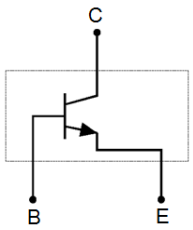
DATA SHEET

MMBT3904M

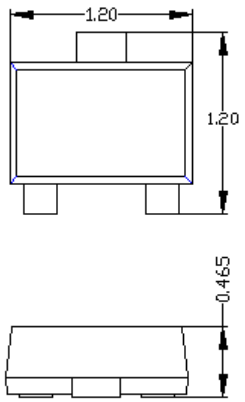
- ◇ Capable of 200 mWatts of Power Dissipation and 200mA Ic
- ◇ Operating and Storage Junction Temperatures: -55℃ to 150℃
- ◇ Small Outline Surface Mount Package
- ◇ RoHS compliant / Green EMC

Device Marking Code	
MMBT3904	1N

Circuit Diagram



SOT723



MAXIMUM RATINGS (Ta=25℃ unless otherwise noted)

Symbol	Parameter	Value	Unit
V_{CBO}	Collector-Base Voltage	60	V
V_{CEO}	Collector-Emitter Voltage	40	V
V_{EBO}	Emitter-Base Voltage	6	V
I_C	Collector Current	200	mA
P_C	Collector Power Dissipation	100	mW
$R\Theta_{JA}$	Thermal Resistance From Junction To Ambient	1250	℃/W
T_j	Junction Temperature	150	℃
T_{stg}	Storage Temperature	-55～+150	℃

ELECTRICAL CHARACTERISTICS @ 25° C Unless Otherwise Specified

Symbol	Parameter	Test Conditions	Min	Max	Units
V_{CEO}	Collector-Emitter Breakdown Voltage	I_C=1.0mA, I_B=0	40		V
V_{CBO}	Collector-Base Breakdown Voltage	I_C=10μA, I_E=0	60		V
V_{EBO}	Emitter-Base Breakdown Voltage	I_E=10μA, I_C=0	6		V

I_{CBO}	Collector Cutoff Current	V_{CB}=30V, I_E=0		100	nA
I_{CEX}	Collector Cutoff Current	V_{CE}=30V, $V_{EB(OFF)}$=3.0V		50	nA
I_{EBO}	Collector Cutoff Current	V_{EB}=5V, I_C=0		100	nA
$h_{FE(1)}$	DC Current Gain	I_C=0.1mA, V_{CE}=1V	40		
$h_{FE(2)}$	DC Current Gain	I_C=1mA, V_{CE}=1V	70		
$h_{FE(3)}$	DC Current Gain	I_C=10mA, V_{CE}=1V	100	300	
$h_{FE(4)}$	DC Current Gain	I_C=50mA, V_{CE}=1V	60		
$V_{CE(sat)1}$	Collector-Emitter Saturation Voltage	I_C=10mA, I_B=1mA		0.2	V
$V_{CE(sat)2}$	Collector-Emitter Saturation Voltage	I_C=50mA, I_B=5mA		0.3	V
$V_{BE(sat)1}$	Base-Emitter Saturation Voltage	I_C=10mA, I_B=1mA	0.65	0.85	V
$V_{BE(sat)2}$	Base-Emitter Saturation Voltage	I_C=50mA, I_B=5.0mA		0.95	V
f_T	Current Gain-Bandwidth Product	I_C=10mA, V_{CE}=20V, f=100MHz	300		MHz

SWITCHING CHARACTERISTICS

Symbol	Parameter	Test Conditions	Min	Max	Units
td	Delay Time	V_{CC}=3.0V, $V_{BE(off)}$=-0.5V		35	ns
tr	Rise Time	I_C=10mA, I_{B1}=1.0mA		35	ns
ts	Storage Time	V_{CC}=3.0V, I_C=10mA		200	ns
tf	Fall Time	I_{B1}=I_{B2}=1.0mA		50	ns

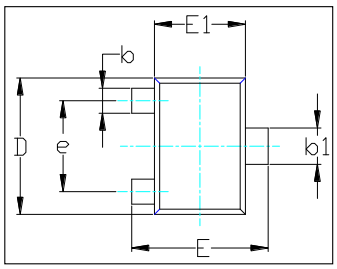
ORDERING INFORMATION

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

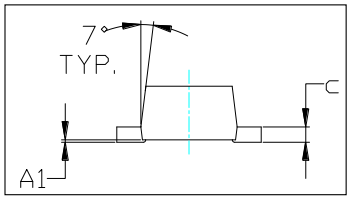
PACKAGE DIMENSIONS

Package outline : SOT723

Top view

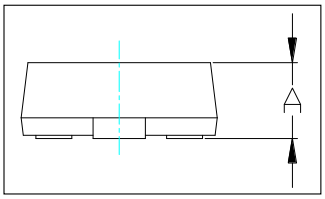


Side view

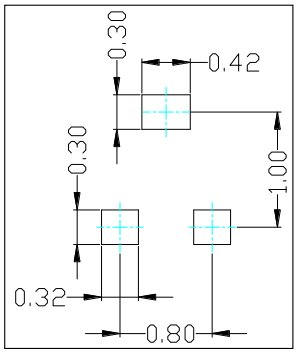


SYMBOL	DIMENSIONS IN MILLIMETER	
	MIN	MAX
A	0.430	0.500
A1	0.000	0.050
b	0.170	0.270
b1	0.270	0.370
c	0.080	0.150
D	1.150	1.250
E	1.150	1.250
E1	0.750	0.850
e	0.800 TYP.	
θ	0°	7°

Front view



Soldering Pattern



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