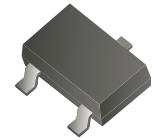


## MMBTA56-HF (PNP)

RoHS Device

Halogen Free



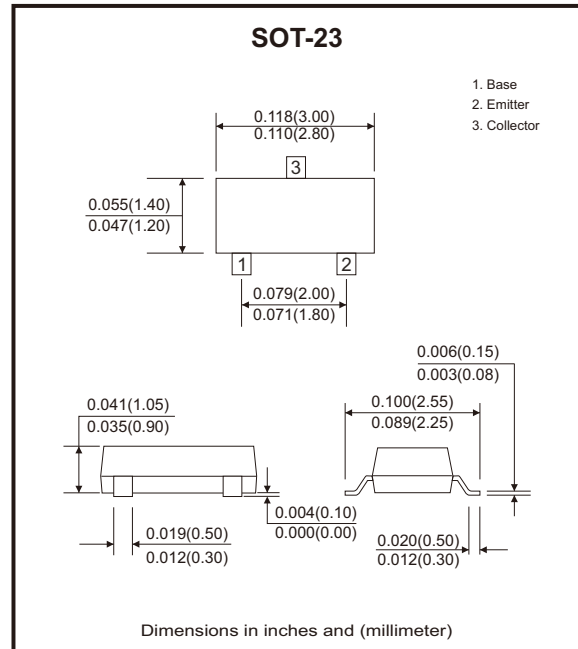
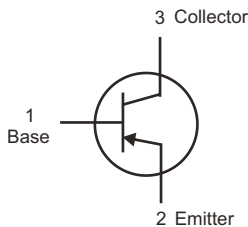
### Features

- Power dissipation of 225mW.
- High stability and high reliability.

### 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>CB0</sub>	-80	V
Collector-emitter voltage	V <sub>CEO</sub>	-80	V
Emitter-base voltage	V <sub>EB0</sub>	-4	V
Collector current-continuous	I <sub>c</sub>	-500	mA
Collector power dissipation	P <sub>c</sub>	225	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>	555	°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 (Note 1)	$I_C = -1\text{mA}, I_B = 0$	$V_{(BR)CEO}$	-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
Emitter cut-off current	$V_{EB} = -4\text{V}, I_C = 0$	$I_{EBO}$		-100	nA
Collector cut-off current	$V_{CE} = -60\text{V}, I_B = 0$	$I_{CEO}$		-1.0	$\mu\text{A}$
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 voltage	$V_{CE} = -1\text{V}, I_C = -100\text{mA}$	$V_{BE}$		-1.20	V
Transition frequency	$V_{CE} = -1\text{V}, I_C = -100\text{mA}, f = 100\text{MHz}$	$f_T$	50		MHz

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

## Rating and Characteristic Curves (MMBTA56-HF)

Fig.1 - Static Characteristic

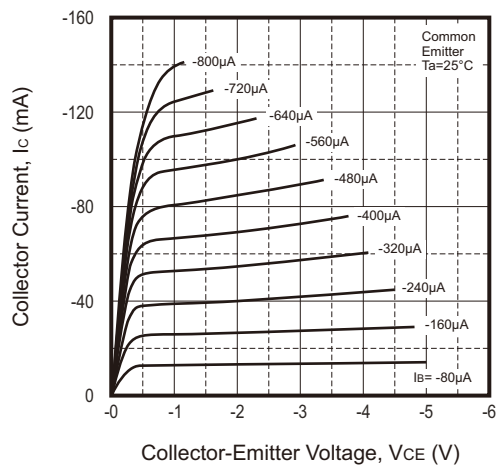


Fig.2 -  $h_{FE} - I_C$

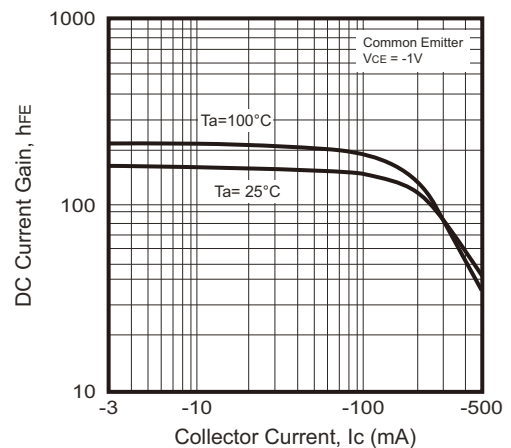


Fig.3 -  $V_{CEsat} - I_C$

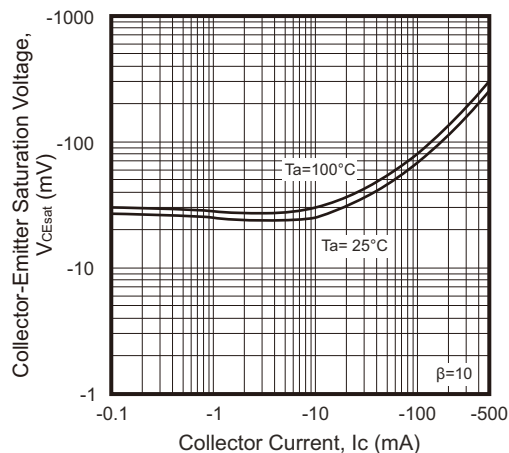
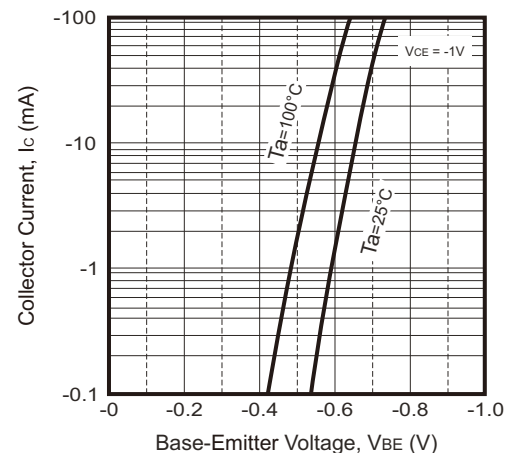


Fig.4 -  $V_{BE} - I_C$



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

REV:A

## Rating and Characteristic Curves (MMBTA56-HF)

Fig.5 -  $C_{ob}/C_{ib}$  —  $V_{CB}/V_{EB}$

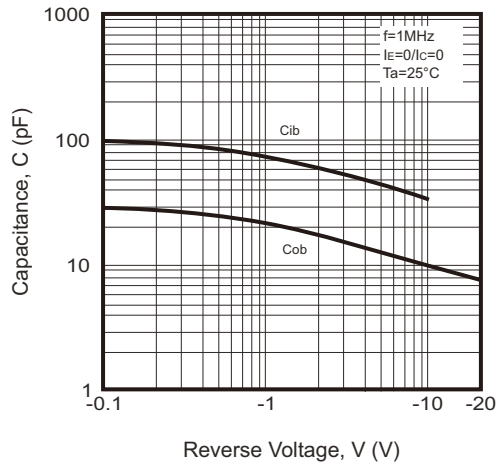


Fig.6 -  $f_T$  —  $I_C$

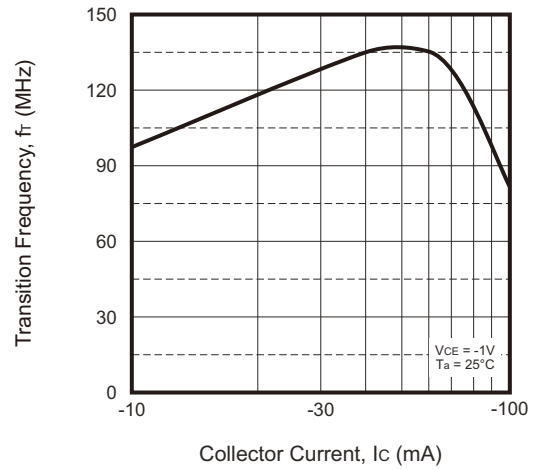
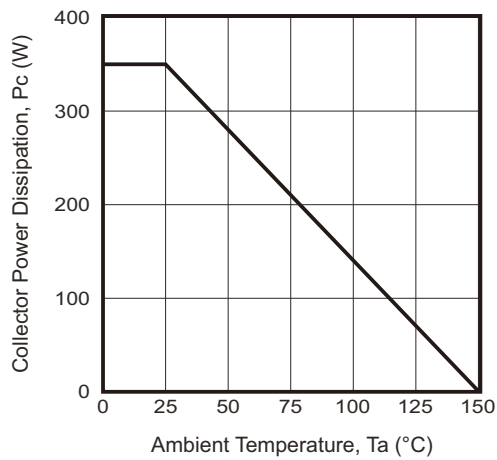
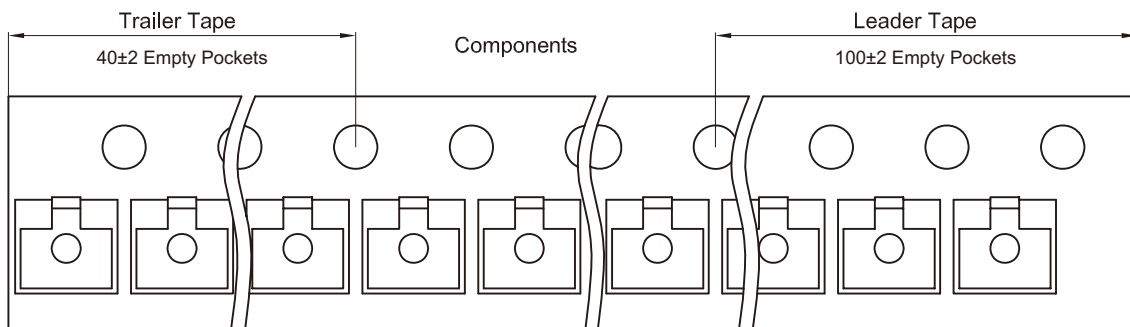
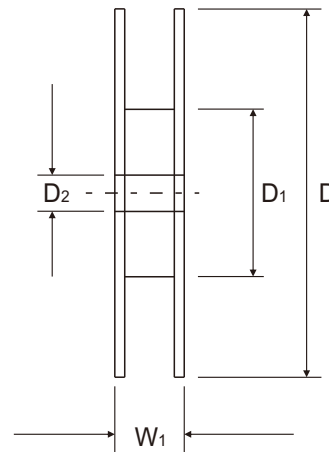
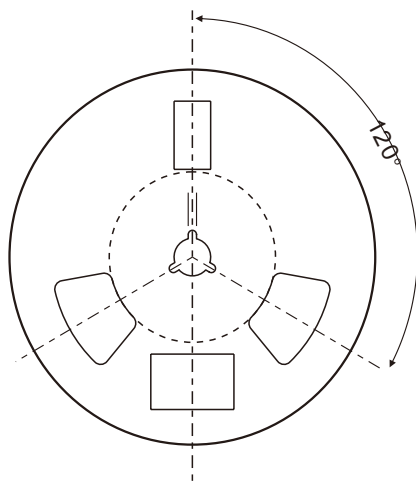
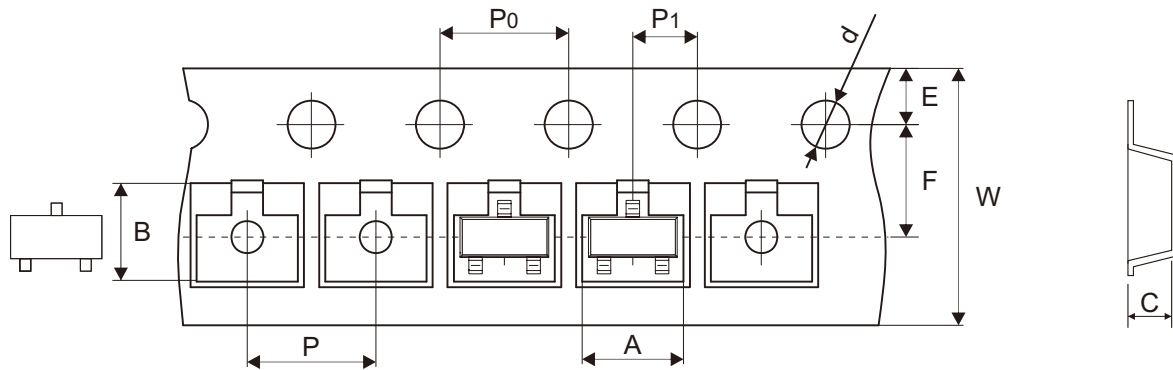


Fig.7 -  $P_C$  —  $T_a$



## Reel Taping Specification

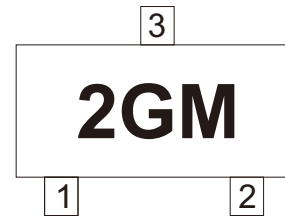


SOT-23	SYMBOL	A	B	C	d	D	D1	D2
	(mm)	$3.15 \pm 0.10$	$2.77 \pm 0.10$	$1.22 \pm 0.10$	$1.50 \pm 0.10$	$178.00 \pm 2.00$	$54.40 \pm 1.00$	$13.00 \pm 1.00$
	(inch)	$0.124 \pm 0.004$	$0.109 \pm 0.004$	$0.048 \pm 0.004$	$0.059 \pm 0.004$	$7.008 \pm 0.079$	$2.142 \pm 0.039$	$0.512 \pm 0.039$

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

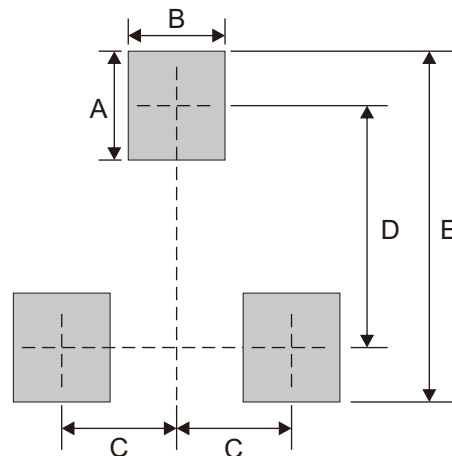
## Marking Code

Part Number	Marking Code
MMBTA56-HF	2GM



## Suggested PAD Layout

SIZE	SOT-23	
	(mm)	(inch)
A	0.90	0.035
B	0.80	0.031
C	0.95	0.037
D	2.00	0.079
E	2.90	0.114



Note: 1. The pad layout is for reference purposes only.

## Standard Packaging

Case Type	REEL PACK	
	REEL (pcs)	Reel Size (inch)
SOT-23	3,000	7

# Mouser Electronics

Authorized Distributor

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