

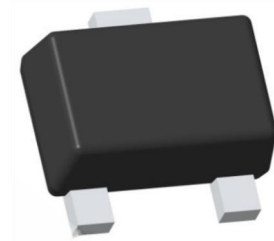
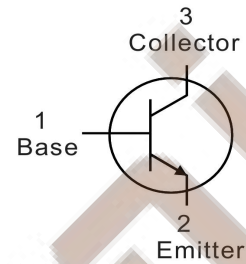
General Description



V_{CEO}	I_C	$V_{CE(sat)}$	f_T	T_{jMax}
40V	200mA	0.3V@ $I_C=50mA$	300MHz	150°C

Features

- SOT-723 Package
- Epoxy meets UL-94 V-0 flammability rating and halogen free
- Moisture Sensitivity Level 3
- High temperature soldering guaranteed 260°C/10seconds
at terminals



Package Marking and Ordering Information

Product ID	Package	Marking	Qty(PCS)
MMBT3904M	SOT-723	1N	3000

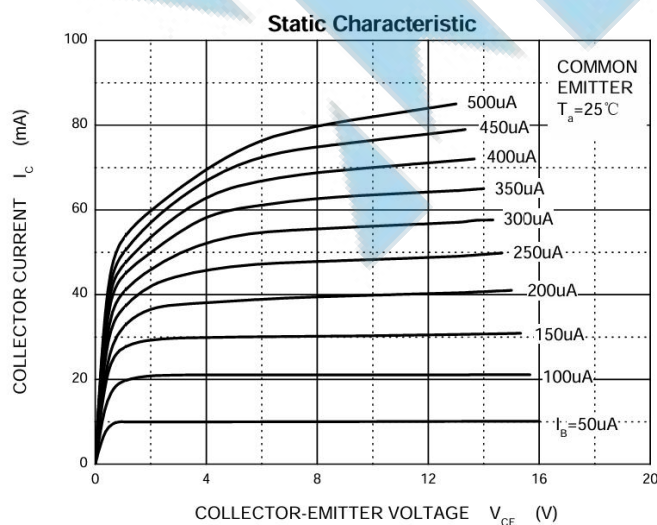
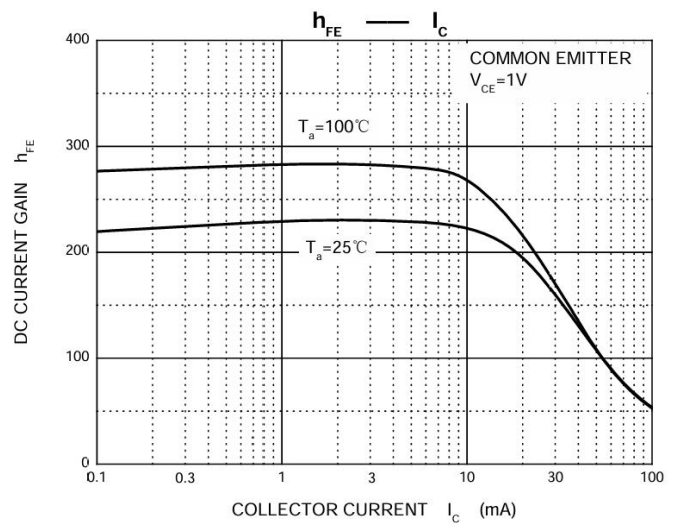
Absolute Maximum Ratings (Ta=25°C unless otherwise noted)

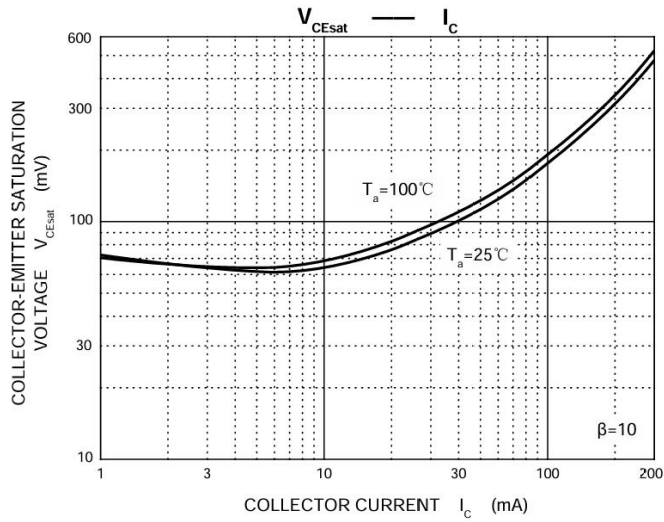
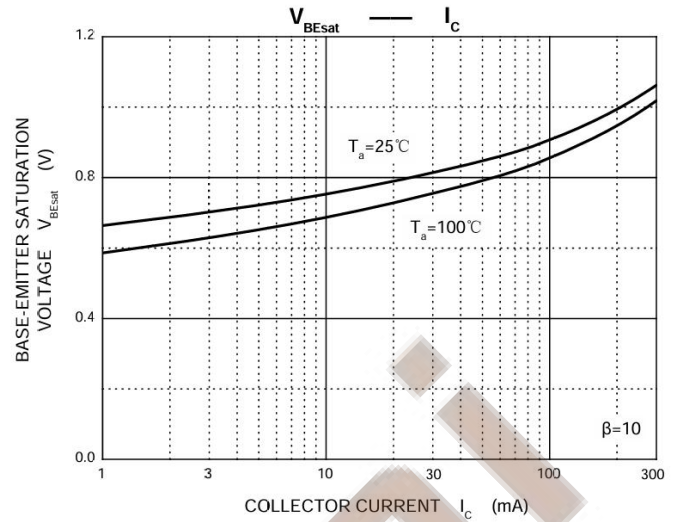
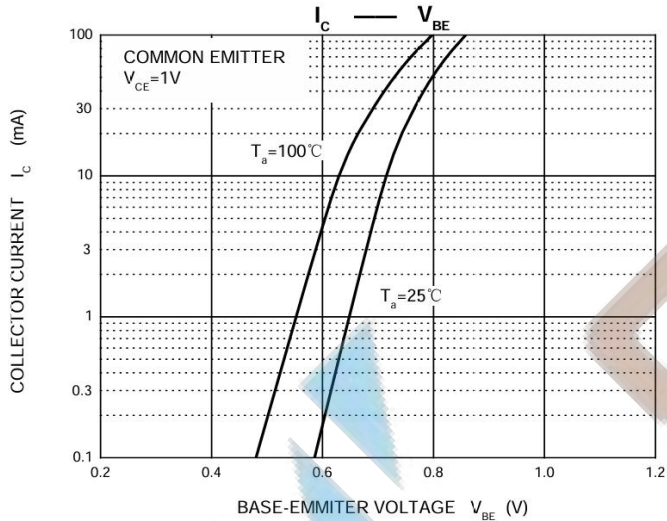
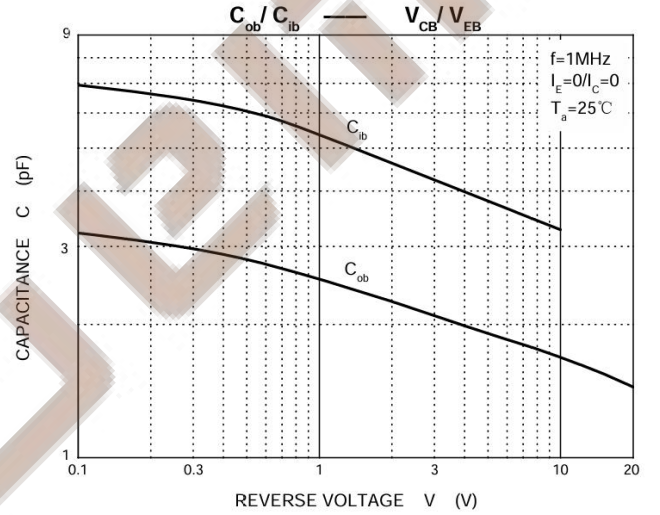
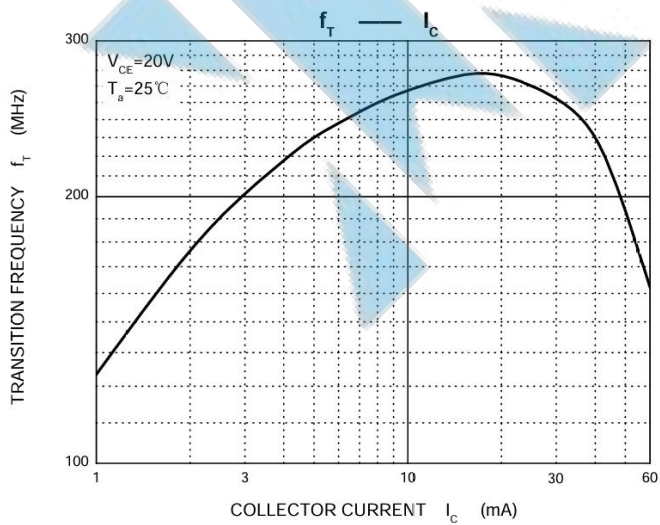
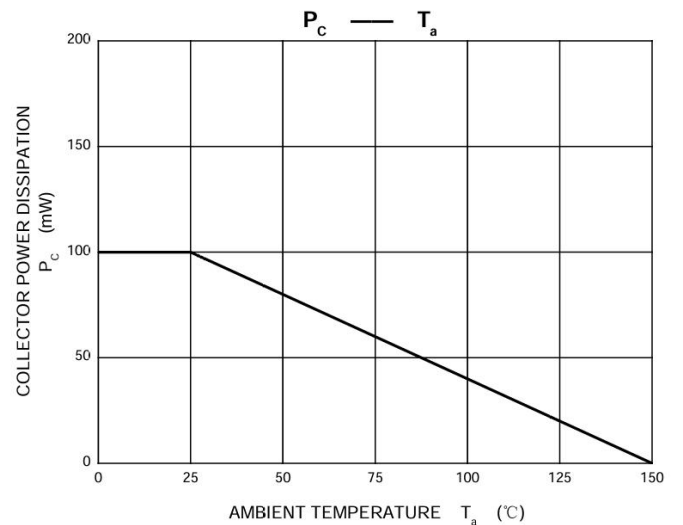
Parameter	Symbols	Value	Units
Collector-Base Voltage	VCBO	60	V
Collector-Emitter Voltage	VCEO	40	V
Emitter -Base Voltage	VEBO	6	V
Collector Current-Continuous	IC	200	mA
Collector Power Dissipation	PC	100	mW
Junction Temperature	Tj	150	°C
Storage Temperature	Tstg	-55-+150	°C
Thermal resistance From junction to ambient	RθJA	1250	°C/W

Electrical Characteristics(Ta=25°C unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Max.	Unit
Collector-base breakdown voltage	V(BR)CBO	IC=10uA, IE=0	60		V
Collector-emitter breakdown voltage	V(BR)CEO	IC=1mA, IB=0	40		V
Emitter-base breakdown voltage	V(BR)EBO	IE=10uA, IC=0	6		V
Emitter cut-off current	IEBO	VEB=5V, IC=0		100	nA
Collector cut-off current	ICEX	VCE=30V, VEB(off)=3V		50	nA
DC current gain	hFE(1)	VCE=1V, IC=0.1mA	40		
	hFE(2)	VCE=1V, IC=1mA	70		
	hFE(3)	VCE=1V, IC=10mA	100	300	
	hFE(4)	VCE=1V, IC=50mA	60		
Collector-emitter saturation voltage	VCE(sat)	IC=10mA, IB=1mA		0.2	V
		IC=50mA, IB=5mA		0.3	V
Base -emitter saturation voltage	VBE(sat)	IC=10mA, IB=1mA	0.65	0.85	V
		IC=50mA, IB=5mA		0.95	V
Transition frequency	fT	VCE=20V, IC=10mA, f=100MHz	300		MHz
Output capacitance	Cob	VCB=5V, IE=0, f=1MHz		4	pF
Input capacitance	Cib	VEB=0.5V, IC=0, f=1MHz		8	pF
Noise figure	NF	VCE=5V, IC=0.1mA, f=1MHz, Rs=1KΩ		5	dB
Delay time	td	VCC=3V, VBE(off)=-0.5V, IC=10mA,		35	nS
Rise time	tr	IB1=1mA		35	nS
Storage time	ts	VCC=3V, IC=10mA, IB1=IB2=1mA		200	nS
Fall time	tf			50	nS

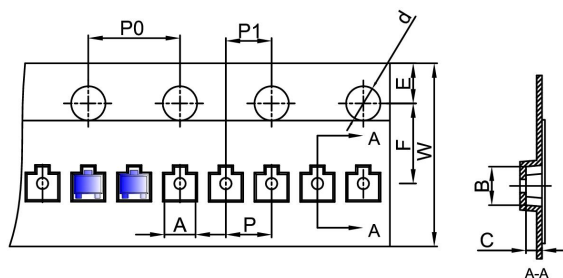
*Pulse test: pulse width≤300us,duty cycle≤2.0%

Typical characteristics




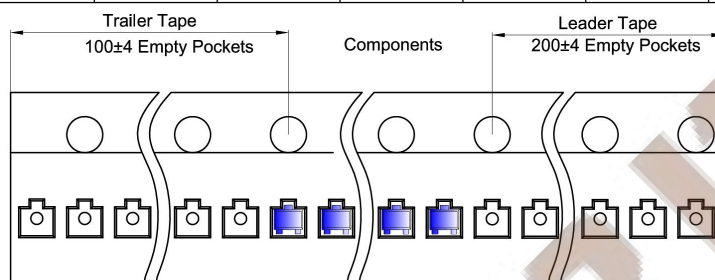
Package Information

Carrier Dimension(mm)

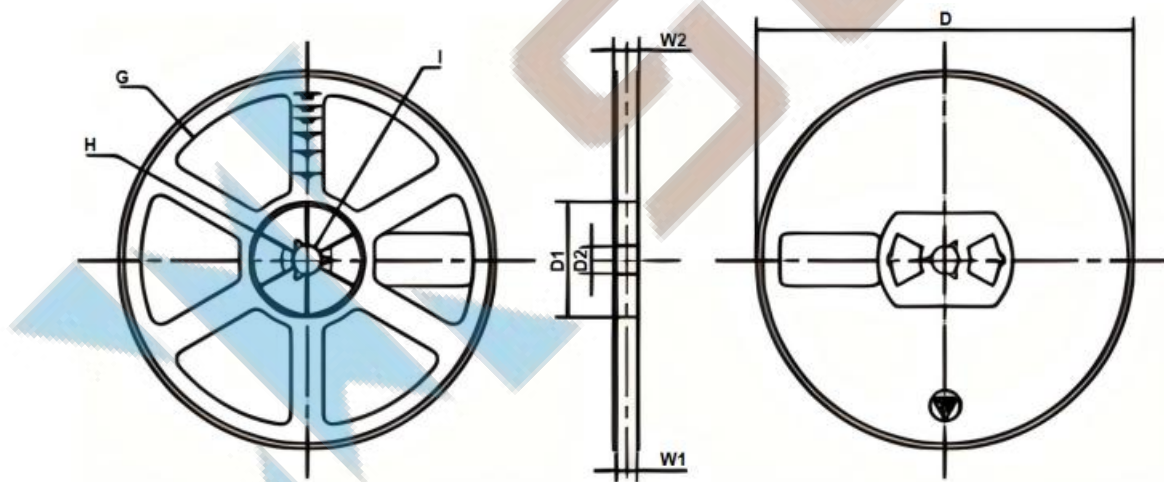


Dimensions are in millimeter

Pkg Type	A	B	C	d	E	F	P0	P	P1	W
SOT-723	1.33	1.45	0.61	Ø1.50	1.75	3.50	4.00	2.00	2.00	8.00



Reel Dimension(mm)



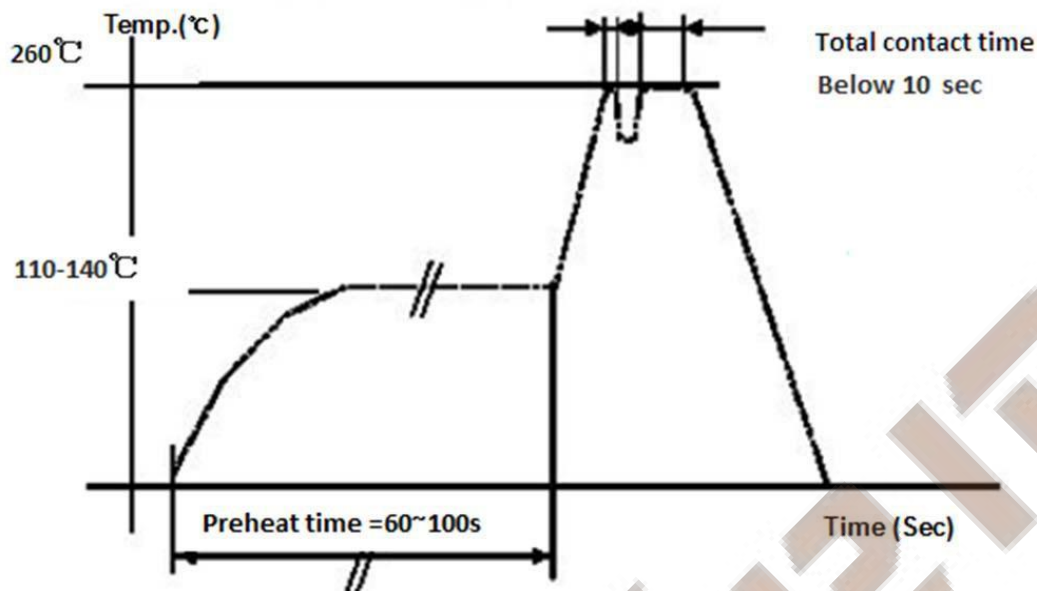
Reel Option	D	D1	D2	G	H	I	W1	W2
7"Dia	Φ178.00	54.40	13.00	R78.00	R25.60	R6.50	9.50	12.30
Tolerance	±2	±1	±1	±1	±1	±1	±1	±1

Package Specifications

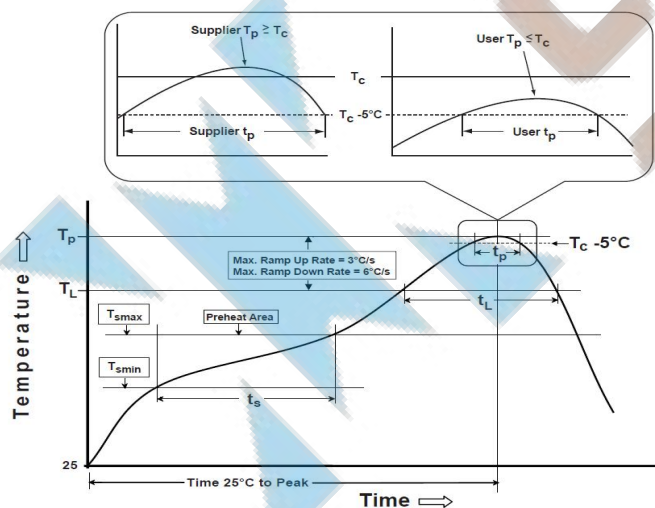
Package	Reel Size	Reel DIA. (mm)	Q'TY/Reel (Kpcs)	Box Size (mm)	QTY/Box (Kpcs)	Carton Size (mm)	Q'TY/Carton (Kpcs)
SOT723	7'	178	8	210*208*203	120	440*400*230	480

Recommended Soldering Profile for Rectifier Diodes (Pb Free)

a) Wave Soldering Profile



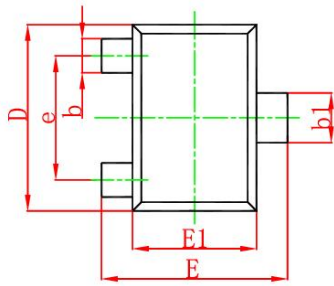
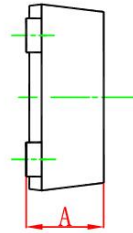
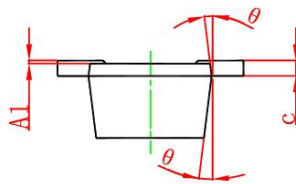
b) Reflow Soldering Profile (Pb Free Application), refer to IPC/JEDEC J-STD-020



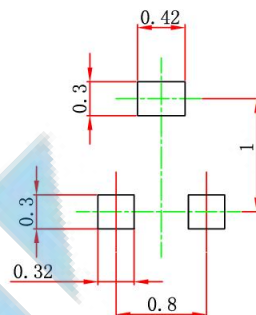
Preheat/Soak Temperature Min (Tsmin) Temperature Max (Tsmax) Time (ts) from (Tsmin to Tsmax)	50 °C 200 °C 60-120 seconds
Melting Point of Solder (Sn Ag Cu)	217°C
Ramp-up Rate to 217°C(Melting Point of Solder)	3°C/sec
Time at Temp.>217°C (Melting Point of Solder)	60~150 Sec
Peak Temperature	255±5°C
Time within 5°Cbelow Peak Temp.	20~40 Sec
Cooling Rate	6°C/sec (max)
Time from 25°C to Peak Temp.	8min (max)

c) Manual Soldering

When using an electric soldering iron for manual soldering, it is recommended that the temperature does not exceed 300°C and the soldering time is less than 10 seconds.

Package Mechanical Data


Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.430	0.500	0.017	0.020
A1	0.000	0.050	0.000	0.002
b	0.170	0.270	0.007	0.011
b1	0.270	0.370	0.011	0.015
c	0.080	0.150	0.003	0.006
D	1.150	1.250	0.045	0.049
E	1.150	1.250	0.045	0.049
E1	0.750	0.850	0.030	0.033
e	0.800TYP.		0.031TYP.	
θ	7° REF.		7° REF.	

Suggested Pad Layout


Note:
 1. Controlling dimension: in millimeters.
 2. General tolerance: $\pm 0.05\text{mm}$.
 3. The pad layout is for reference purposes only.

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