



**THE DATASHEET OF
MMBT3906-TP**





Micro Commercial Components

Micro Commercial Components
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MMBT3906

Features

- Halogen free available upon request by adding suffix "-HF"
- Lead Free Finish/RoHS Compliant ("P" Suffix designates RoHS Compliant. See ordering information)
- Epoxy meets UL 94 V-0 flammability rating
- Moisture Sensitivity Level 1
- Marking:2A

Maximum Ratings

Symbol	Rating	Rating	Unit
V_{CEO}	Collector-Emitter Voltage	-40	V
V_{CBO}	Collector-Base Voltage	-40	V
V_{EBO}	Emitter-Base Voltage	-5.0	V
I_C	Collector Current, Continuous	-0.2	A
P_D	Power Dissipation	0.3	W
T_J	Operating Junction Temperature	-55 to +150	$^{\circ}C$
T_{STG}	Storage Temperature	-55 to +150	$^{\circ}C$
R_{thJA}	Thermal Resistance, Junction to Ambient	417	$^{\circ}C/W$

Electrical Characteristics @ 25°C Unless Otherwise Specified

Symbol	Parameter	Min	Max	Units
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage* ($I_C=-1.0mA$, $I_B=0$)	-40		Vdc
$V_{(BR)CBO}$	Collector-Base Breakdown Voltage ($I_C=10\mu A$, $I_E=0$)	-40		Vdc
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage ($I_E=10\mu A$, $I_C=0$)	-5.0		Vdc
I_{CBO}	Collector cut-off Current ($V_{CB}=40Vdc$, $I_E=0$)		-0.1	μA
I_{CEX}	Collector Cut-off Current ($V_{CE}=30Vdc$, $V_{BE}=-3.0Vdc$)		-50	nA
I_{EBO}	Emitter cut-off Current ($V_{EB}=-5Vdc$, $I_C=0$)		-0.1	μA
h_{FE}	DC Current Gain* ($I_C=-10mA$, $V_{CE}=-1.0Vdc$) ($I_C=-50mA$, $V_{CE}=-1.0Vdc$) ($I_C=-100mA$, $V_{CE}=-1.0Vdc$)	100 60 30	300	
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage ($I_C=-10mA$, $I_B=-1.0mA$) ($I_C=-50mA$, $I_B=-5.0mA$)		-0.25 -0.4	Vdc
$V_{BE(sat)}$	Base-Emitter Saturation Voltage ($I_C=-10mA$, $I_B=-1.0mA$) ($I_C=-50mA$, $I_B=-5.0mA$)	-0.65	-0.85 -0.95	Vdc
C_{obo}	Output Capacitance ($V_{CB}=-5.0Vdc$, $f=1.0MHz$, $I_E=0$)		4.5	pF
C_{ibo}	Input Capacitance ($V_{EB}=-0.5Vdc$, $f=1.0MHz$, $I_C=0$)		10	pF
f_T	Current Gain-Bandwidth Product ($I_C=-10mA$, $V_{CE}=-20Vdc$, $f=100MHz$)	250		MHz
NF	Noise Figure ($V_{CE}=-5.0V$, $f=1.0kHz$, $I_C=-100\mu A$, $R_S=1.0K$)		4.0	dB

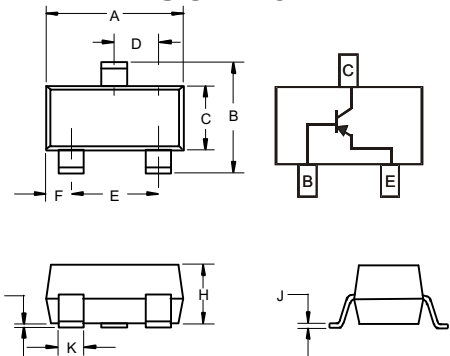
SWITCHING CHARACTERISTICS

Symbol	Parameter	Conditions	Value	Unit
t_d	Delay Time	$V_{CC}=-3.0Vdc$, $V_{BE}=-0.5Vdc$	35	ns
t_r	Rise Time	$I_C=-10mA$, $I_{B1}=-1.0mA$	35	ns
t_s	Storage Time	$V_{CC}=-3.0Vdc$, $I_C=-10mA$	225	ns
t_f	Fall Time	$I_{B1}=I_{B2}=-1.0mA$	75	ns

*Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2.0\%$

PNP General Purpose Amplifier

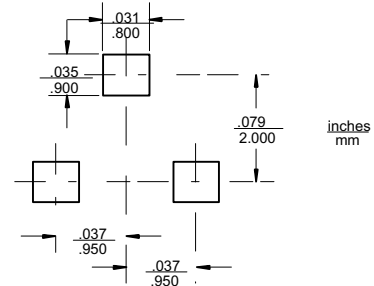
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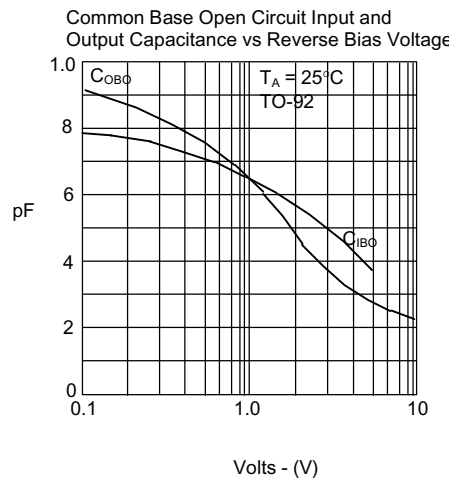
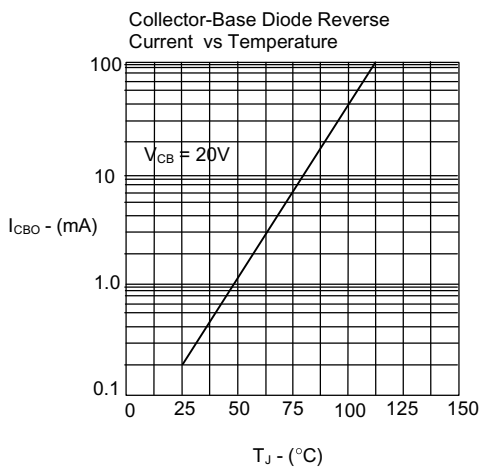
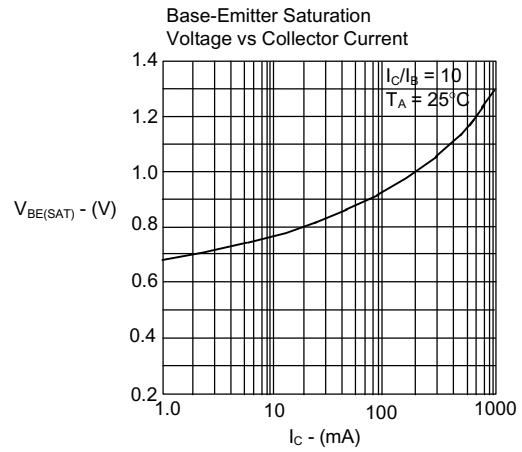
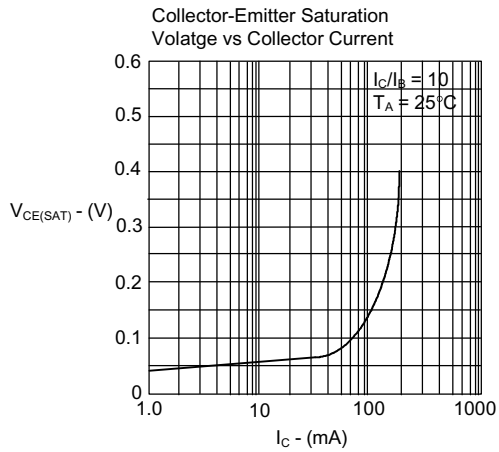
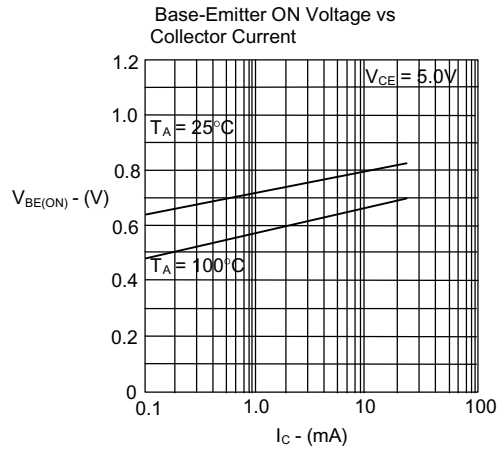
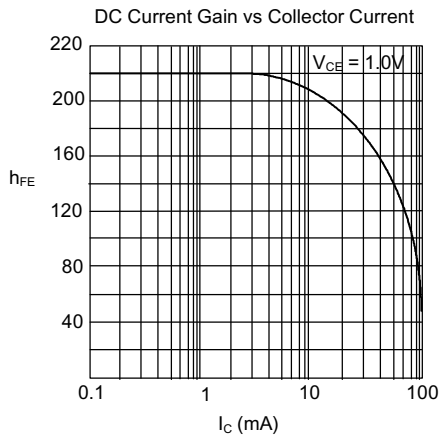
DIMENSIONS

DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	.110	.120	2.80	3.04	
B	.083	.104	2.10	2.64	
C	.047	.055	1.20	1.40	
D	.035	.041	.89	1.03	
E	.070	.081	1.78	2.05	
F	.018	.024	.45	.60	
G	.0005	.0039	.013	.100	
H	.035	.044	.89	1.12	
J	.003	.007	.085	.180	
K	.015	.020	.37	.51	

Suggested Solder Pad Layout



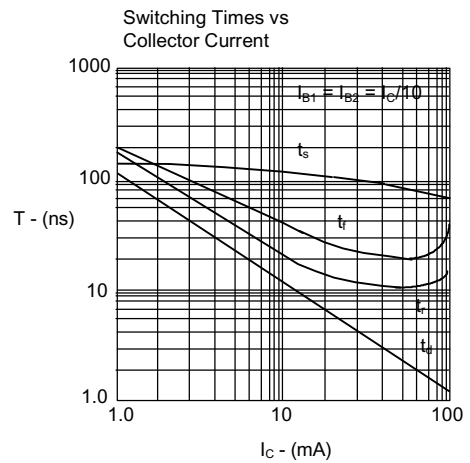
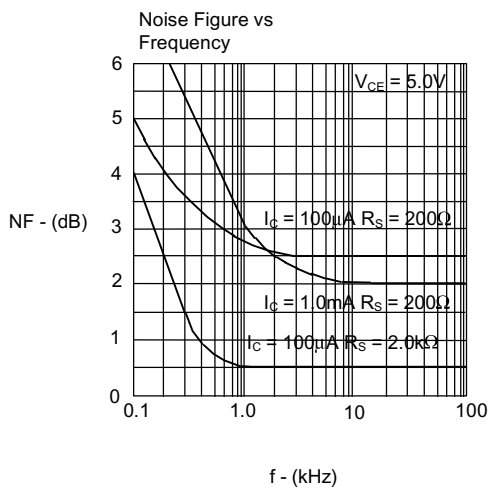
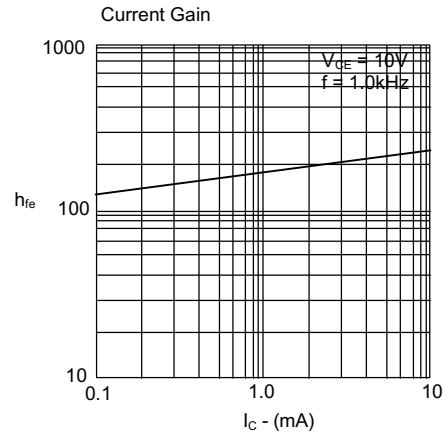
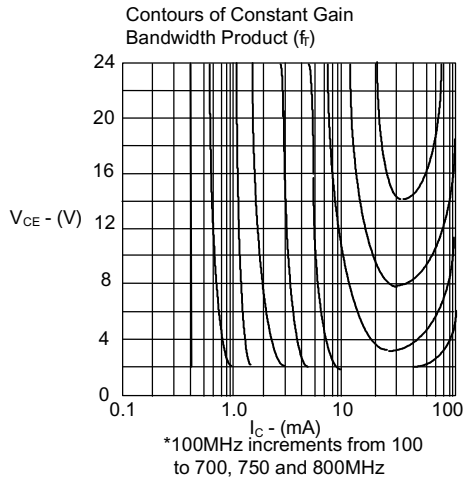
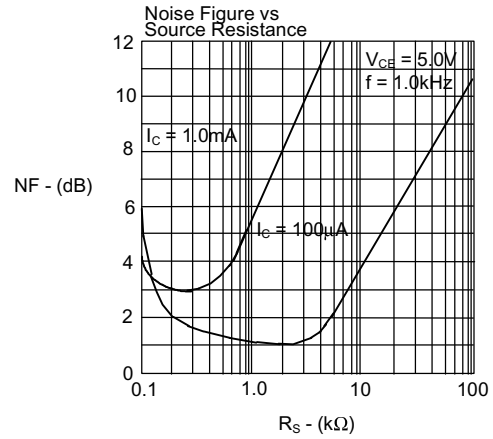
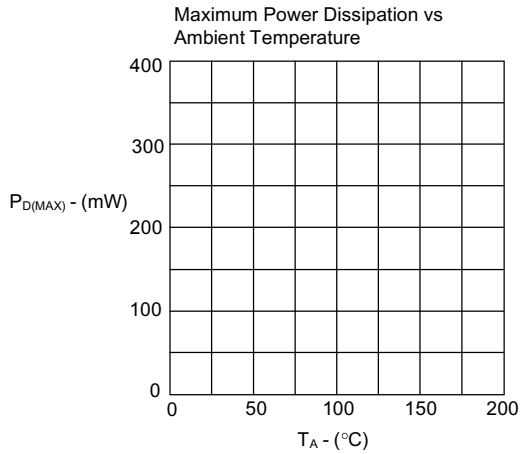
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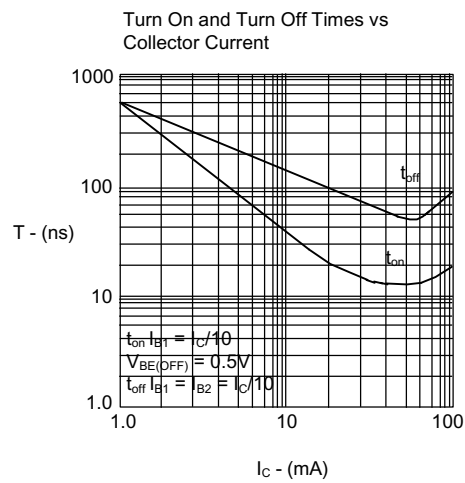
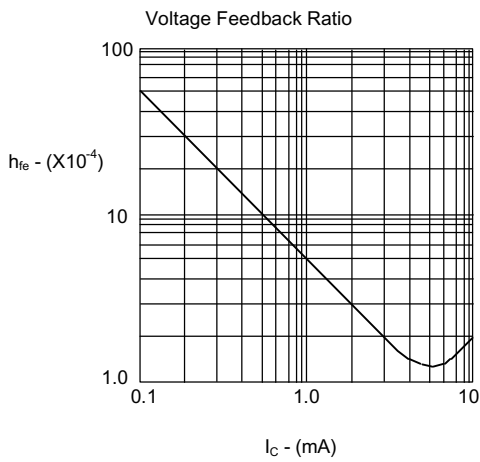
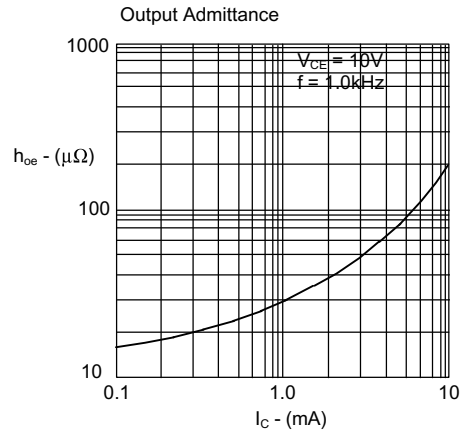
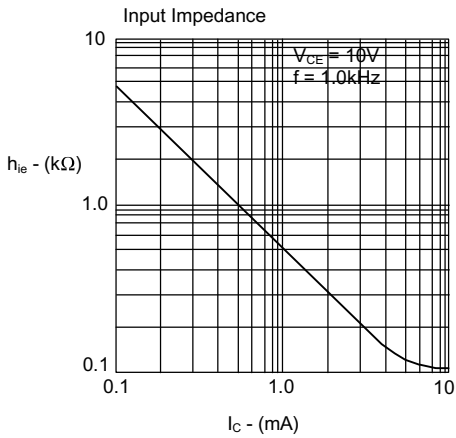
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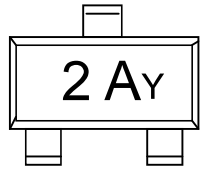
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Marking Information



2A = Product Type Marking Code
Y=Date Code Marking

Date code Key (2 years a cycle)

Year	2011											
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code	J	O	L	C	K	B	P	D	M	E	G	F

Year	2012											
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code	W	N	Y	T	R	H	A	I	U	X	Z	S



Ordering Information :

Device	Packing
Part Number-TP	Tape&Reel; 3Kpcs/Reel

Note : Adding "-HF" suffix for halogen free, eg. Part Number-TP-HF

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- ✓ Shortage Management
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