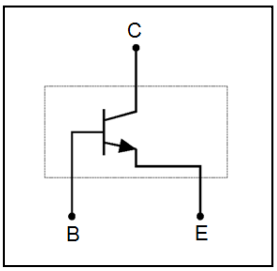
DATA SHEET

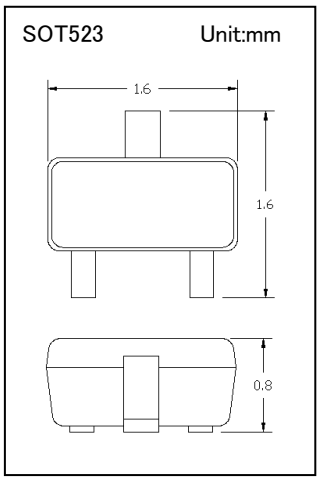
MMBT3904T

- ◇ Complementary PNP Type Available (MMBT3906T)
- ◇ Epoxy Meets UL 94 V-0 Flammability Rating
- ◇ Surface Mount SOT-523 Package
- ◇ Rohs Compliant / Green EMC

Device Marking Code	
MMBT3904T	**1N**

Equivalent Circuit





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	150	mW
$R_{\Theta JA}$	Thermal Resistance From Junction To Ambient	833	℃/W
T_j	Junction Temperature	150	℃
T_{stg}	Storage Temperature	-55～+150	℃

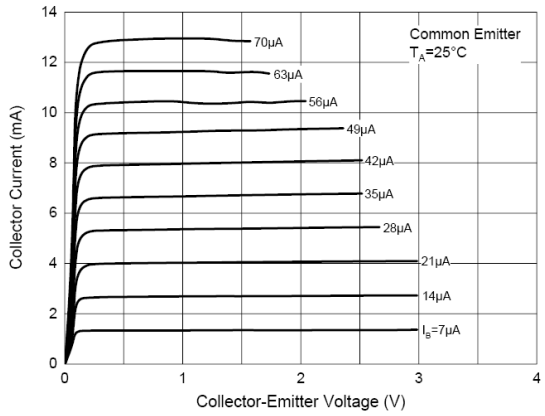
Electrical Characteristics @ 25℃ Unless Otherwise Specified

Symbol	Parameter	Test Conditions	Min	Typ	Max	Units
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage	I_C=1.0mA, I_B=0	40			V
$V_{(BR)CBO}$	Collector-Base Breakdown Voltage	I_C=10μA, I_E=0	60			V
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage	I_E=10μA, I_C=0	6.0			V
I_{CBO}	Collector Cut-off Current	V_{CB}=60V, I_E=0			100	nA
I_{CEX}	Collector Cut-off Current	V_{CE}=30V, V_{EB}(off)=3V			50	nA
I_{EBO}	Emitter Cut-off Current	V_{EB}=5V, I_c=0			100	nA
h_{FE}	DC Current Gain	I_C=0.1mA,V_{CE}=1.0V	40			
		I_C=1.0mA,V_{CE}=1.0V	70			
		I_C=10mA, V_{CE}=1.0V	100		300	
		I_C=50mA,V_{CE}=1.0V	60			
		I_C=100mA,V_{CE}=1.0V	30			
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	I_C=10mA,I_B=1.0mA			0.2	V
		I_C=50mA,I_B=5.0mA			0.3	
$V_{BE(sat)}$	Base-Emitter Saturation Voltage	I_C=10mA,I_B=1.0mA	0.65		0.85	V
		I_C=50mA,I_B=5.0mA			0.95	
f_T	Transition Frequency	I_C=10mA, V_{CE}=20V,f=100MHz	300			MHZ
C_{ob}	Output Capacitance	V_{CB}=5.0V, I_E=0, f=1.0MHz			4.0	pF
C_{ib}	Input Capacitance	V_{BE}=0.5V, I_C=0, f=1.0MHz			8.0	pF

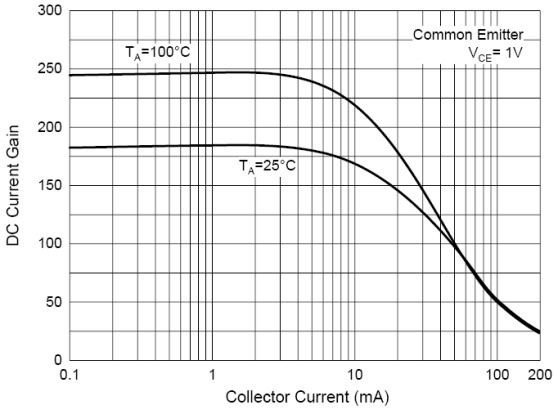
Switching Characteristics

Symbol	Parameter	Test Conditions	Min	Typ	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

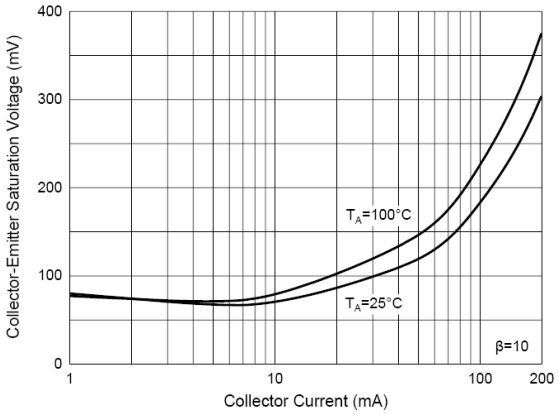
Curve Characteristics



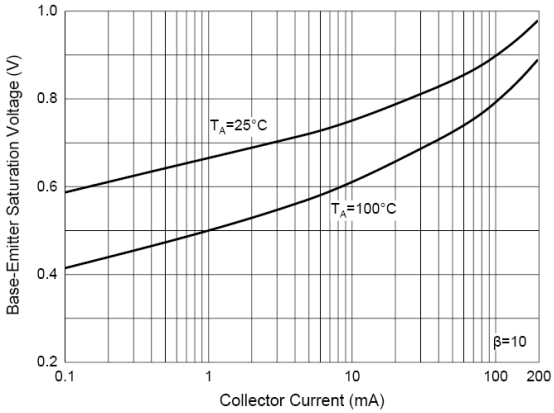
Static Characteristics



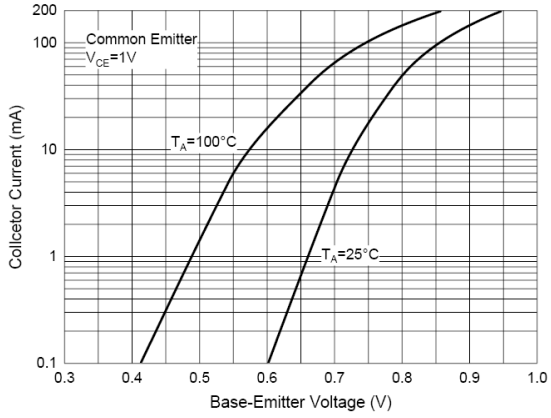
DC Current Gain Characteristics



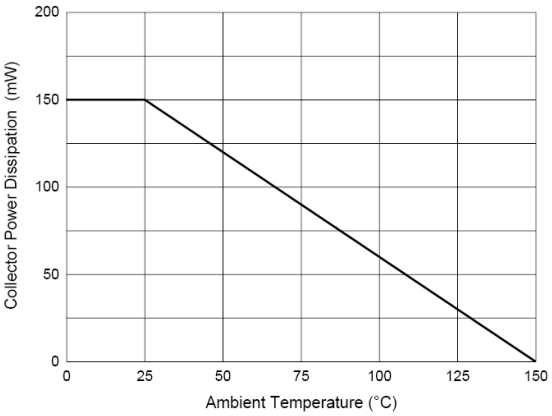
Collector-Emitter Saturation Voltage Characteristics



Base-Emitter Saturation Voltage Characteristics



Base-Emitter Voltage Characteristics



Collector Power Derating Curve

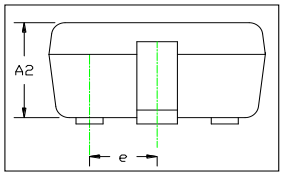
Ordering Information

Device	Package	Shipping	Tape wide	Emboss pitch	Tape specification	Notes
MMBT3904T	SOT523	Tape & Reel 3000pcs /7" Reel	8mm	4mm	Conductive	

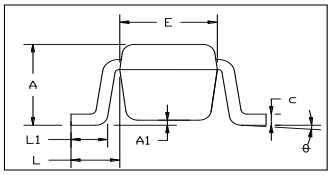
Package Dimensions

Package outline : SOT523

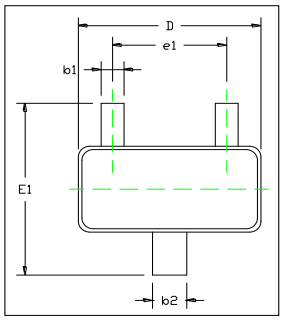
FRONT VIEW



SIDE VIEW

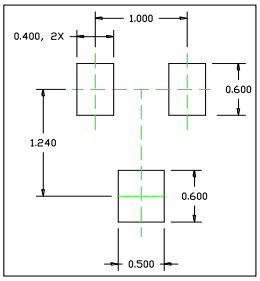


TOP VIEW



SYMBOL	DIMENSIONS IN MILLIMETER	
	MIN	MAX
A	0.70	0.90
A1	0.00	0.10
A2	0.70	0.80
b1	0.15	0.25
b2	0.25	0.35
c	0.10	0.20
D	1.50	1.70
E	0.70	0.90
E1	1.45	1.75
e	0.50 TYP.	
e1	0.90	1.10
L	0.40 REF.	
L1	0.26	0.46
θ	0°	8°

SOLDRING 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