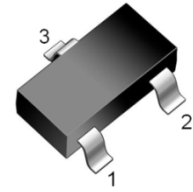


**REPLACEMENT TYPE :MMBT3906**

**FEATURES**

- PNP Silicon Epitaxial Planar Transistor
- for switching and amplifier applications.
- Complement to HABT3904(NPN)



SOT-23 MARKING : 2A

1: BASE 2: EMITTER 3: COLLECTOR

**MAXIMUM RATINGS (T<sub>A</sub> = 25°C unless otherwise noted)**

Parameter	Symbol	Value	Unit
Collector-Base Voltage	V <sub>CBO</sub>	-40	V
Collector-Emitter Voltage	V <sub>CEO</sub>	-40	V
Emitter-Base Voltage	V <sub>EBO</sub>	-6	V
Collector Current-Continuous	I <sub>C</sub>	-200	mA
Collector Power Dissipation	I <sub>C</sub>	200	mW
Thermal Resistance Junction to Ambient	R <sub>θJA</sub>	625	°C
Junction Temperature	T <sub>J</sub>	150	°C
Storage Temperature	T <sub>stg</sub>	-55 to +150	°C

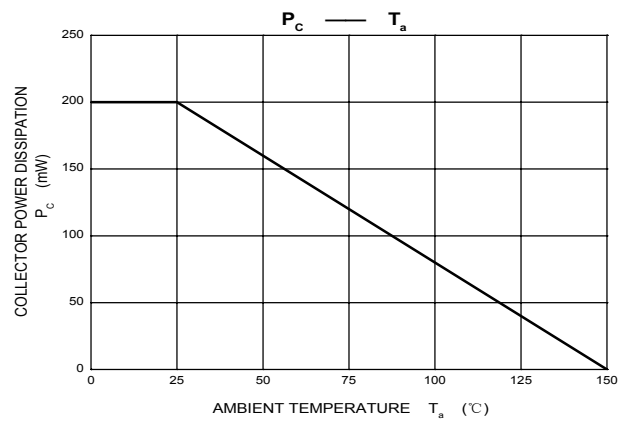
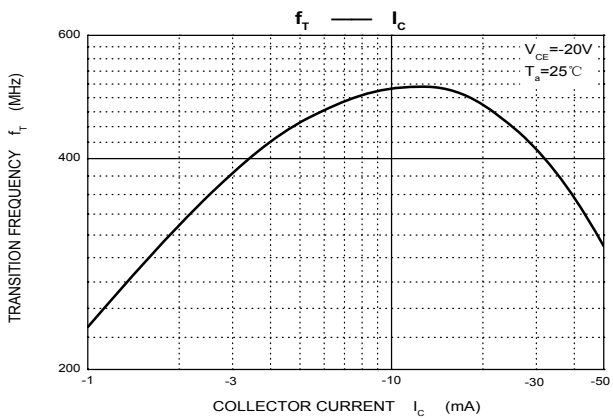
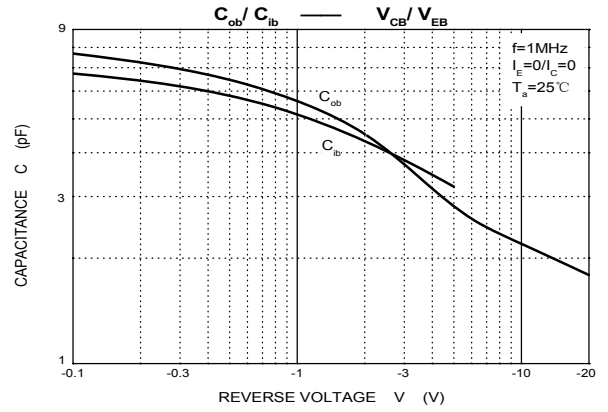
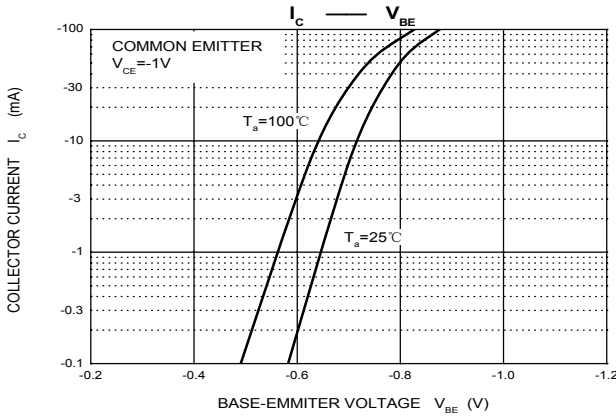
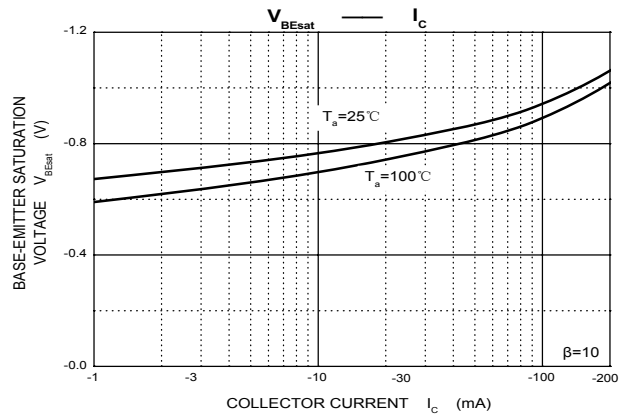
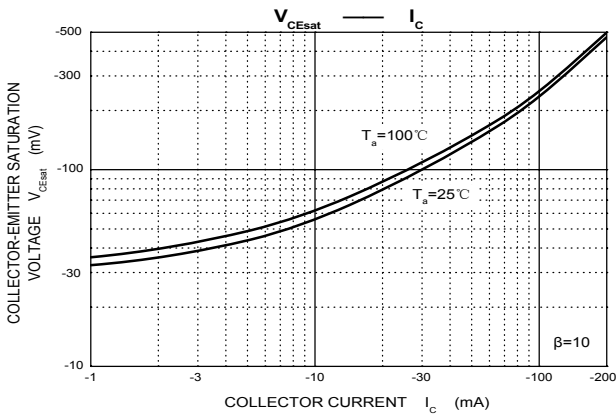
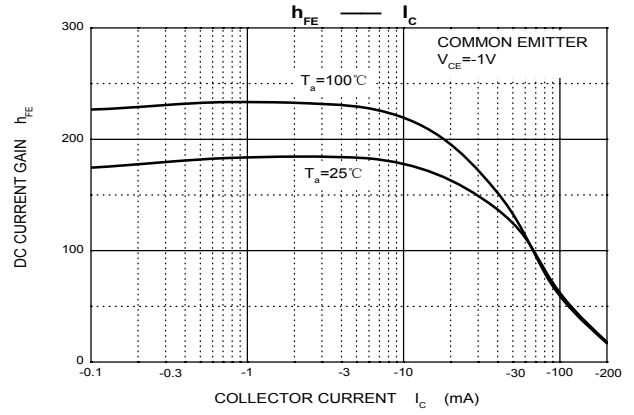
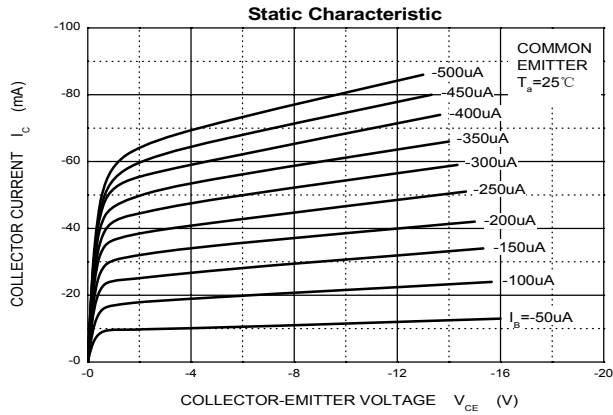
**ELECTRICAL CHARACTERISTICS (T<sub>A</sub> = 25°C unless otherwise noted)**

Parameter	Symbol	Test conditions	Min	Max	Unit
Collector-Base Breakdown Voltage	V <sub>CBO</sub>	I <sub>C</sub> = -10mA, I <sub>E</sub> = 0	-40		v
Collector-Emitter Breakdown Voltage	V <sub>CEO</sub>	I <sub>C</sub> = -1mA, I <sub>B</sub> = 0	-40		v
Emitter-Base Breakdown Voltage	V <sub>EBO</sub>	I <sub>E</sub> = -10μA, I <sub>C</sub> = 0	-6		v
Collector Cut-off Current	I <sub>CBO</sub>	V <sub>CB</sub> = -60V, I <sub>E</sub> = 0		-0.1	uA
Collector Cut-off Current	I <sub>CEO</sub>	V <sub>CE</sub> = -30V, V <sub>BE(off)</sub> = 3V		-50	nA
Emitter Cut-off Current	I <sub>EBO</sub>	V <sub>EB</sub> = -5V, I <sub>C</sub> = 0		-0.1	uA
DC Current Gain	h <sub>FE(1)</sub>	V <sub>CE</sub> = -1V, I <sub>C</sub> = -10mA	100	300	
DC Current Gain	h <sub>FE(2)</sub>	V <sub>CE</sub> = -1V, I <sub>C</sub> = -100mA	30		
Collector-Emitter Saturation Voltage	V <sub>CE(sat)</sub>	I <sub>C</sub> = -50mA, I <sub>B</sub> = -5mA		-0.3	v
Base-Emitter Saturation Voltage	V <sub>BE(sat)</sub>	I <sub>C</sub> = -50mA, I <sub>B</sub> = -5mA		-0.95	v
Transition Frequency	f <sub>T</sub>	V <sub>CE</sub> = -20V, I <sub>C</sub> = -10mA, f = 100MHz	300		MHZ
Delay Time	t <sub>d</sub>	V <sub>CC</sub> = -3V, V <sub>BE</sub> = -0.5V I <sub>C</sub> = -10mA, I <sub>B1</sub> = -I <sub>B2</sub> = -1.0mA		35	nS
Rise Time	t <sub>r</sub>			35	nS
Storage Time	t <sub>s</sub>	V <sub>CC</sub> = -3V, I <sub>C</sub> = -10mA, I <sub>B1</sub> = -I <sub>B2</sub> = -1mA		200	nS
Fall Time	t <sub>f</sub>			50	nS

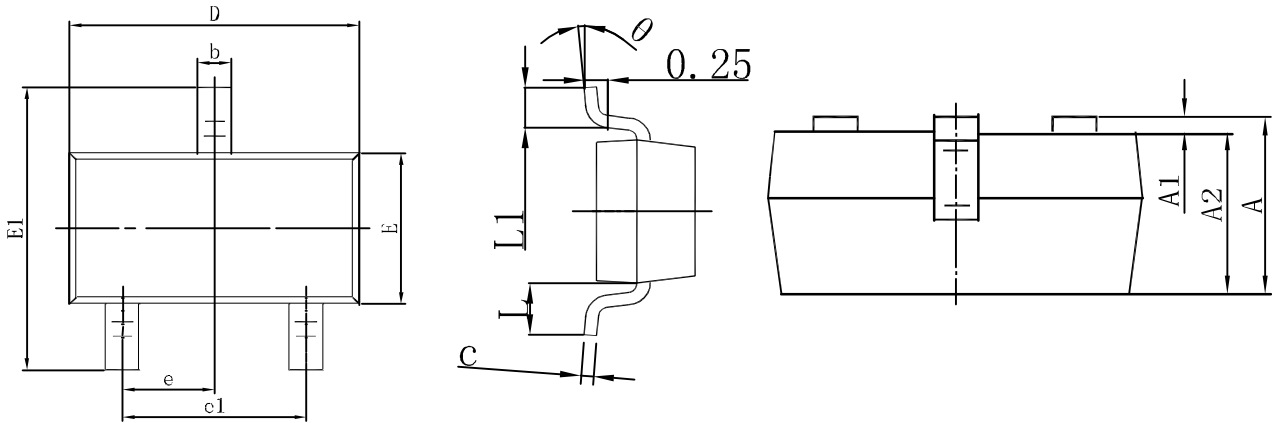
**CLASSIFICATION OF h<sub>FE</sub>**

Rank	O	Y	G
Range	120-200	200-300	300-400

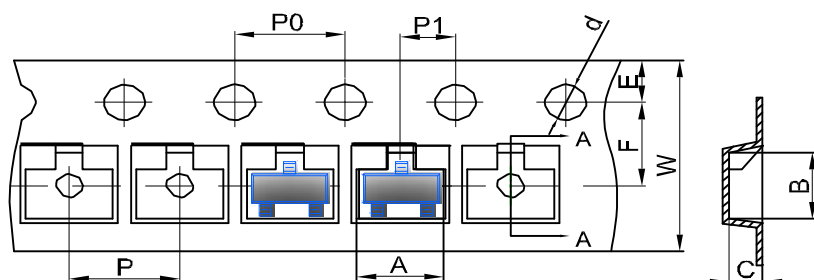
Typical Characteristics



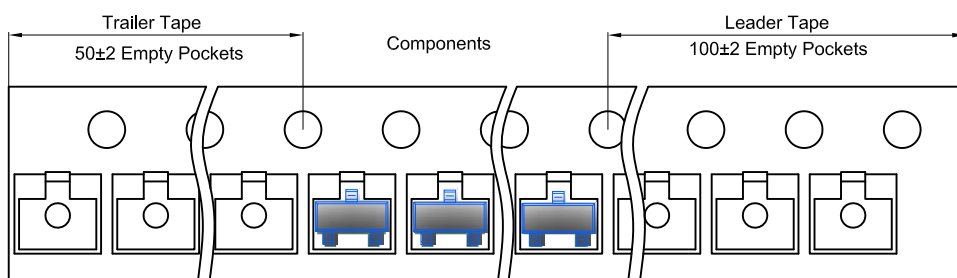
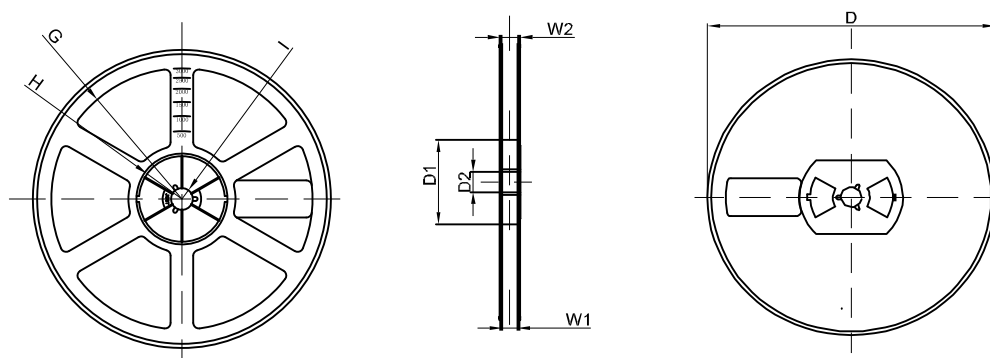
## Typical Characteristics



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	0.080	0.150	0.003	0.006
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	0.950 TYP		0.037 TYP	
e1	1.800	2.000	0.071	0.079
L	0.550 REF		0.022 REF	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°

**SOT-23 Embossed Carrier Tape**


DIMENSIONS ARE IN MILLIMETER										
TYPE	A	B	C	d	E	F	P0	P	P1	W
SOT-23	3.15	2.77	1.22	φ1.50	1.75	3.50	4.00	4.00	2.00	8.00
TOLERANCE	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1

**SOT-23 Tape Leader and Traller**

**SOT-23 Reel**


DIMENSIONS ARE IN MILLIMETER								
REEL OPTION	D	D1	D2	G	H	I	W1	W2
7" DIA	φ178	54.40	13.00	R78	R25.60	R6.50	9.50	12.30
TOLERANCE	±2	±1	±1	±1	±1	±1	±1	±1