

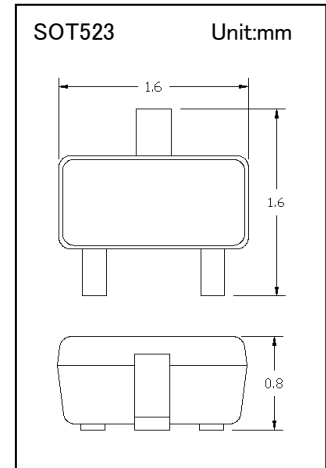
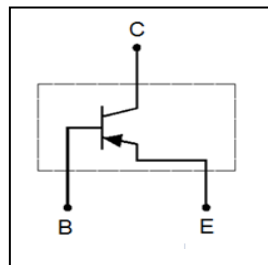
DATA SHEET

MMBT3906T

- ◇ Complementary NPN Type Available (MMBT3904T)
- ◇ Epoxy Meets UL 94 V-0 Flammability Rating
- ◇ Surface Mount SOT-523 Package
- ◇ Rohs Compliant / Green EMC

Device Marking Code	
MMBT3906T	3N

Equivalent Circuit



Maximum Ratings (Ta=25°C Unless Otherwise Noted)

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	-200	mA
P_C	Collector Power Dissipation	150	mW
$R_{\theta JA}$	Thermal Resistance From Junction To Ambient	833	°C/W
T_j	Junction Temperature	150	°C
T_{stg}	Storage Temperature	-55~+150	°C

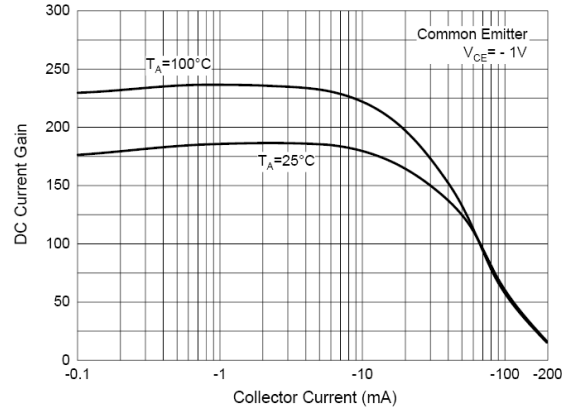
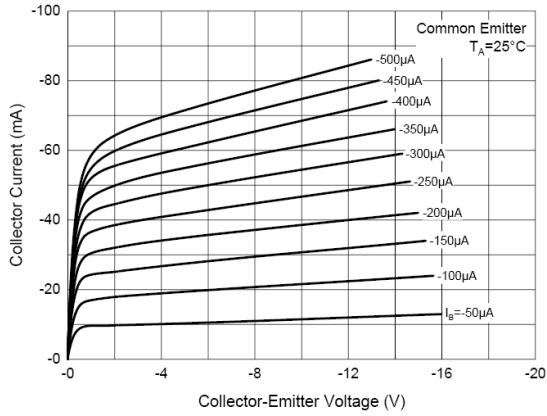
Electrical Characteristics @ 25°C Unless Otherwise Specified

Symbol	Parameter	Test Conditions	Min	Typ	Max	Units
$V_{(BR)CEO}$	Collector–Emitter Breakdown Voltage	$I_C=-1.0mA, I_B=0$	-40			V
$V_{(BR)CBO}$	Collector–Base Breakdown Voltage	$I_C=-10\mu A, I_E=0$	-40			V
$V_{(BR)EBO}$	Emitter–Base Breakdown Voltage	$I_E=-10\mu A, I_C=0$	-5			V
I_{CBO}	Collector Cut–Off Current	$V_{CB}=-30V, I_E=0$			-50	nA
I_{EBO}	Emitter Cut–off Current	$V_{EB}=-5V, I_C=0$			-50	nA
h_{FE}	DC Current Gain	$I_C=-0.1mA, V_{CE}=-1.0V$	60			
		$I_C=-1.0mA, V_{CE}=-1.0V$	80			
		$I_C=-10mA, V_{CE}=-1.0V$	100		300	
		$I_C=-50mA, V_{CE}=-1.0V$	60			
		$I_C=-100mA, V_{CE}=-1.0V$	30			
$V_{CE(sat)}$	Collector–Emitter Saturation Voltage	$I_C=-10mA, I_B=-1.0mA$			-0.25	V
		$I_C=-50mA, I_B=-5.0mA$			-0.4	
$V_{BE(sat)}$	Base–Emitter Saturation Voltage	$I_C=-10mA, I_B=-1.0mA$	-0.65		-0.85	V
		$I_C=-50mA, I_B=-5.0mA$			-0.95	
f_T	Transition Frequency	$I_C=-10mA, V_{CE}=-20V, f=100MHz$	250			MHz
C_{obo}	Output Capacitance	$V_{CB}=-5.0V, I_E=0, f=1.0MHz$			4.5	pF
C_{ibo}	Input Capacitance	$V_{BE}=-0.5V, I_C=0, f=1.0KHz$			10	pF
NF	Noise Figure	$V_{CE}=-5V, I_C=-100\mu A, R_S=1K\Omega, f=1KHz$			4	dB

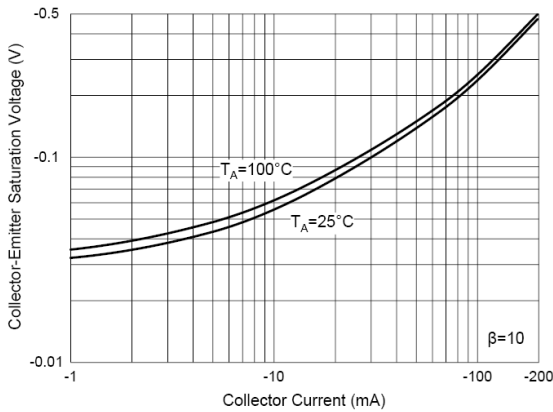
Switching Characteristics

Symbol	Parameter	Test Conditions	Min	Typ	Max	Units
td	Delay Time	$V_{CC}=-3.0V, V_{BE}=-0.5V$			35	nS
tr	Rise Time	$I_C=-10mA, I_{B1}=-1.0mA$			35	nS
ts	Storage Time	$V_{CC}=-3.0V, I_C=-10mA$			225	nS
tf	Fall Time	$I_{B1}=I_{B2}=-1.0mA$			75	nS

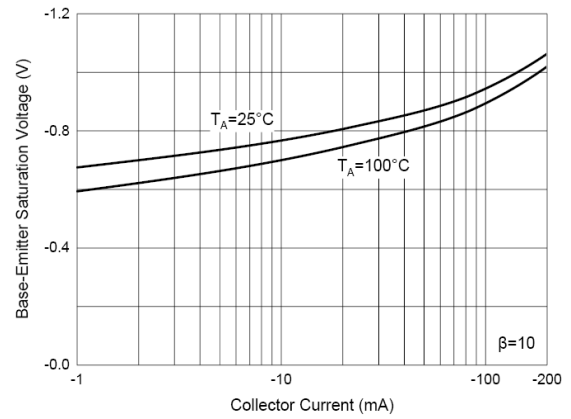
Curve Characteristics



Static Characteristics

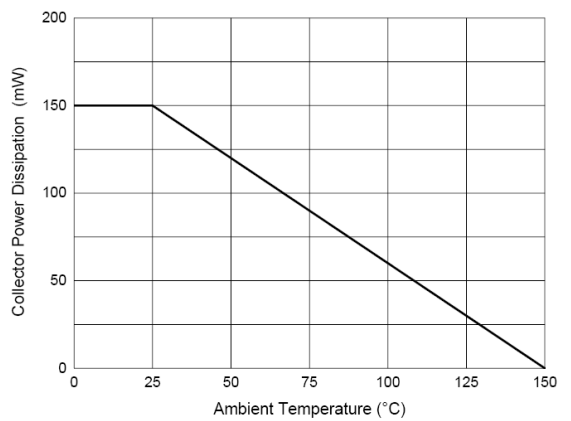
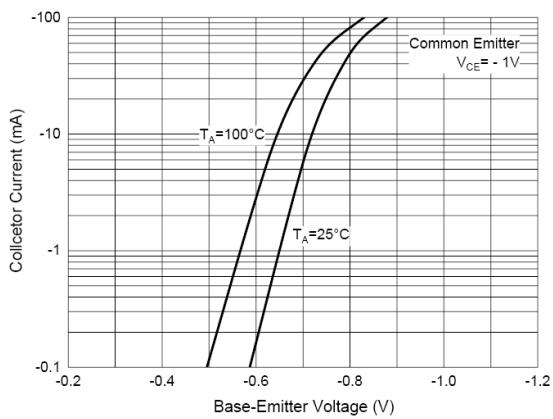


DC Current Gain Characteristics



Collector-Emmitter Saturation Voltage Characteristics

Base-Emmitter Saturation Voltage Characteristics



Base-Emmitter Voltage Characteristics

Collector Power Derating Curve

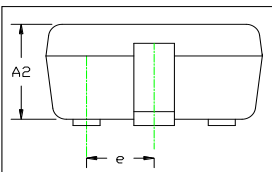
Ordering Information

Device	Package	Shipping	Tape wide	Emboss pitch	Tape specification	Notes
MMBT3906T	SOT523	Tape & Reel 3000pcs /7" Reel	8mm	4mm	Conductive	

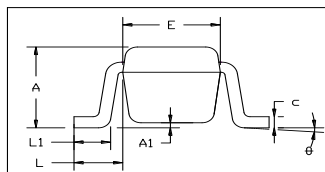
Package Dimensions

Package outline : SOT523

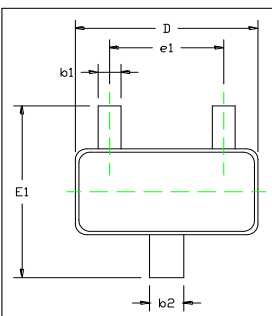
FRONT VIEW



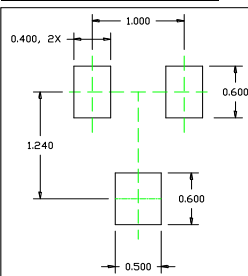
SIDE VIEW



TOP VIEW



SOLDERING PATTERN



SYMBOL	DIMENSIONS IN MILLIMETER	
	MIN	MAX
A	0.70	0.90
A1	0.00	0.10
A2	0.70	0.80
b1	0.15	0.25
b2	0.25	0.35
c	0.10	0.20
D	1.50	1.70
E	0.70	0.90
E1	1.45	1.75
e	0.50 TYP.	
e1	0.90	1.10
L	0.40 REF.	
L1	0.26	0.46
θ	0°	8°

Notice:

1. Lead plating: Pb free solder
2. Lead thickness includes solder plating
3. Lead frame: CAC-5
4. Other Tolerance: ± 0.05
5. Dimensions are exclusive of Burrs, Mold Flash and Tie Bar extrusions
6. Unit: mm