MMBT3906M

PNP TRANSISTOR

Datasheet

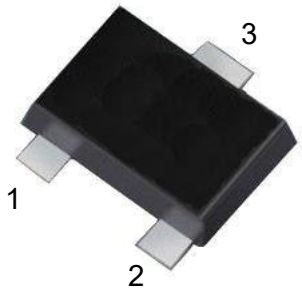
Features

- Low profile package
- Ideal for automated placement
- Complementary to MMBT3904M (NPN).
- Power Dissipation of 200mW
- High Stability and High Reliability
- RoHS Compliant

Mechanical Data

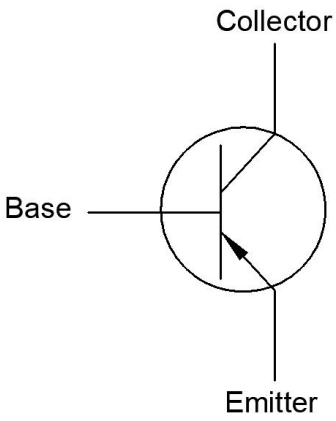
- Package: SOT-723
- Lead Finish:Matte Tin
- Case Material: “Green” Molding Compound.
- UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 3 per J-STD-020
- Tape Reel :8000pcs

Appearance & Symbol



Package：SOT-723

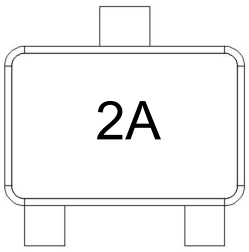
1：Base
2：Emitter
3：Collector



Applications

- amplifying signal
- Electronic switch
- Oscillating circuit
- variable resistance

Marking Information



2A= Marking Code

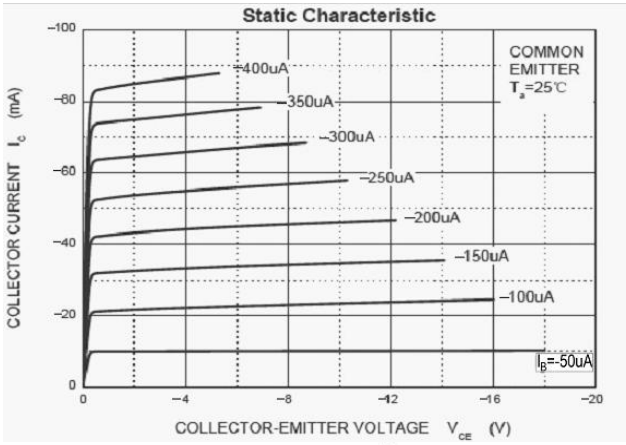
Absolute Maximum Ratings (T=25℃ unless otherwise noted)

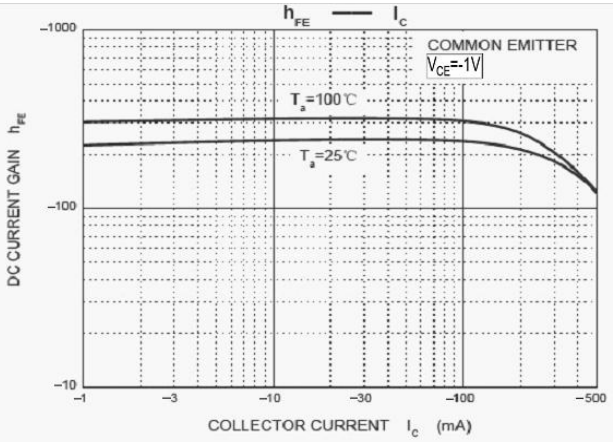
Parameter	Symbol	Value	Units
Collector-Base Voltage	V_{CBO}	-40	V
Collector-Emitter Voltage	V_{CEO}	-40	V
Emitter-Base Voltage	V_{EBO}	-5	V
Collector Current - Continuous	I_C	-200	mA
Collector Power Dissipation	P_C	200	mW
Thermal Resistance From Junction to Ambient	$R_{\theta JA}$	625	℃/W
Junction Temperature	T_J	-55 to +150	℃
Junction and Storage Temperature	T_{STG}	-55 to +150	℃

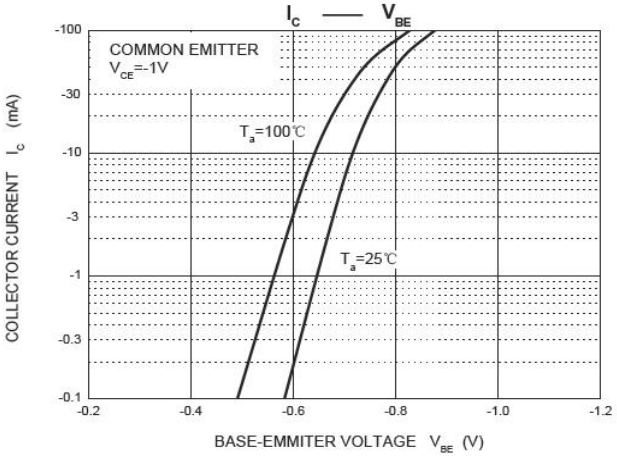
Electrical Characteristics (T=25℃ unless otherwise noted)

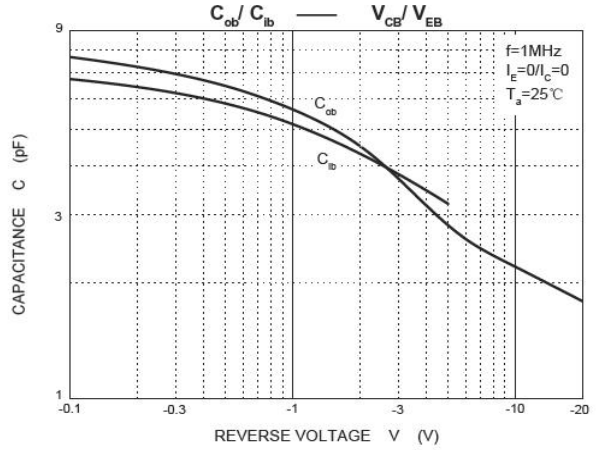
Parameter	Symbol	Test conditions	Min	Max	Unit
Collector-base breakdown voltage	$V_{(BR)CBO}$	I_C=-10uA, I_E=0	-40		V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	I_C=-1mA, I_B=0	-40		V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	I_E=-10uA, I_C=0	-5		V
Collector cut-off current	I_{CEX}	V_{CE}=-30V, $V_{BE(Off)}$=-3V		-50	nA
Collector cut-off current	I_{CBO}	V_{CB}=-40V, 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}=-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	td	V_{CC}=-3V,V_{BE}=-0.5V I_C=-10mA, I_{B1}=I_{B2}=-1mA		35	nS
Rise time	tr			35	nS
Storage time	ts	V_{CC}=-3V,I_C=-10mA I_{B1}=I_{B2}=-1mA		225	nS
Fall time	tf			75	nS

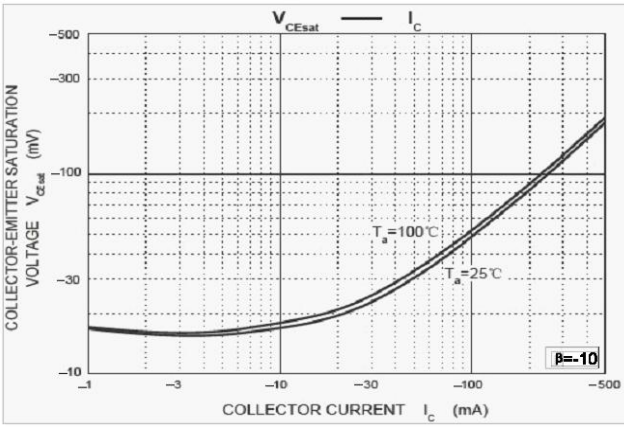
Typical Characteristics

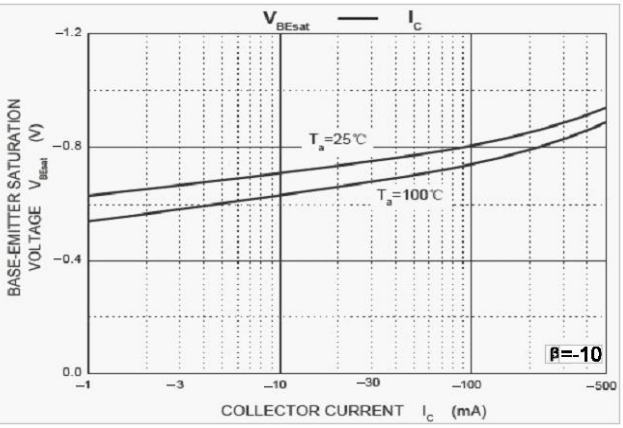


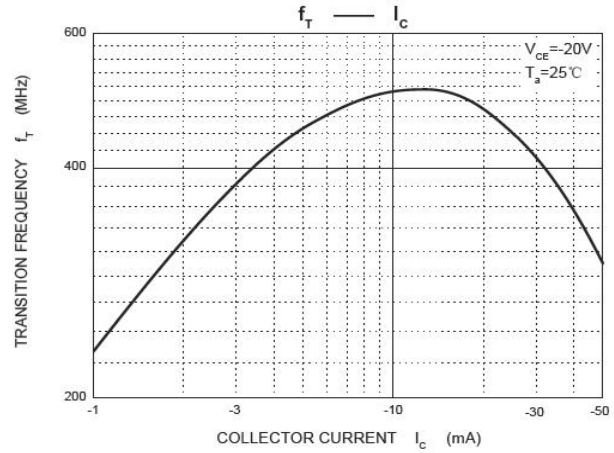


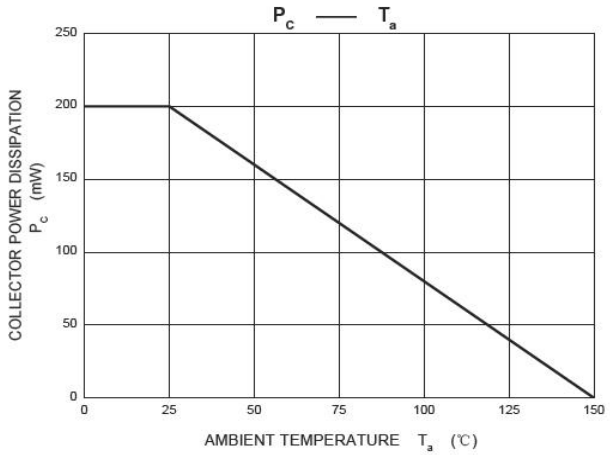






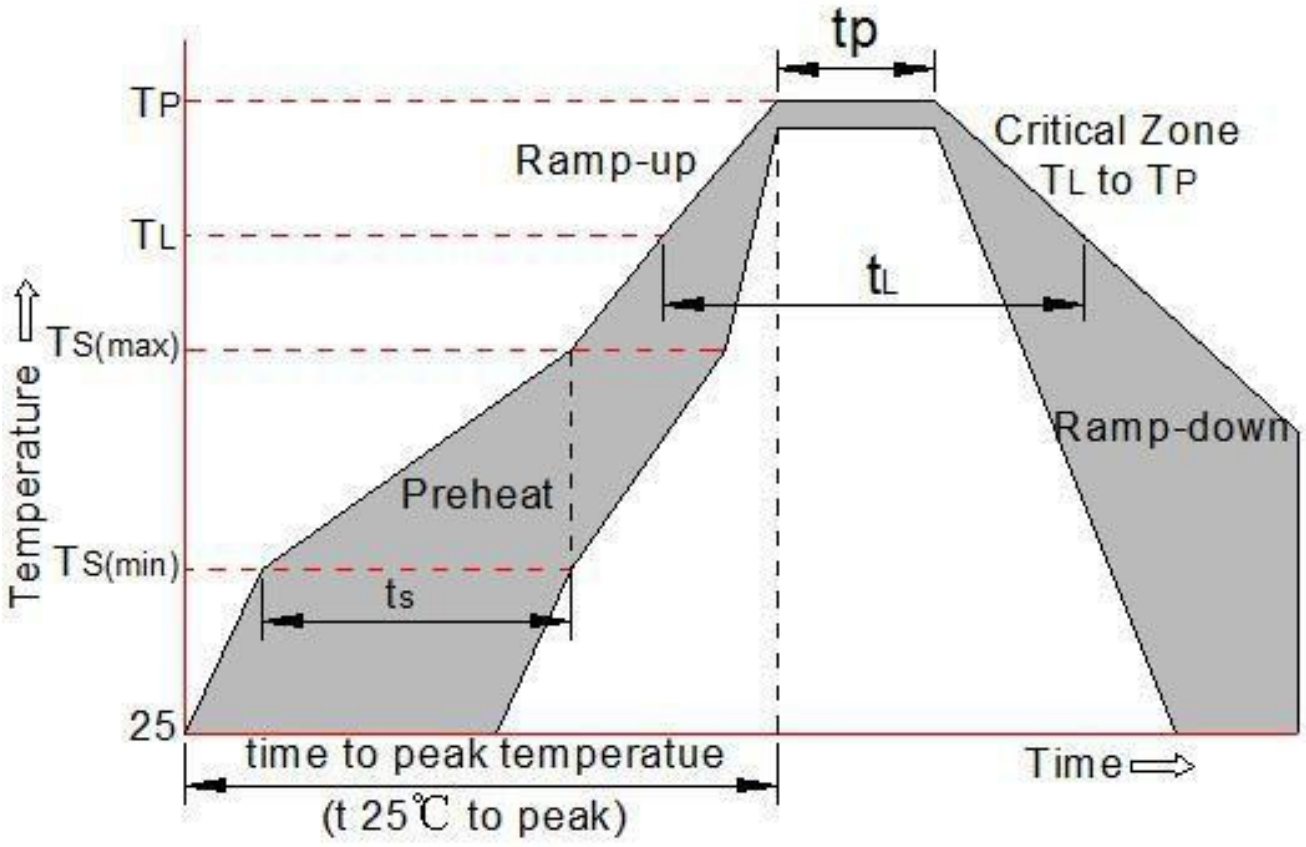




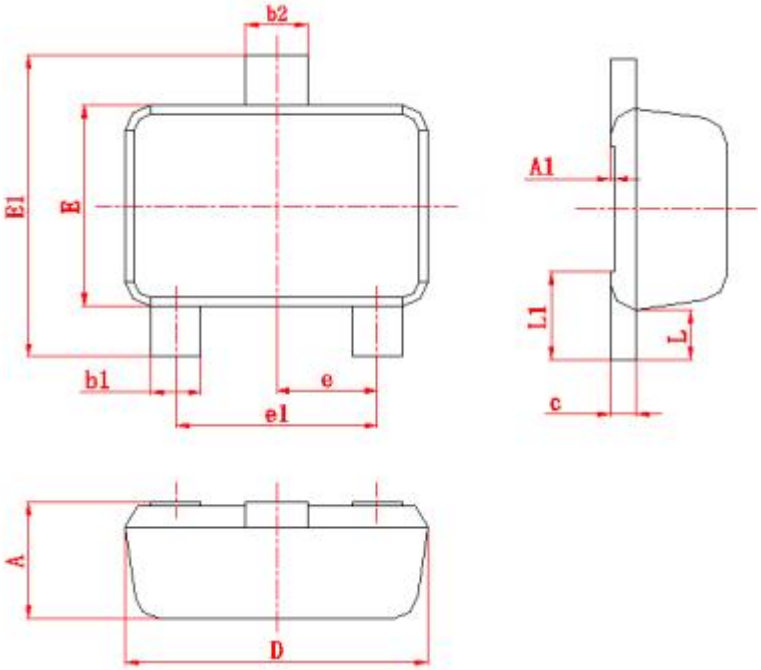


Soldering parameters

Reflow Condition		Pb-Free assembly see as bellow
Pre Heat	-Temperature Min ($T_{s(min)}$)	+150℃
	-Temperature Max($T_{s(max)}$)	+200℃
	-Time (Min to Max) (ts)	60-180 secs.
Average ramp up rate (Liquid us Temp (T_L) to peak)		3℃/sec. Max
$T_{s(max)}$ to T_L - Ramp-up Rate		3℃/sec. Max
Reflow	-Temperature(T_L) (Liquid us)	+217℃
	-Temperature(t_L)	60-150 secs.
Peak Temp (T_p)		+260(+0/-5)℃
Time within 5℃ of actual Peak Temp (t_p)		30 secs. Max
Ramp-down Rate		6℃/sec. Max
Time 25℃ to Peak Temp (T_P)		8 min. Max
Do not exceed		+260℃

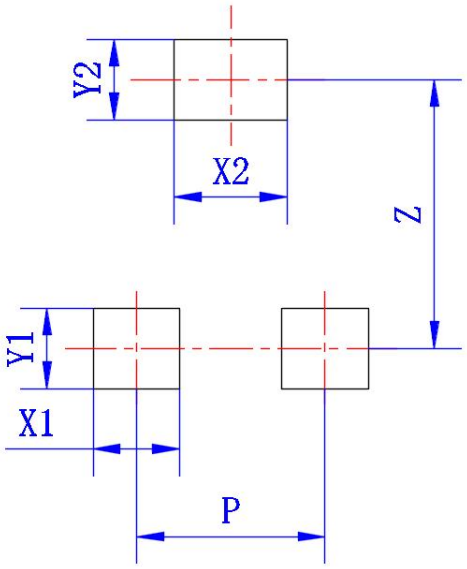


Package mechanical data



Symbol	Dimension in Millimeters	
	min	max
A	0.43	0.5
A1	0	0.05
D	1.15	1.25
E	0.75	0.85
E1	1.15	1.25
e	(0.4)	
e1	0.7	0.9
b1	0.15	0.25
b2	0.25	0.35
c	0.08	0.15
L	0.12	0.28
L1	(0.3)	

Suggested Land Pattern



Symbol	Dimension in Millimeters
	typ
X1	(0.4)
X2	(0.45)
Y1	(0.4)
Y2	(0.4)
P	(0.8)
Z	(1.1)