



Micro Commercial Components



Micro Commercial Components  
20736 Marilla Street Chatsworth  
CA 91311  
Phone: (818) 701-4933  
Fax: (818) 701-4939

# MMBT3906

## PNP General Purpose Amplifier

### Features

- 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
- Capable of 300mWatts of Power Dissipation
- 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	°C
$T_{STG}$	Storage Temperature	-55 to +150	°C

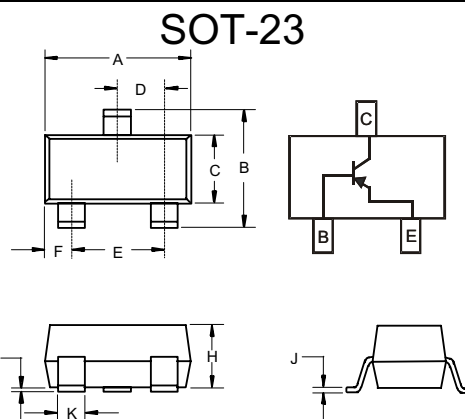
### Electrical Characteristics @ 25°C Unless Otherwise Specified

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	$\mu A$
$I_{CEX}$	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	$\mu A$
$h_{FE}$	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

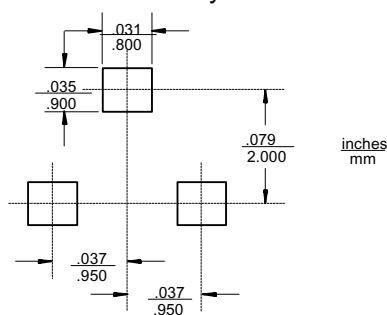
$t_d$	Delay Time	( $V_{CC}=-3.0Vdc$ , $V_{BE}=-0.5Vdc$ )	35	ns
$t_r$	Rise Time	( $I_C=-10mA$ , $I_{B1}=-1.0mA$ )	35	ns
$t_s$	Storage Time	( $V_{CC}=-3.0Vdc$ , $I_C=-10mA$ )	225	ns
$t_f$	Fall Time	( $I_{B1}=I_{B2}=-1.0mA$ )	75	ns

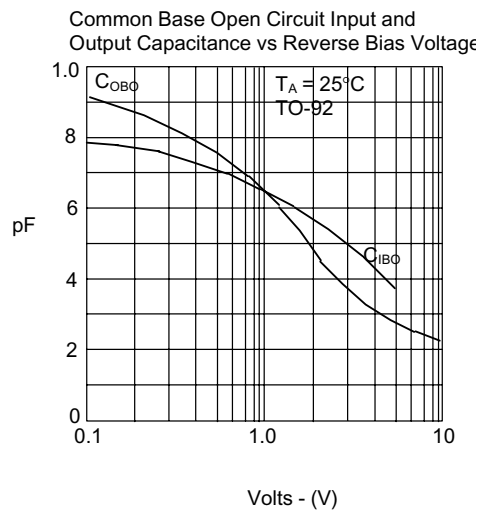
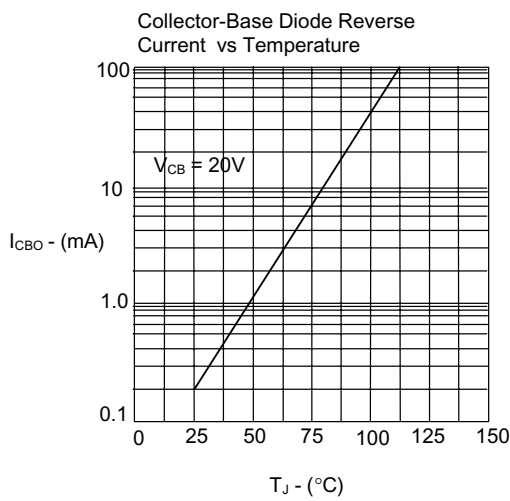
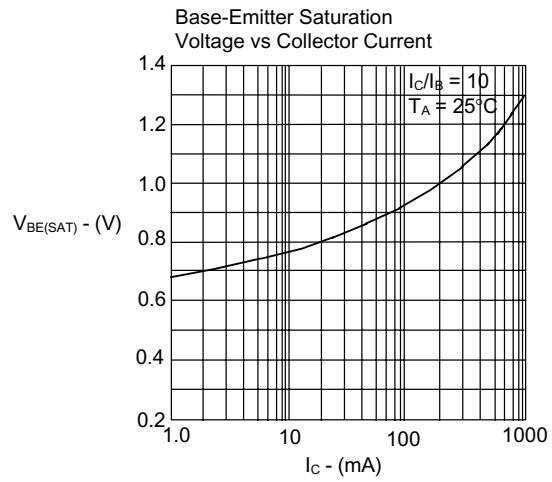
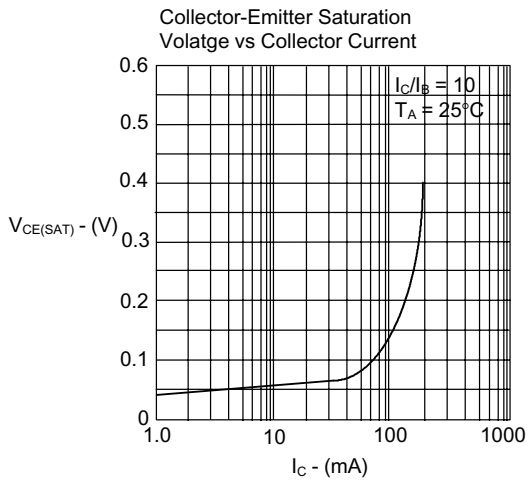
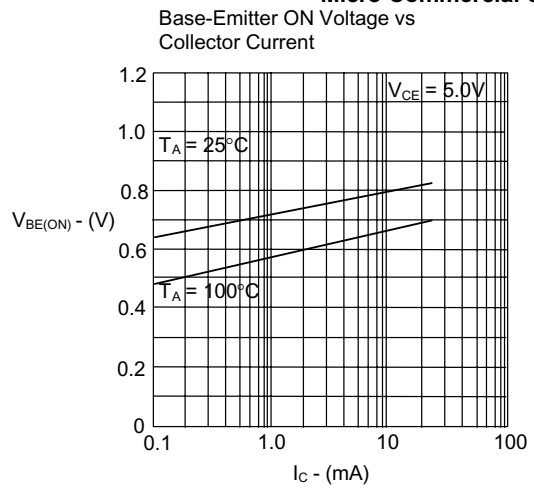
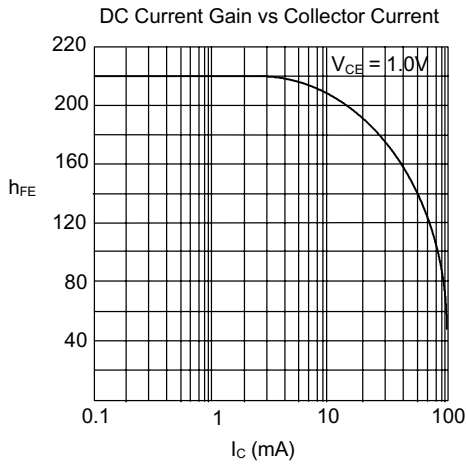
\*Pulse Width  $\leq 300\mu s$ , Duty Cycle  $\leq 2.0\%$



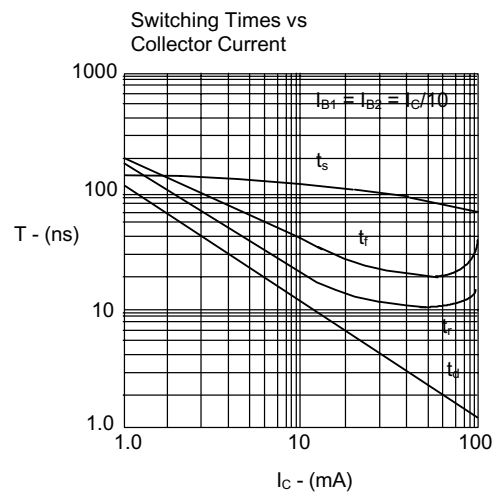
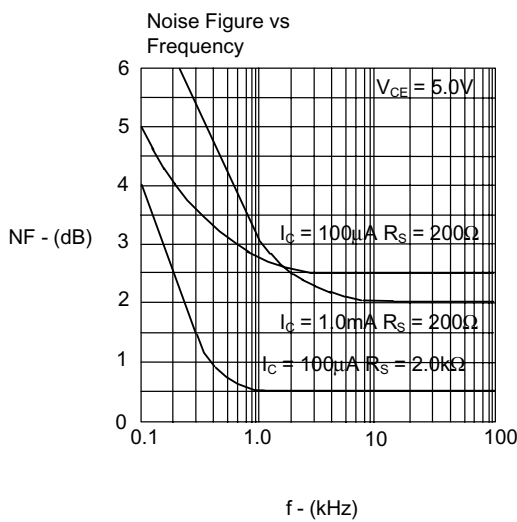
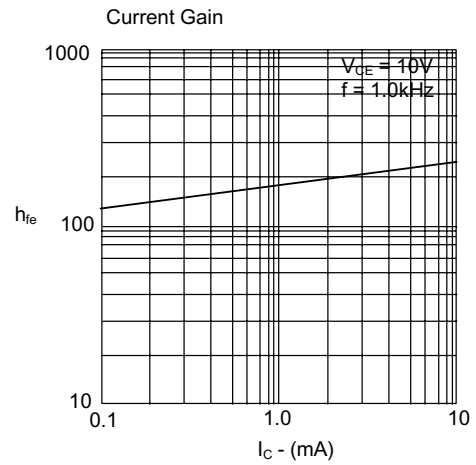
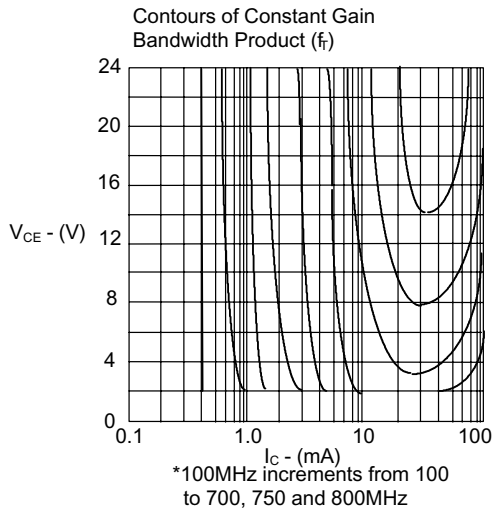
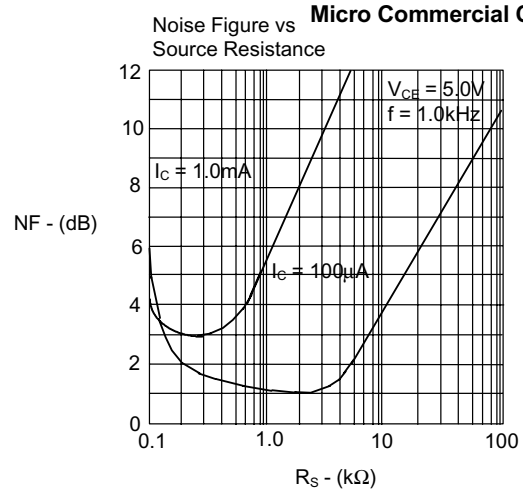
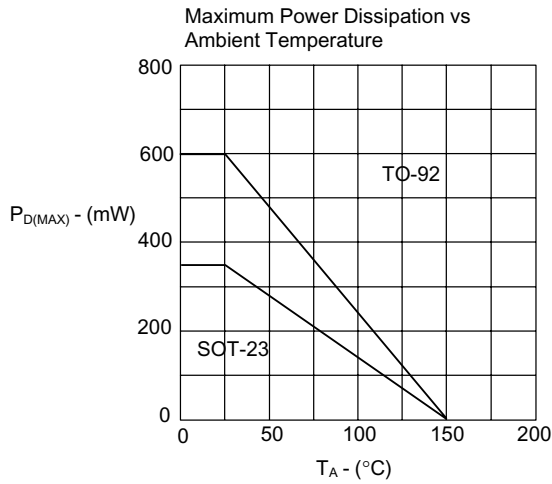
DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	.110	.120	2.80	3.04	
B	.083	.098	2.10	2.64	
C	.047	.055	1.20	1.40	
D	.035	.041	.89	1.03	
E	.070	.081	1.78	2.05	
F	.018	.024	.45	.60	
G	.0005	.0039	.013	.100	
H	.035	.044	.89	1.12	
J	.003	.007	.085	.180	
K	.015	.020	.37	.51	

### Suggested Solder Pad Layout

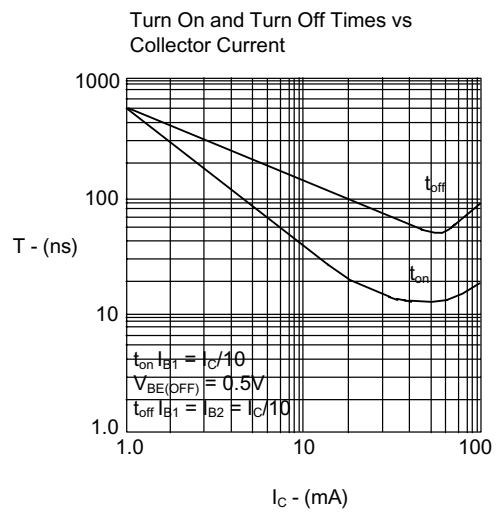
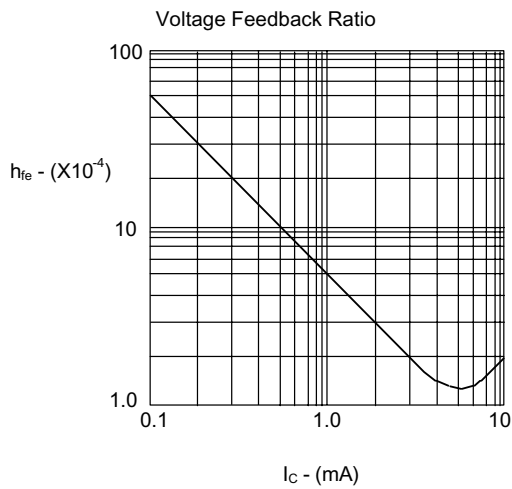
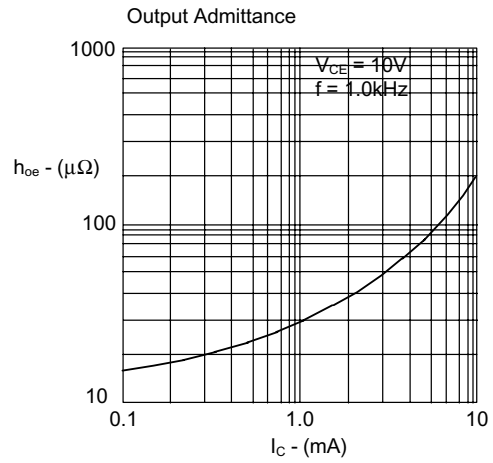
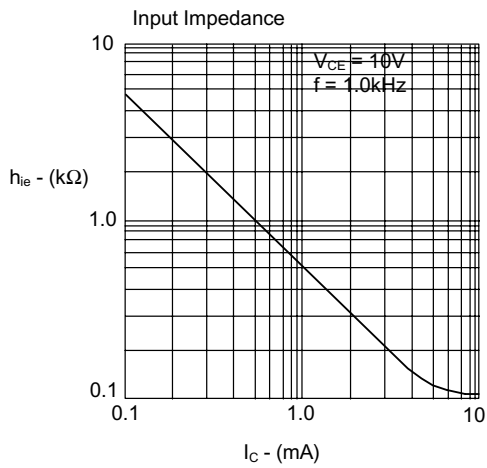




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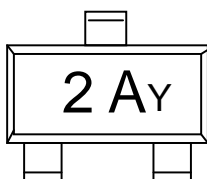




TM

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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



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### Ordering Information :

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

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