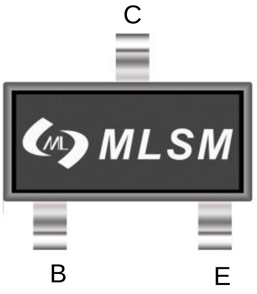
MMBT3906T

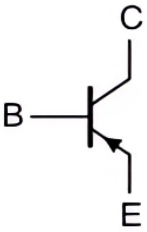
TRANSISTOR (PNP)

Features

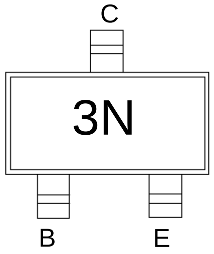
- Epitaxial Planar Die Construction
- Complementary NPN Type Available
- Also Available in Lead Free Version



SOT-523 top view



Schematic diagram



Marking and pin assignment

Pb-Free RoHS Halogen-Free

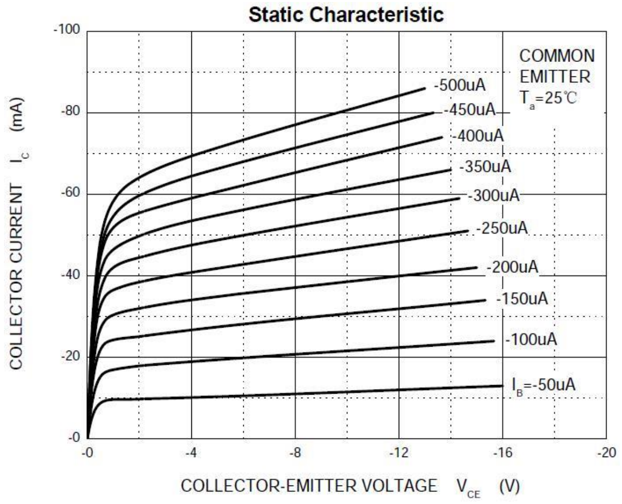
MAXIMUM RATINGS (Ta=25℃ unless otherwise noted)

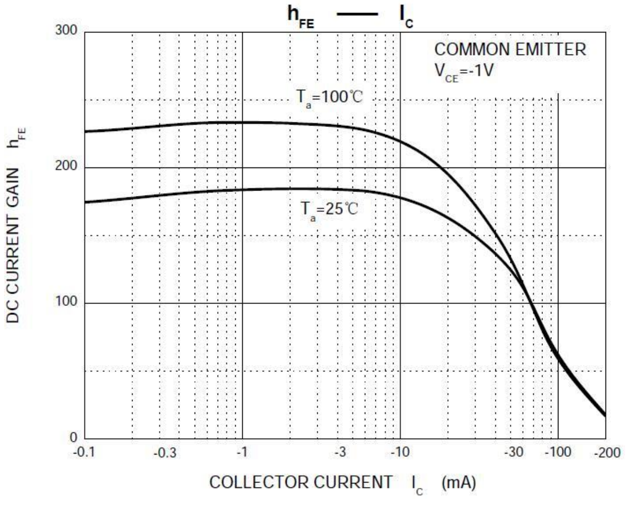
Symbol	Parameter	Limit	Unit
V_{CBO}	Collector-Base Voltage	-40	V
V_{CEO}	Collector-Emitter Voltage	-40	V
V_{EBO}	Emitter-Base Voltage	-5	V
I_C	Collector Current -Continuous	-200	mA
P_C	Power Dissipation	150	mW
$R_{\theta JA}$	Thermal Resistance Junction to Ambient	833	°C/W
T_J,T_{STG}	Operation Junction and Storage Temperature Range	-55~+150	°C

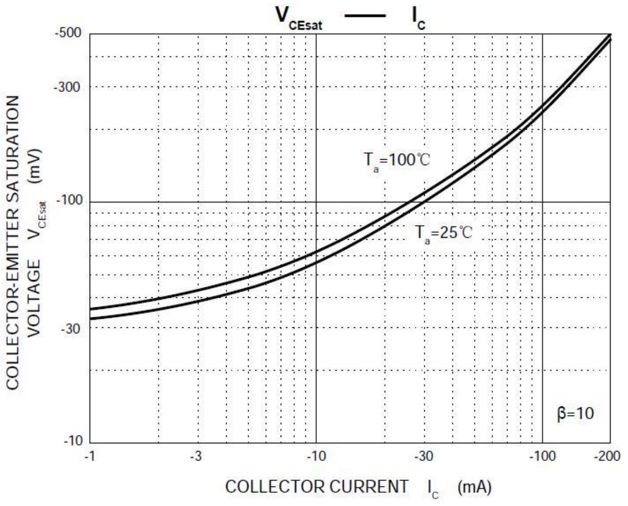
ELECTRICAL CHARACTERISTICS(Ta=25℃ unless otherwise specified)

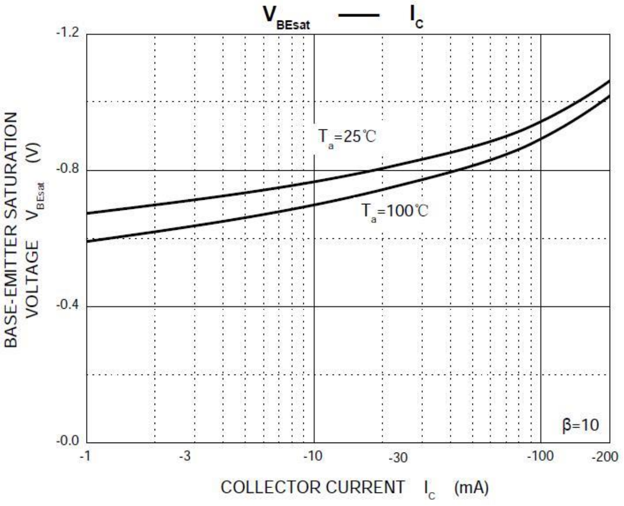
Symbol	Parameter	Test conditions	Min	Typ	Max	Unit
$V_{(BR)CBO}$	Collector-base breakdown voltage	I_C=-10μA,I_E=0	-40	--	--	V
$V_{(BR)CEO}$	Collector-emitter breakdown voltage	I_C=-1mA,I_B=0	-40	--	--	V
$V_{(BR)EBO}$	Emitter-base breakdown voltage	I_E=-10μA,I_C=0	-5	--	--	V
I_{CBO}	Collector cut-off current	V_{CB}=-40V,I_E=0	--	--	-0.1	μA
I_{CEX}	Collector cut-off current	V_{CE}=-30V, $V_{EB(off)}$=-3V	--	--	-0.05	μA
I_{EBO}	Emitter cut-off current	V_{EB}=-5V,I_C=0	--	--	-0.1	μA
h_{FE1}	DC current gain	V_{CE}=-1V,I_C=-0.1mA	60	--	--	
h_{FE2}		V_{CE}=-1V,I_C=-1mA	80	--	--	
h_{FE3}		V_{CE}=-1V,I_C=-10mA	100	--	300	
h_{FE4}		V_{CE}=-1V,I_C=-50mA	60	--	--	
h_{FE5}		V_{CE}=-2V,I_C=-100mA	30	--	--	
$V_{CE(sat)}$	Collector-emitter saturation voltage	I_C=-10mA I_B=-1mA	--	--	-0.25	V
		I_C=-50mA I_B=-5mA	--	--	-0.4	V
$V_{BE(sat)}$	Base-emitter saturation voltage	I_C=-10mA I_B=-1mA	-0.65	--	-0.85	V
		I_C=-50mA I_B=-5mA	--	--	-0.95	V
f_T	Transition frequency	V_{CE}=-20V, I_c=-10mA,f=100MHz	250	--	--	MHz
C_{obo}	Output capacitance	V_{CB}=-5V, I_E=0,f=1MHz	--	--	4.5	pF
C_{ib}	Input capacitance	V_{EB}=-0.5V, I_c=0,f=1MHz	--	--	10	pF
NF	Noise figure	V_{CE}=-5V,I_C=0.1mA	--	--	4	dB
t_d	Delay time	V_{CC}=-3V, $V_{BE(OFF)}$=-0.5V	--	--	35	ns
t_r	Rise time	I_C=-10mA , I_{B1}=-1mA	--	--	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

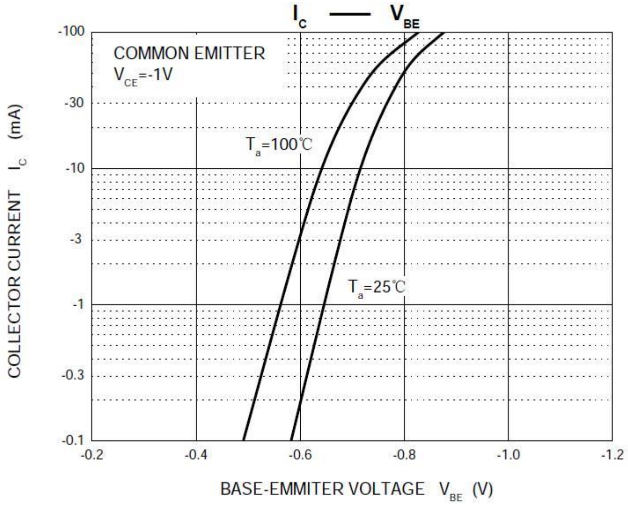
Typical Operating Characteristics

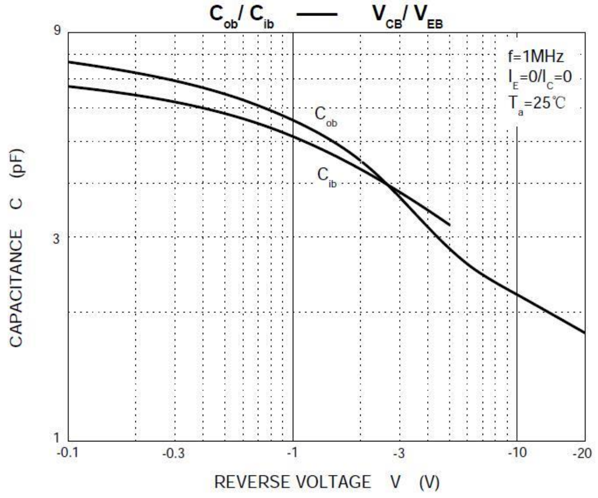

Static Characteristic

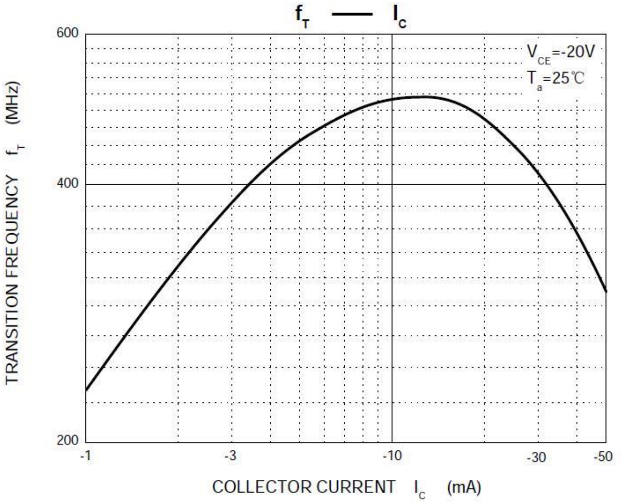

h_{FE} —— I_C

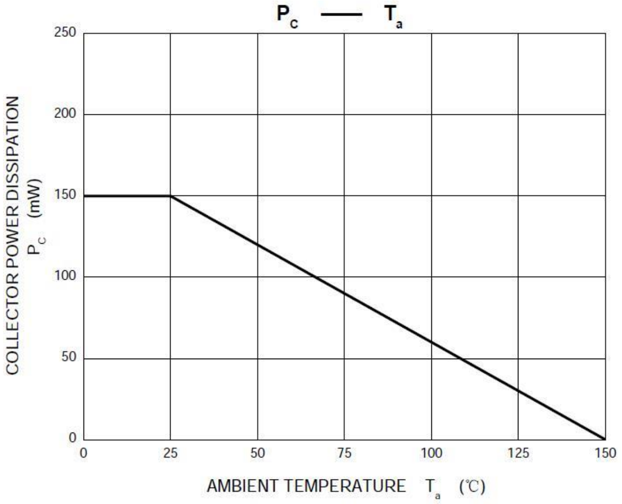

V_{CEsat} —— I_C


V_{BEsat} —— I_C


I_C —— V_{BE}


C_{ob}/ C_{ib} —— V_{CB}/ V_{EB}

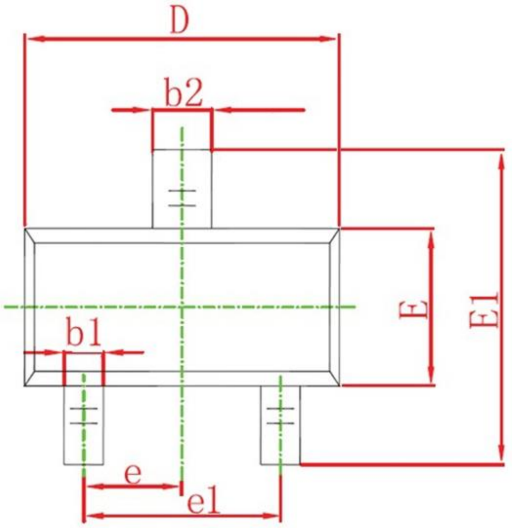


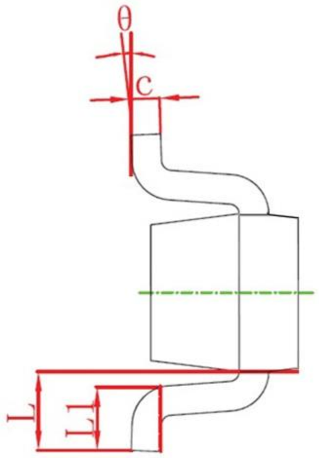


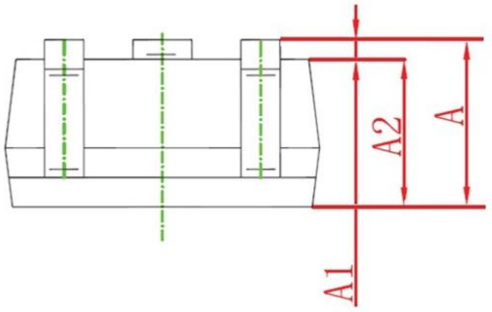
Ordering Information (Example)

Type	Package	Marking	Minimum Package(pcs)	Inner Box Quantity(pcs)	Outer Carton Quantity(pcs)	Delivery Mode
MMBT3906T	SOT-523	3N	3,000	45,000	180,000	7"reel

SOT-523 Package information







Symbol	Dimensions in Millimeters(mm)		Dimensions In Inches	
	Min	Max	Min	Max
A	0.700	0.900	0.028	0.035
A1	0.000	0.100	0.000	0.004
A2	0.700	0.800	0.028	0.031
b1	0.150	0.250	0.006	0.010
b2	0.250	0.350	0.010	0.014
c	0.100	0.200	0.004	0.008
D	1.500	1.700	0.059	0.067
E	0.700	0.900	0.028	0.035
E1	1.450	1.750	0.057	0.069
e	0.500TYP		0.020TYP	
e1	0.900	1.100	0.035	0.043
L	0.400REF		0.016REF	
L1	0.260	0.460	0.010	0.018
θ	0°	8°	0°	8°