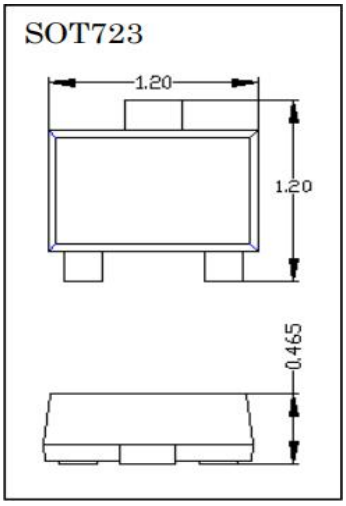
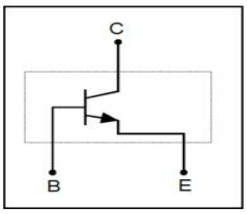
MMBT3904M

NPN General Purpose Amplifier

- ◇ Capable of 100m Watts of Power Dissipation and 200mA Ic
- ◇ Operating and Storage Junction Temperatures: −55℃ to 150℃
- ◇ Small Outline Surface Mount Package
- ◇ RoHS compliant / Green EMC



Circuit Diagram



Device Marking Code	
MMBT3904M	**1N**

Maximum Ratings (Ta = 25 ℃ unless otherwise noted)

Symbol	Parameter	Value	Units
V_{CBO}	Collector−Base Voltage	60	V
V_{CEO}	Collector−Emitter Voltage	40	V
V_{EBO}	Emitter−Base Voltage	6	V
P_C	Collector Power Dissipation	100	mW
I_C	Collector Current	200	mA
T_J	Junction Temperature	150	℃
T_{STG}	Storage Temperature	−55 to 150	℃
$R_{\theta JA}$	Thermal Resistance From Junction To Ambient	1250	℃/W

Electrical Characteristics (Ta = 25 ℃ Unless Otherwise Specified)

Symbol	Parameter	Test Conditions	Min	Max	Units
V_{CBO}	Collector−Base Breakdown Voltage	I_C = 10 μ A, I_E =0	60		V
V_{CEO}	Collector−Emitter Breakdown Voltage	I_C = 1mA, I_B =0	40		V
V_{EBO}	Emitter−Base Breakdown Voltage	I_E = 10 μ A, I_C =0	6		V
I_{CBO}	Collector−Base Cutoff Current	V_{CB} = 30V, I_E =0		100	nA
I_{CEX}	Collector−Emitter Cutoff Current	V_{CE} = 30V, V_{BE} =3V		50	nA
I_{EBO}	Collector Cutoff Current	V_{EB} = 5V, I_C =0		100	nA
$V_{CE(sat)}$	Collector−Emitter Saturation Voltage	I_C = 10mA, I_B =1mA		0.2	V
		I_C = 50mA, I_B =5mA		0.3	
$V_{BE(sat)}$	Base−Emitter Saturation Voltage	I_C = 10mA, I_B =1mA	0.65	0.85	V
		I_C = 50mA, I_B =5mA		0 95	

h_{FE}	DC Current Gain	V_{CE} = 1V, I_C =0.1mA	40		
		V_{CE} = 1V, I_C =1mA	70		
		V_{CE} = 1V, I_C =10mA	100	300	
		V_{CE} = 1V, I_C =50mA	60		
f_T	Current Gain-Bandwidth Product	V_{CE} = 20V, I_C =10mA, f=100MHz	300		MHz

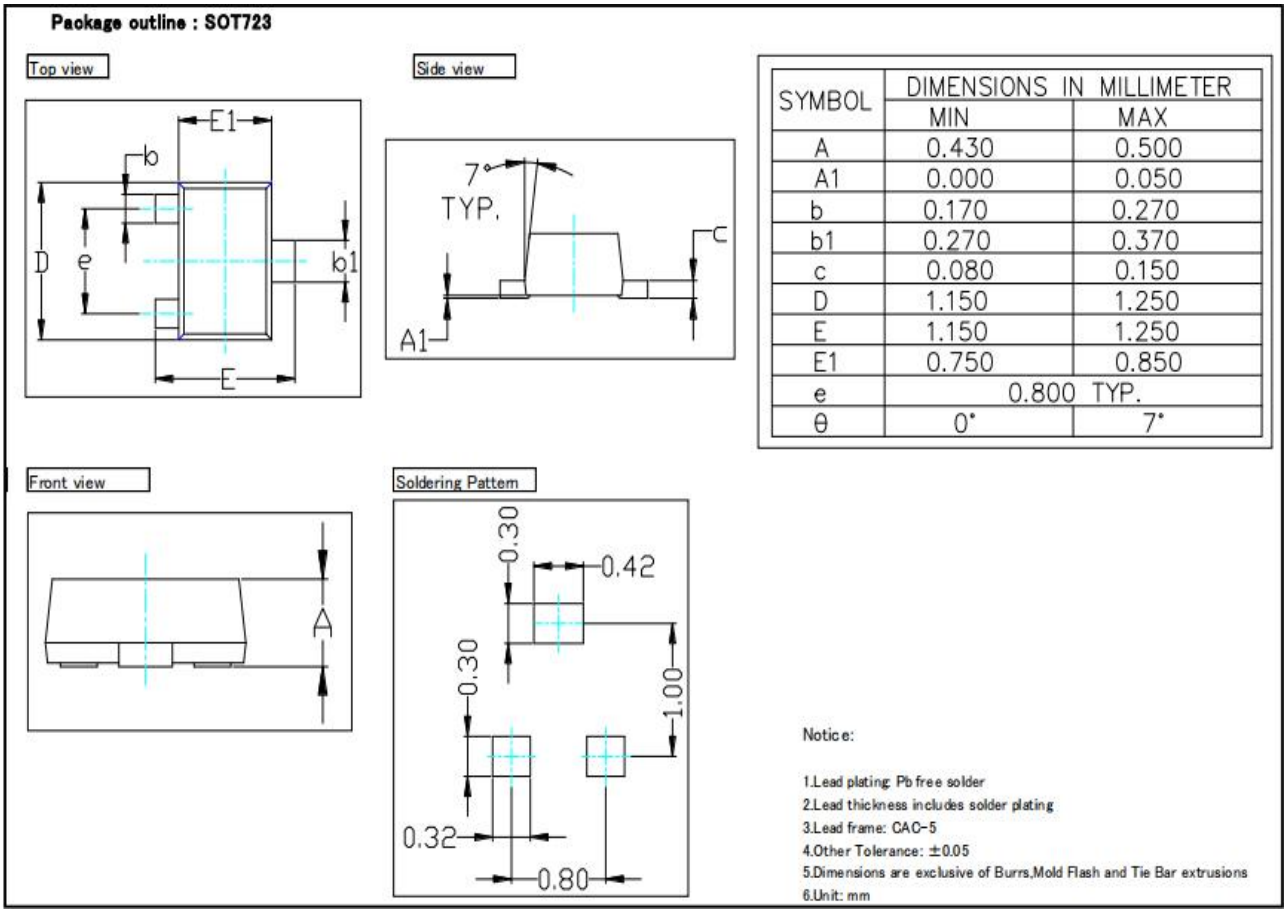
Switching Characteristics

Symbol	Parameter	Test Conditions	Min	Max	Units
t_d	Delay Time	V_{CC} = 3V, I_C =10mA , V_{BE} = -0.5V, I_{B1} =1mA		35	nS
t_r	Rise Time			35	nS
t_S	Storage Time	V_{CC} = 3V, I_C =10mA , I_{B1} = I_{B2} =1mA		200	nS
t_f	Fall Time			50	nS

Ordering Information

Device	Package	Shipping	Tape wide	Emboss pitch	Tape specification	Notes
MMBT3904M	SOT723	8000pcs /7" Reel	8 mm	4 mm	Conductive	

Package Dimensions



SYMBOL	DIMENSIONS IN MILLIMETER	
	MIN	MAX
A	0.430	0.500
A1	0.000	0.050
b	0.170	0.270
b1	0.270	0.370
c	0.080	0.150
D	1.150	1.250
E	1.150	1.250
E1	0.750	0.850
e	0.800 TYP.	
θ	0°	7°

Notice:

1.Lead plating: Pb free solder
2.Lead thickness includes solder plating
3.Lead frame: CAC-5
4.Other Tolerance: ±0.05
5.Dimensions are exclusive of Burrs,Mold Flash and Tie Bar extrusions
6.Unit: mm

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