

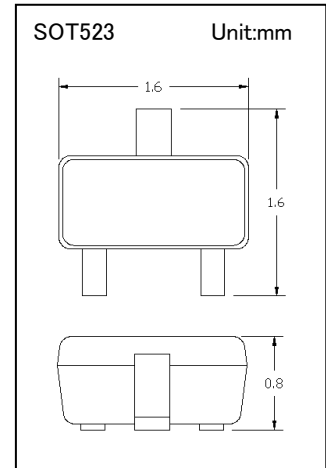
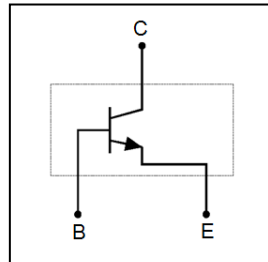
DATA SHEET

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°C 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	°C/W
T_j	Junction Temperature	150	°C
T_{stg}	Storage Temperature	-55~+150	°C

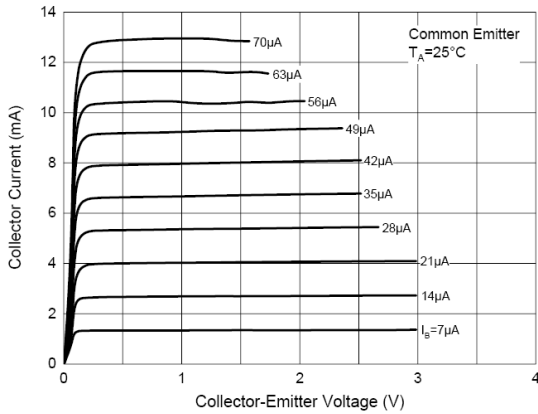
Electrical Characteristics @ 25°C Unless Otherwise Specified

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	$I_C=10\mu A, I_E=0$	60			V
$V_{(BR)EBO}$	Emitter–Base Breakdown Voltage	$I_E=10\mu A, I_C=0$	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

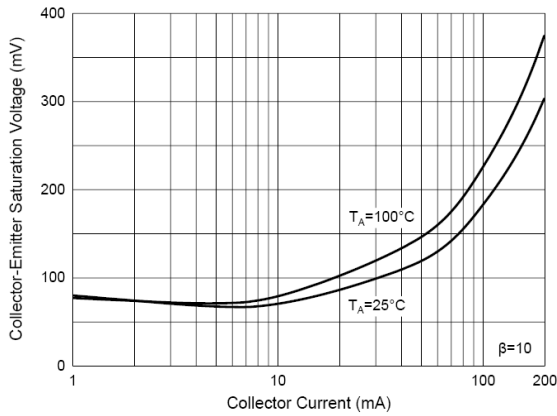
Switching Characteristics

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
ts	Storage Time	$V_{CC}=3.0V, I_C=10mA$			200	nS
tf	Fall Time		$I_{B1}=I_{B2}=1.0mA$			50

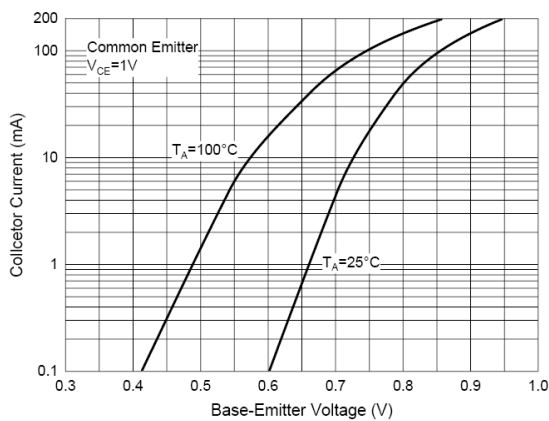
Curve Characteristics



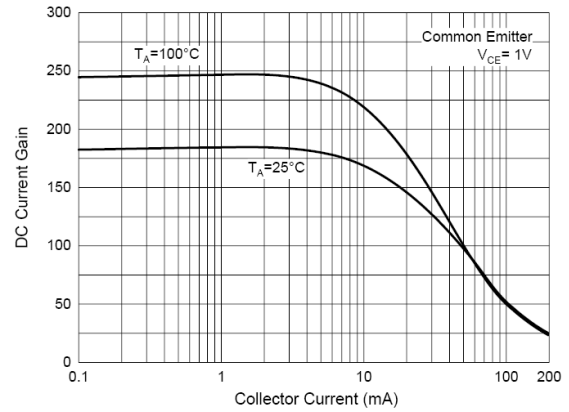
Static Characteristics



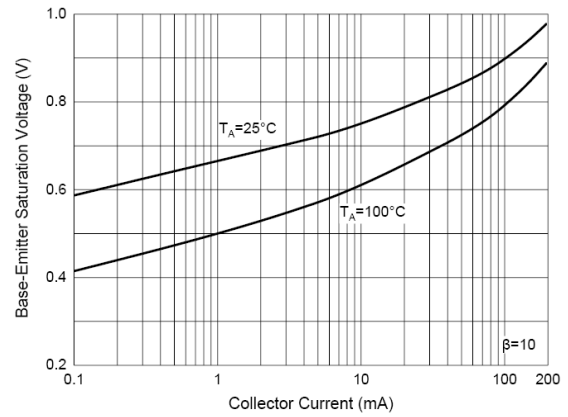
Collector-Emitter Saturation Voltage Characteristics



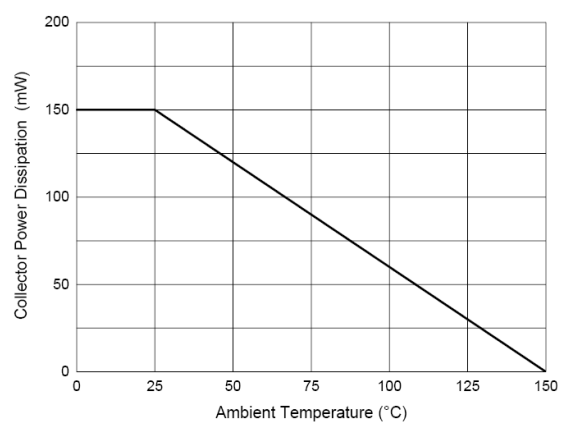
Base-Emitter Voltage Characteristics



DC Current Gain Characteristics



Base-Emitter Saturation Voltage Characteristics



Collector Power Derating Curve

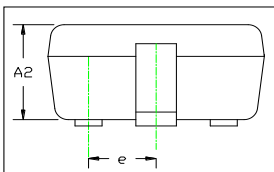
Ordering Information

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

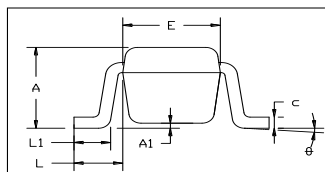
Package Dimensions

Package outline : SOT523

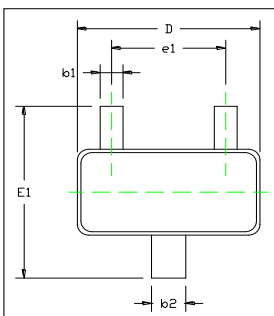
FRONT VIEW



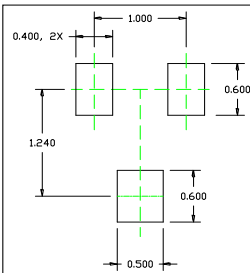
SIDE VIEW



TOP VIEW



SOLDERING PATTERN



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°

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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