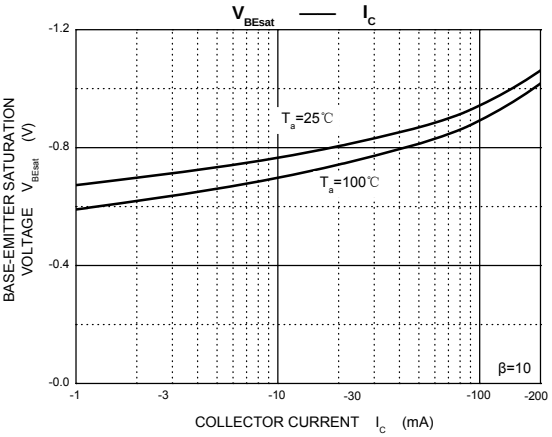
■ Electrical Characteristics Ta = 25℃

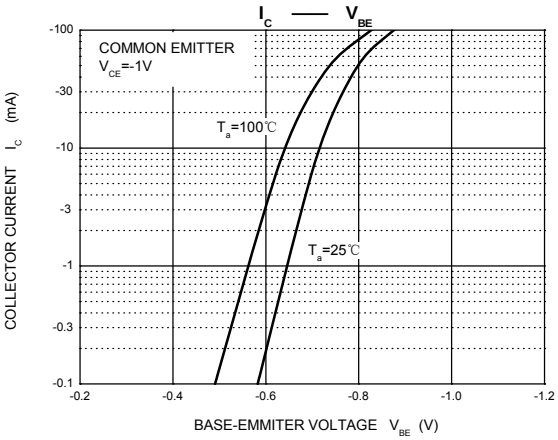
Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Collector-base breakdown voltage	$V_{(BR)CBO}$	I_C=-10μA,I_E=0	-40			V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	I_C=-1mA,I_B=0	-40			V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	I_E=-10μA,I_C=0	-5			V
Collector cut-off current	I_{CBO}	V_{CB}=-40V,I_E=0			-100	nA
Collector cut-off current	I_{CEX}	V_{CE}=-30V,$V_{EB(off)}$=-3V			-50	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}=-2V,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}=I_{B2}=-1mA			35	ns
Rise time	t_r				35	ns
Storage time	t_s	V_{CC}=-3V,I_C=-10mA I_{B1}=I_{B2}=-1mA			225	ns
Fall time	t_f				75	ns

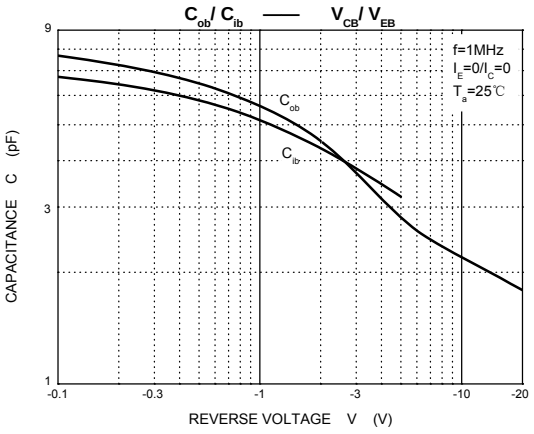

Static Characteristic
COMMON EMITTER
T_a=25℃
-500uA
-450uA
-400uA
-350uA
-300uA
-250uA
-200uA
-150uA
-100uA
I_B=-50uA
COLLECTOR CURRENT I_C (mA)
COLLECTOR-EMITTER VOLTAGE V_{CE} (V)

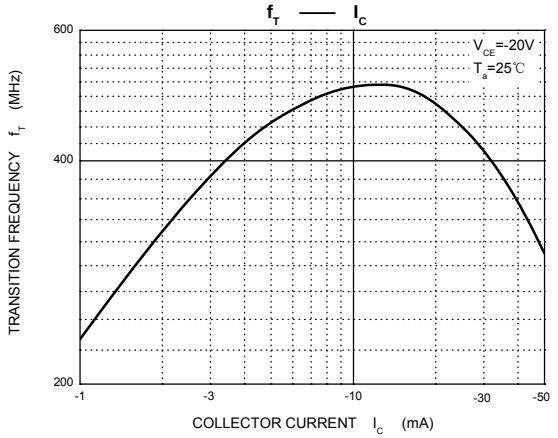

h_{FE} —— I_C
COMMON EMITTER
V_{CE}=-1V
T_a=100℃
T_a=25℃
DC CURRENT GAIN h_{FE}
COLLECTOR CURRENT I_C (mA)

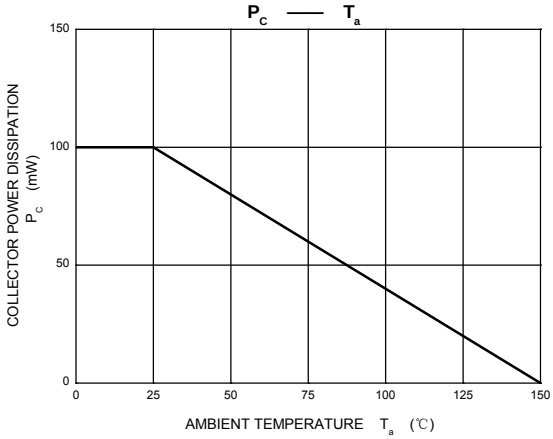

V_{CEsat} —— I_C
T_a=100℃
T_a=25℃
β=10
COLLECTOR-EMITTER SATURATION VOLTAGE V_{CEsat} (mV)
COLLECTOR CURRENT I_C (mA)


V_{BEsat} —— I_C
T_a=25℃
T_a=100℃
β=10
BASE-EMITTER SATURATION VOLTAGE V_{BEsat} (V)
COLLECTOR CURRENT I_C (mA)

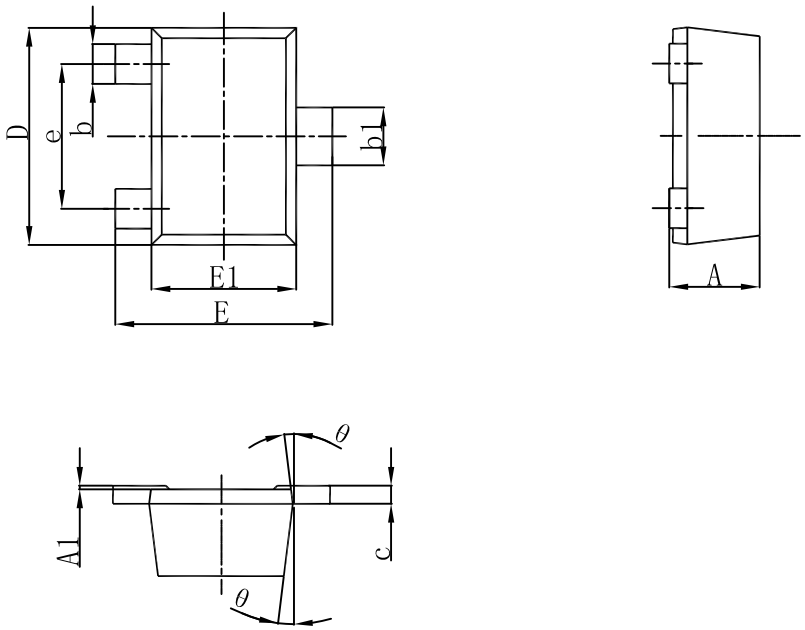

I_C —— V_{BE}
COMMON EMITTER
V_{CE}=-1V
T_a=100℃
T_a=25℃
COLLECTOR CURRENT I_C (mA)
BASE-EMMITER VOLTAGE V_{BE} (V)

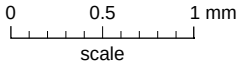

C_{ob} / C_{ib} —— V_{CB} / V_{EB}
f=1MHz
I_E=0/I_C=0
T_a=25℃
C_{ob}
C_{ib}
CAPACITANCE C (pF)
REVERSE VOLTAGE V (V)


f_T —— I_C
V_{CE}=-20V
T_a=25℃
TRANSITION FREQUENCY f_T (MHz)
COLLECTOR CURRENT I_C (mA)


P_C —— T_a
COLLECTOR POWER DISSIPATION P_C (mW)
AMBIENT TEMPERATURE T_a (℃)

■ SOT-723





DIMENSIONS (mm are the original dimensions)

UNIT	A	A_1 max	b	b1	c	D	E	E1
mm	0.43 0.50	0.05	0.17 0.27	0.27 0.37	0.08 0.15	1.15 1.25	0.15 0.25	0.75 0.85