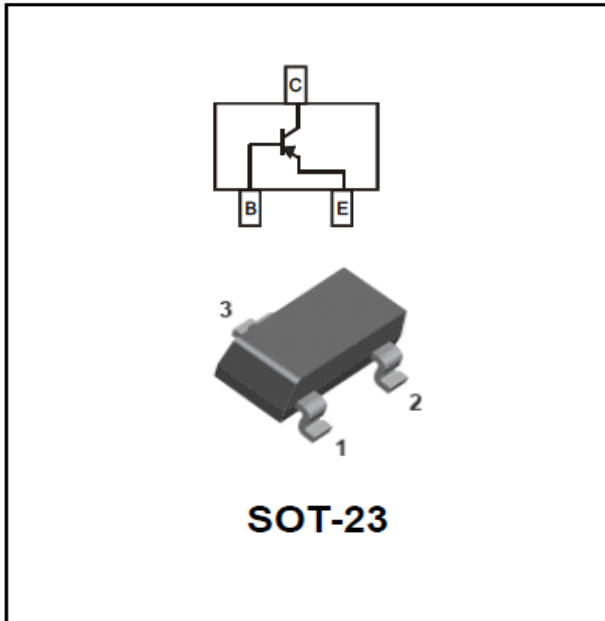


## PNP General Purpose Amplifier



### Features

- Epoxy meets UL-94 V-0 flammability rating
- Halogen free available upon request by adding suffix "HF"
- Moisure Sensitivity Level 1
- Marking:2A

### ■Maximum Rating ( $T_a=25^{\circ}\text{C}$ Unless otherwise specified)

Item	Symbol	Unit	Value
Collector-Emitter Voltage	$V_{CEO}$	V	-40
Collector-Base Voltage	$V_{CBO}$	V	-40
Emitter-Base Voltage	$V_{EBO}$	V	-5.0
Collector Current	$I_C$	A	-0.2
Collector Power Dissipation	$P_C$	mW	300
Operation Junction Temperature	$T_J$	$^{\circ}\text{C}$	-55 to +150
Storage Temperature	$T_{stg}$	$^{\circ}\text{C}$	-55 to +150

### ■Ordering Information (Example)

PREFERRED P/N	PACKING CODE	UNIT WEIGHT(g)	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
MMBT3906	F2	Approximate 0.008	3000	30000	120000	7" reel
MMBT3906	F4	Approximate 0.008	10000	/	210000	13" reel



# MMBT3906

## ■Electrical Characteristics (T<sub>a</sub>=25°C Unless otherwise specified)

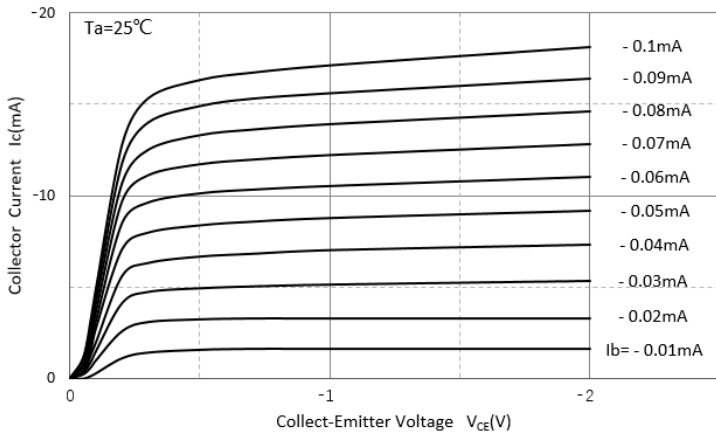
Item	Symbol	Unit	Conditions	Min	Max
Collector-Emitter Breakdown Voltage	V <sub>CEO</sub>	Vdc	I <sub>C</sub> =-1.0mA, I <sub>B</sub> =0	-40	
Collector-Base Breakdown Voltage	V <sub>CBO</sub>	Vdc	I <sub>C</sub> =-10μA, I <sub>E</sub> =0	-40	
Emitter-Base Breakdown Voltage	V <sub>EBO</sub>	Vdc	I <sub>E</sub> =-10μA, I <sub>C</sub> =0	-5.0	
Collector-base cut-off Current	I <sub>CBO</sub>	μA	V <sub>CB</sub> =-40V, I <sub>E</sub> =0		-0.1
Collector-emitter cut-off Current	I <sub>CEX</sub>	nA	V <sub>CE</sub> =-30V, V <sub>BE</sub> =-3.0V		-50
Emitter-base cut-off Current	I <sub>EBO</sub>	μA	V <sub>EB</sub> =-5V, I <sub>C</sub> =0		-0.1
DC Current Gain	h <sub>FE</sub>		I <sub>C</sub> =-10mA, V <sub>CE</sub> =-1.0V	100	300
			I <sub>C</sub> =-50mA, V <sub>CE</sub> =-1.0V	60	
			I <sub>C</sub> =-100mA, V <sub>CE</sub> =-1.0V	30	
Collector-Emitter Saturation Voltage	V <sub>CE(sat)</sub>	Vdc	I <sub>C</sub> =-10mA, I <sub>B</sub> =-1.0mA		-0.25
			I <sub>C</sub> =-50mA, I <sub>B</sub> =-5.0mA		-0.4
Base-Emitter Saturation Voltage	V <sub>BE(sat)</sub>	Vdc	I <sub>C</sub> =-10mA, I <sub>B</sub> =-1.0mA	-0.65	-0.85
			I <sub>C</sub> =-50mA, I <sub>B</sub> =-5.0mA		-0.95
Collector-base Output Capacitance	C <sub>obo</sub>	pF	V <sub>CB</sub> =-5.0V, f=1.0MHz, I <sub>E</sub> =0		4.5
Emitter-base Input Capacitance	C <sub>ibo</sub>	pF	V <sub>EB</sub> =-0.5V, f=1.0MHz, I <sub>C</sub> =0		10
Transition frequency	f <sub>T</sub>	MHZ	I <sub>C</sub> =-10mA, V <sub>CE</sub> =-20V, f=100MHz	250	
Noise Figure	NF	dB	V <sub>CE</sub> =-5.0V, f=1.0kHz, I <sub>C</sub> =-100μA, R <sub>S</sub> =1.0K		4.0
Delay time	t <sub>d</sub>	ns	V <sub>CC</sub> =-3V, V <sub>BE(off)</sub> =-0.5V, I <sub>C</sub> =-10mA, I <sub>B1</sub> =-1mA		35
Rise time	t <sub>r</sub>	ns			35
Storage time	t <sub>s</sub>	ns	V <sub>CC</sub> =-3V, I <sub>C</sub> =-10mA, I <sub>B1</sub> =-I <sub>B2</sub> =-1mA		225
Fall time	t <sub>f</sub>	ns			75



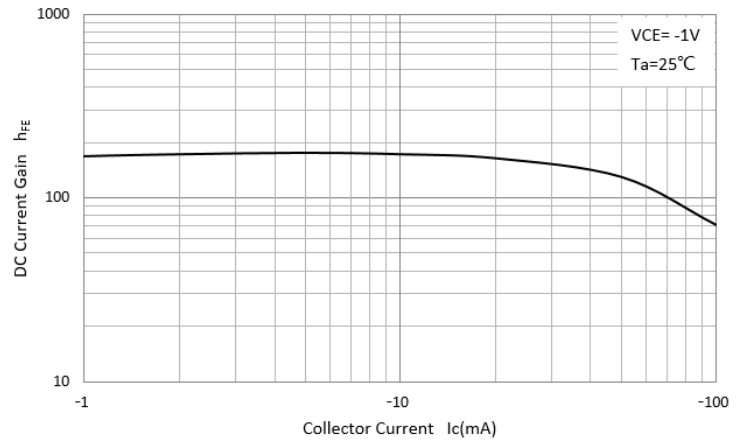
# MMBT3906

## ■ Characteristics(Typical)

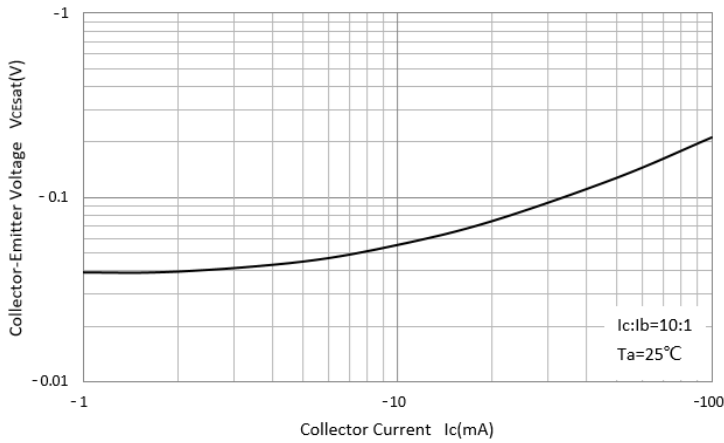
### Static Characteristic



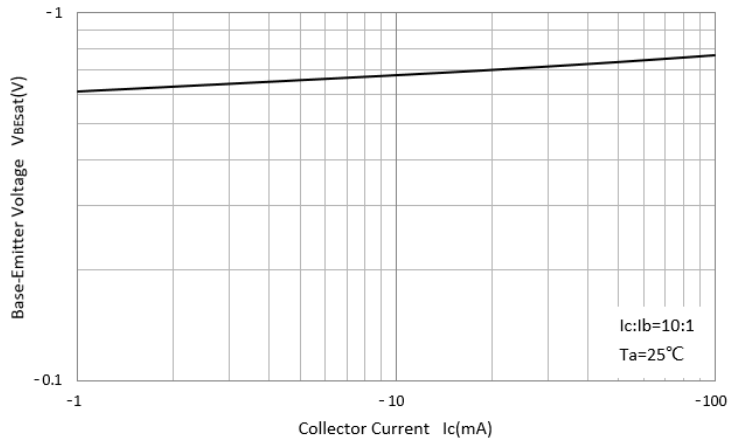
### DC Current Gain



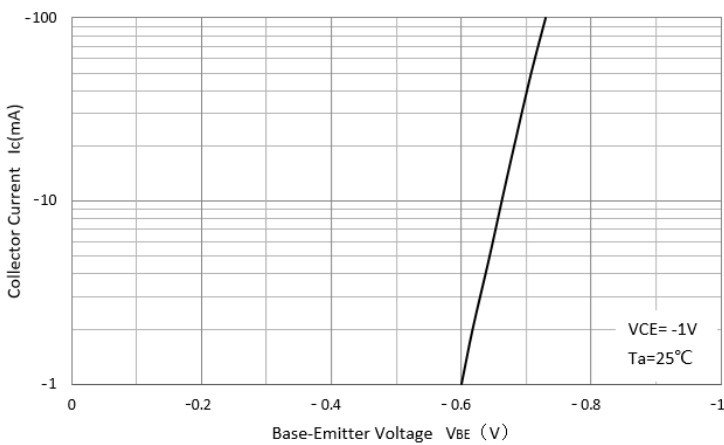
### Collector-Emmitter Saturation Voltage



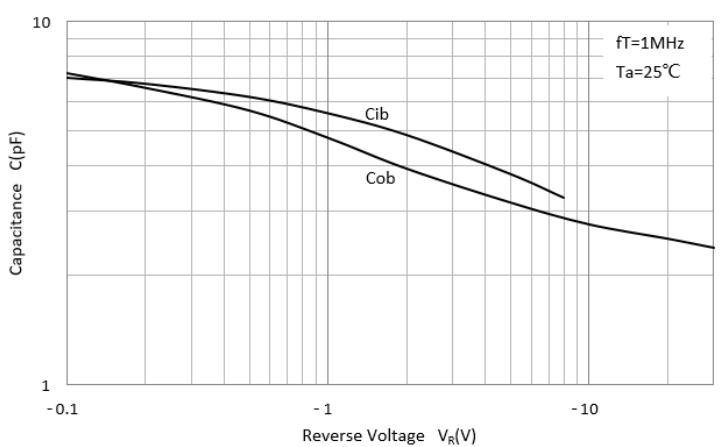
### Base-Emmitter Saturation Voltage



### Base-Emmitter On Voltage



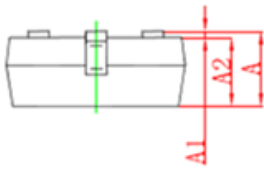
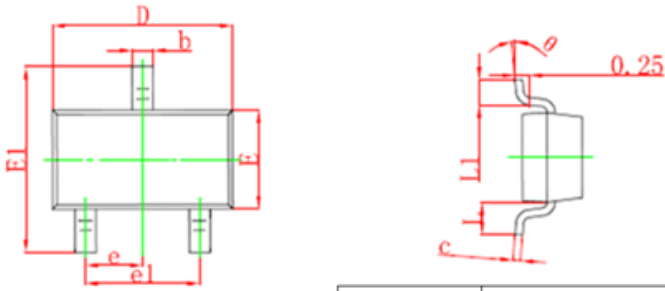
### Cob/Cib- $V_{CB}/V_{EB}$





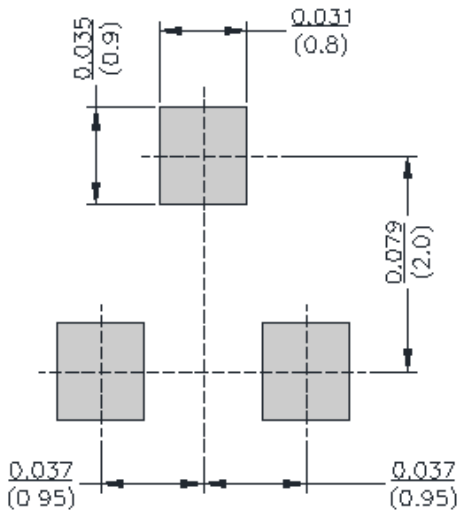
# MMBT3906

## ■SOT-23 Package Outline Dimensions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950TYP		0.037TYP	
e1	1.800	2.000	0.071	0.079
L	0.550REF		0.022REF	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°

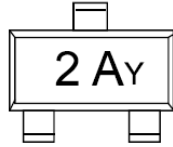
## ■SOT-23 Soldering Footprint





# MMBT3906

## ■ Marking code



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



## MMBT3906

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