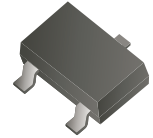


## MMBTA06-HF (NPN)

RoHS Device  
Halogen Free



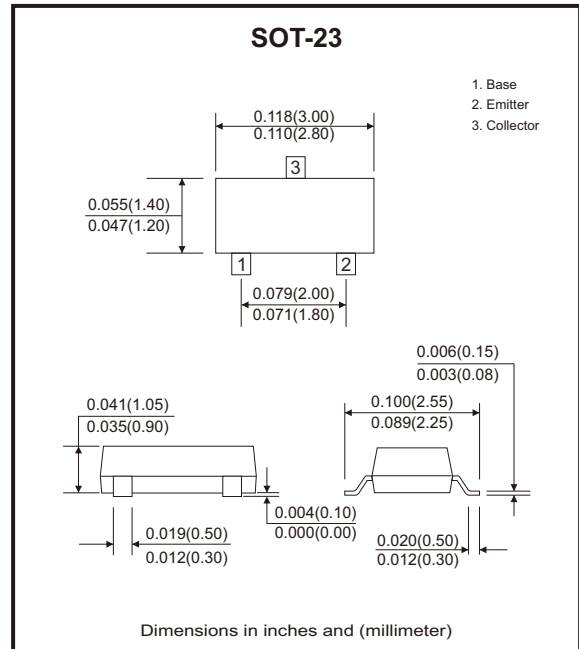
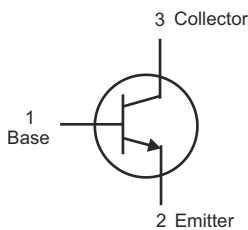
### Features

- Power dissipation of 300mW.
- High stability and high reliability.
- For switching and amplifier applications.

### Mechanical data

- Case: SOT-23, molded plastic.
- Epoxy : UL 94V-0.
- Mounting position: Any.

### Circuit Diagram



### Maximum Ratings (at TA=25°C unless otherwise noted)

Parameter	Symbol	Value	Unit
Collector-base voltage	V <sub>CBO</sub>	80	V
Collector-emitter voltage	V <sub>CEO</sub>	80	V
Emitter-base voltage	V <sub>EBO</sub>	4	V
Collector current-continuous	I <sub>c</sub>	500	mA
Collector power dissipation	P <sub>C</sub>	300	mW
Junction temperature	T <sub>J</sub>	150	°C
Storage temperature range	T <sub>STG</sub>	-55 to +150	°C
Thermal resistance, junction to ambient	R <sub>θJA</sub>	416	°C/W

## Electrical Characteristics (at $T_A=25^\circ\text{C}$ unless otherwise noted)

Parameter	Conditions	Symbol	Min	Max	Unit
Collector-base breakdown voltage	$I_C = 100\mu\text{A}, I_E = 0$	$V_{(BR)CBO}$	80		V
Collector-emitter breakdown voltage	$I_C = 1\text{mA}, I_B = 0$	$V_{(BR)CEO}$	80		V
Emitter-base breakdown voltage	$I_E = 100\mu\text{A}, I_C = 0$	$V_{(BR)EBO}$	4		V
Collector cut-off current	$V_{CB} = 80\text{V}, I_E = 0$	$I_{CBO}$		100	nA
Collector cut-off current	$V_{CE} = 60\text{V}, I_B = 0$	$I_{CEO}$		1.0	$\mu\text{A}$
Emitter cut-off current	$V_{EB} = 3\text{V}, I_C = 0$	$I_{EBO}$		100	nA
DC current gain (Note 1)	$V_{CE} = 1\text{V}, I_C = 10\text{mA}$	$h_{FE(1)}$	100	400	
	$V_{CE} = 1\text{V}, I_C = 100\text{mA}$	$h_{FE(2)}$	100		
Collector-emitter saturation voltage (Note 1)	$I_C = 100\text{mA}, I_B = 10\text{mA}$	$V_{CE(sat)}$		0.25	V
Base-emitter saturation voltage (Note 1)	$I_C = 100\text{mA}, I_B = 10\text{mA}$	$V_{BE(sat)}$		1.20	V
Transition frequency	$V_{CE} = 2\text{V}, I_C = 10\text{mA}, f = 100\text{MHz}$	$f_T$	100		MHz

Note: 1. Pulse width  $\leq 300\mu\text{s}$ , duty cycle  $\leq 2.0\%$ .

## Rating and Characteristic Curves (MMBTA06-HF)

Fig.1 - Static Characteristic

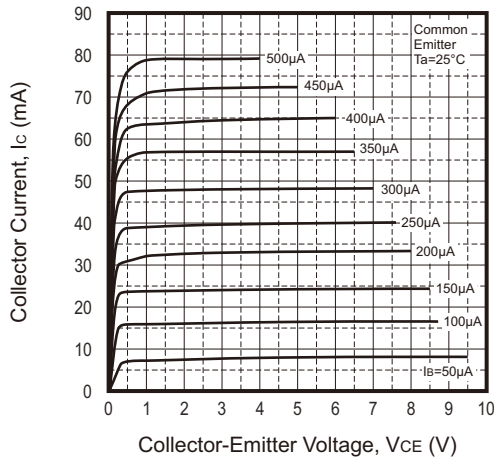


Fig.2 -  $h_{FE} - I_C$

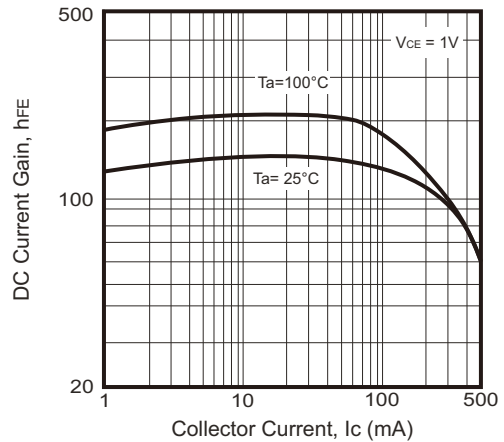


Fig.3 -  $V_{CEsat} - I_C$

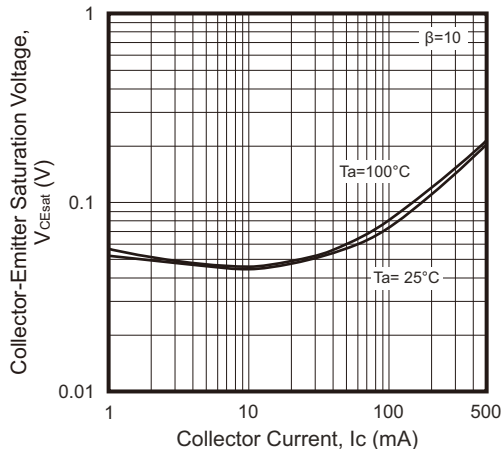
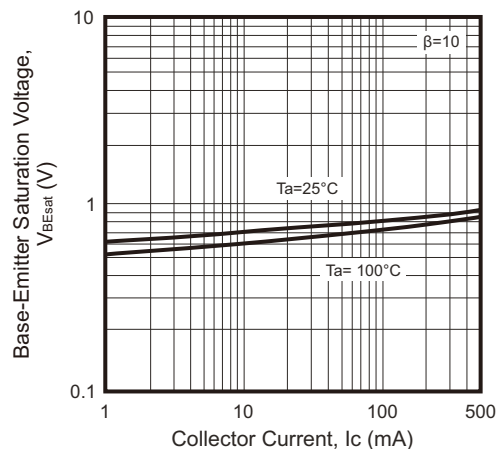


Fig.4 -  $V_{BEsat} - I_C$



Company reserves the right to improve product design, functions and reliability without notice.

REV:A

## Rating and Characteristic Curves (MMBTA06-HF)

Fig.5 -  $V_{BE} - I_c$

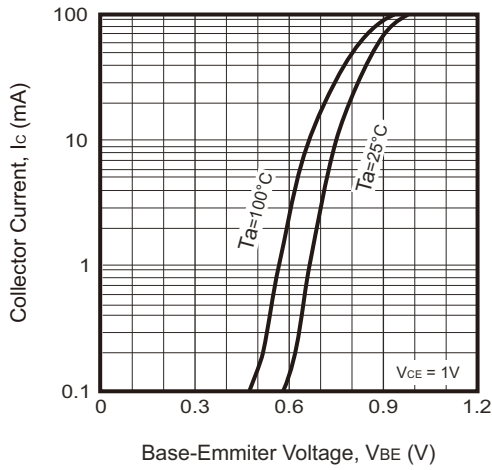


Fig.6 -  $C_{ob}/C_{ib} - V_{ce}/V_{EB}$

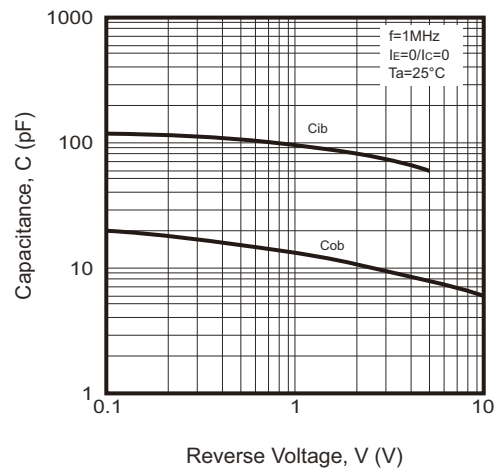


Fig.7 -  $f_r - I_c$

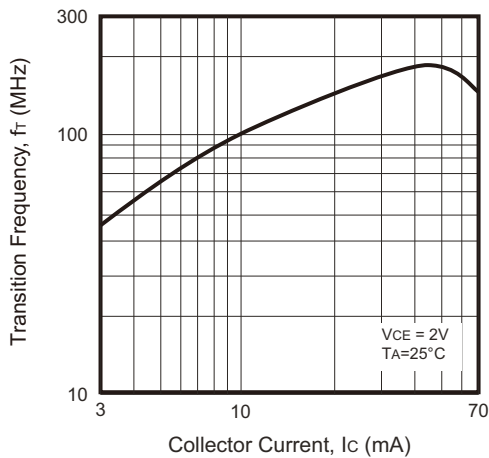
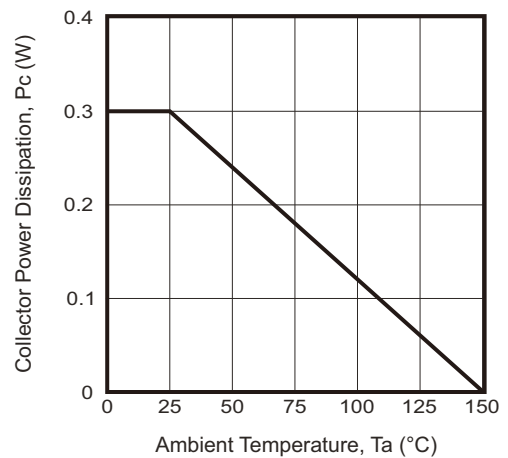
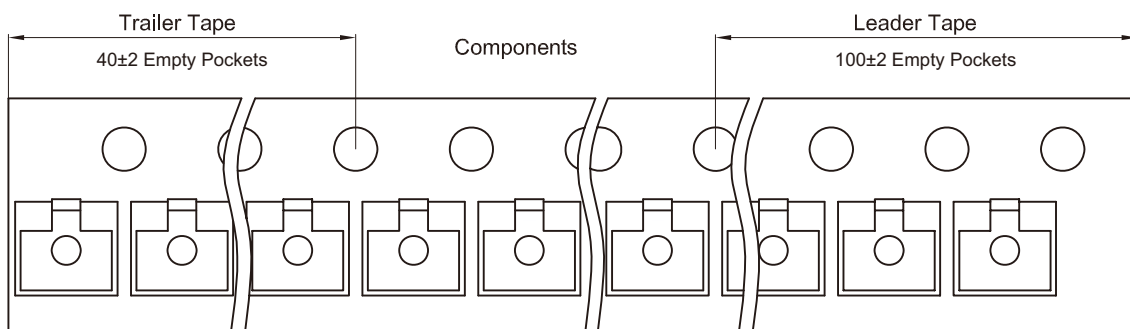
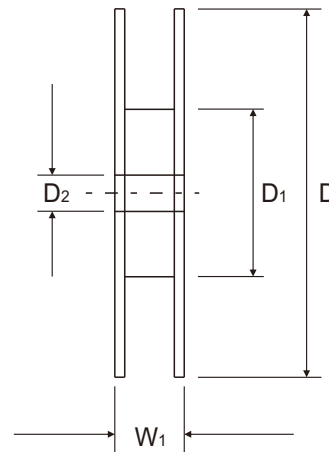
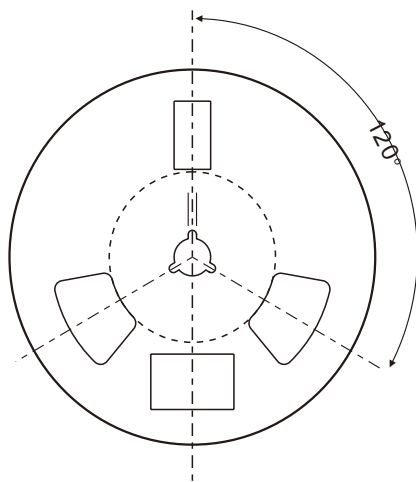
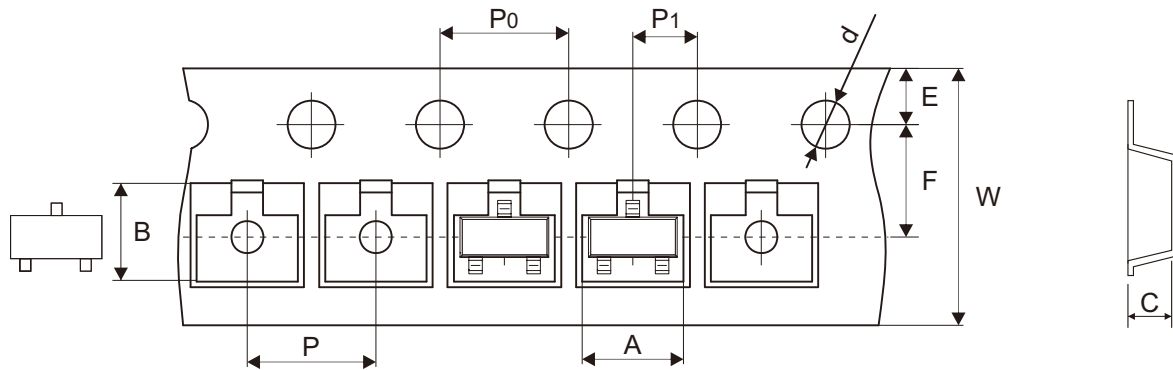


Fig.8 -  $P_c - T_a$



## Reel Taping Specification



SOT-23	SYMBOL	A	B	C	d	D	D1	D2
	(mm)	3.15 ± 0.10	2.77 ± 0.10	1.22 ± 0.10	1.50 ± 0.10	178.00 ± 2.00	54.40 ± 1.00	13.00 ± 1.00
	(inch)	0.124 ± 0.004	0.109 ± 0.004	0.048 ± 0.004	0.059 ± 0.004	7.008 ± 0.079	2.142 ± 0.039	0.512 ± 0.039

SOT-23	SYMBOL	E	F	P	P0	P1	W	W1
	(mm)	1.75 ± 0.10	3.50 ± 0.10	4.00 ± 0.10	4.00 ± 0.10	2.00 ± 0.10	8.00 ± 0.10	12.30 ± 1.00
	(inch)	0.069 ± 0.004	0.138 ± 0.004	0.157 ± 0.004	0.157 ± 0.004	0.079 ± 0.004	0.315 ± 0.004	0.472 ± 0.039