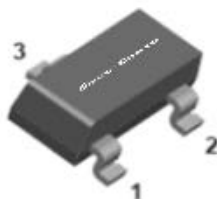
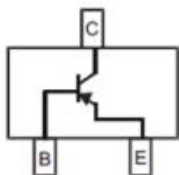


MMBTA44

NPN Transistor



SOT-23

Features

- Moisture sensitivity level 1
- Halogen free and
- Surface mount package ideally suited for automatic insertion

Application

- Signal amplification
- Switching circuit

Mechanical data

- **Package:** SOT-23
- **Terminals:** Tin plated leads, solderable per J-STD-002 and JESD22-B102

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

Item	Symbol	Unit	Conditions	Value
Device marking code				3D
Collector-base voltage	V_{CBO}	V	$I_C=100\mu\text{A}, I_E=0$	400
Collector-emitter voltage	V_{CEO}	V	$I_C=1\text{mA}, I_B=0$	400
Emitter-base voltage	V_{EBO}	V	$I_E=10\mu\text{A}, I_C=0$	6
Collector current	I_C	mA		200
Power dissipation	P_D	mW		350
Junction temperature	T_J	$^{\circ}\text{C}$		-55 to +150
Storage temperature	T_{STG}	$^{\circ}\text{C}$		-55 to +150

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■ Electrical Characteristics (T_a=25°C Unless otherwise specified)

Item	Symbol	Unit	Conditions	Min	Typ	Max
Collector-base breakdown voltage	V _{(BR)CBO}	V	I _C =100μA, I _E =0	400		
Collector-emitter breakdown voltage	V _{(BR)CEO}	V	I _C = 1mA, I _B =0	400		
Emitter-base breakdown voltage	V _{(BR)EBO}	V	I _E =10μA, I _C =0	6		
Collector-base cut-off current	I _{CBO}	nA	V _{CB} =400V			100
Emitter-base cut-off current	I _{EBO}	nA	V _{EB} =4V			100
DC current gain	h _{FE1}		V _{CE} =10V, I _C =1mA	40		
	h _{FE2}		V _{CE} =10V, I _C =10mA	50		200
	h _{FE3}		V _{CE} =10V, I _C =50mA	45		
	h _{FE4}		V _{CE} =10V, I _C =100mA	40		
Collector-emitter saturation voltage	V _{CE(sat)1}	V	I _C =10mA, I _B =1mA			0.5
	V _{CE(sat)2}	V	I _C =50mA, I _B =5mA			0.75
Base-emitter saturation voltage	V _{BE(sat)}	V	I _C =10mA, I _B =1mA			0.75

■ Thermal Characteristics

Parameter	Symbol	Unit	Value
Thermal resistance, junction-to-ambient	R _{θJ-A} ⁽¹⁾	°C/W	357
Thermal resistance, junction-to-case	R _{θJ-C} ⁽¹⁾	°C/W	286

Note:

(1) Device mounted on PCB, single-sided copper, with standard footprint

■ Characteristics

Fig 1: Static Characteristics

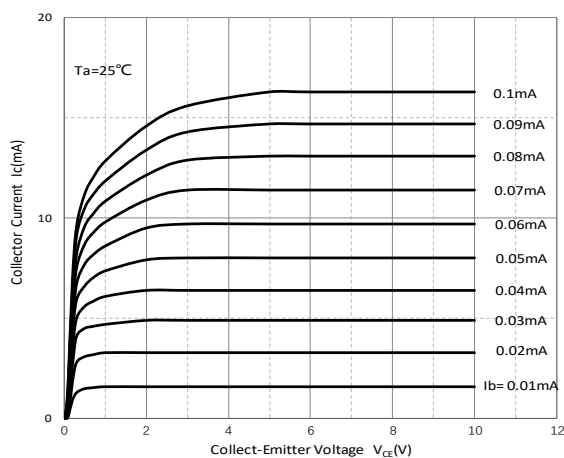


Fig 2: DC Current Gain

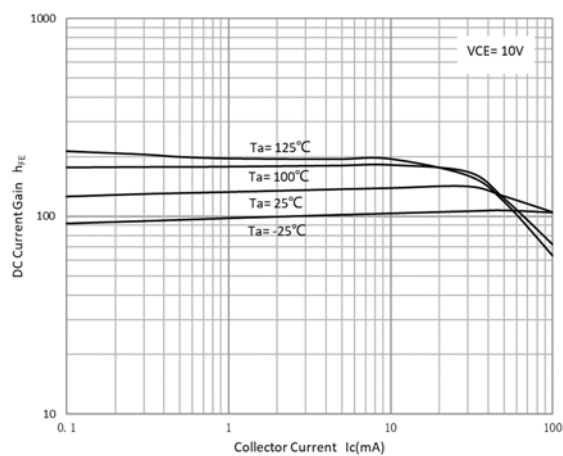


Fig 3: Collector-Emittor Saturation Voltage

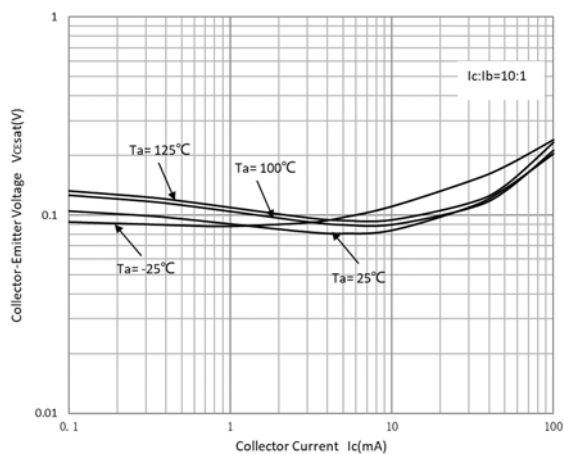


Fig 4: Base-Emittor Saturation Voltage

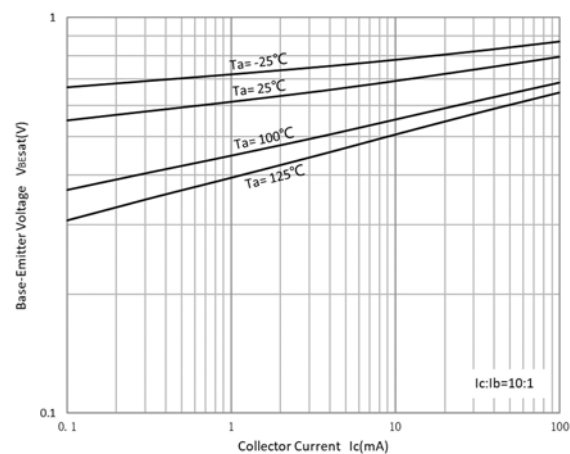


Fig 5: Base-Emittor On Voltage

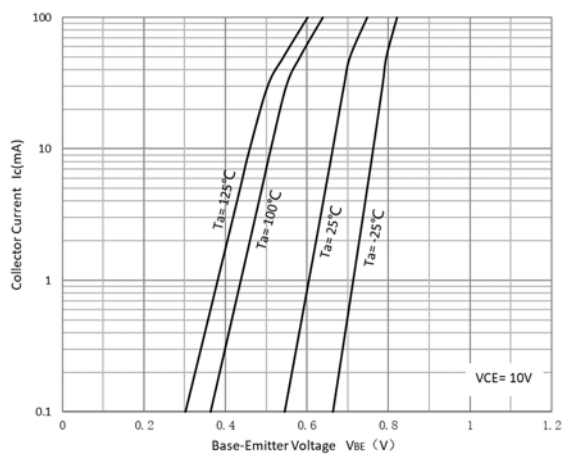


Fig 6: Cob/Cib-Vcb/Veb

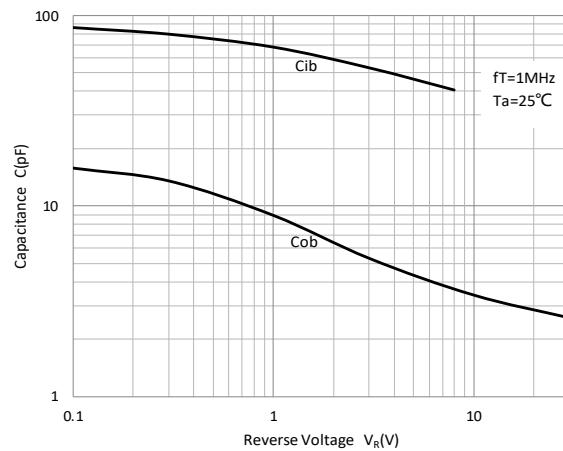
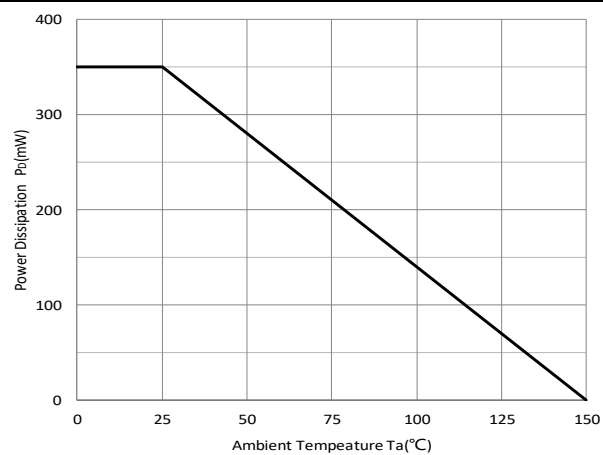


Fig 7: PD-Ta Curve

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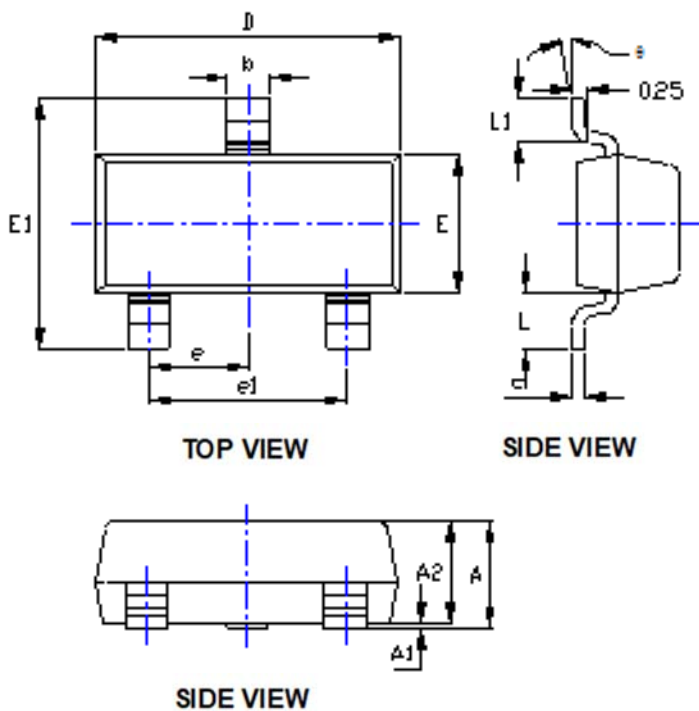


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■ Ordering Information

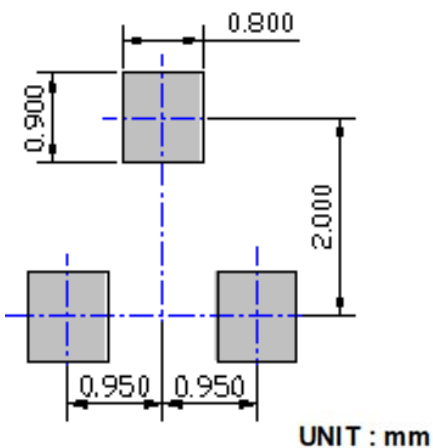
Preferred P/N	Packing code	Unit weight(g)	Minimum package(pcs)	Inner box quantity(pcs)	Outer carton quantity(pcs)	Delivery mode
MMBTA44	F2	Approximate 0.008	3000	30000	120000	7" reel
MMBTA44	F4	Approximate 0.008	10000	/	210000	13" reel

■ Outline Dimensions



SYMBOL	DIMENSIONS			
	INCHES		Millimeter	
	MIN.	MAX.	MIN.	MAX.
A	0.035	0.045	0.900	1.150
A1	0.000	0.004	0.000	0.100
A2	0.035	0.041	0.900	1.050
b	0.012	0.020	0.300	0.500
c	0.004	0.008	0.100	0.200
D	0.110	0.118	2.800	3.000
E	0.047	0.055	1.200	1.400
E1	0.089	0.100	2.250	2.550
e	0.037TYP		0.950TYP	
e1	0.071	0.079	1.800	2.000
L	0.022REF		0.550REF	
L1	0.012	0.020	0.300	0.500
θ	0°	8°	0°	8°

■ Suggested Pad Layout



MMBTA44

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