Descriptions

The MMBT3904H is Silicon NPN transistor in a SOT-723 Plastic Package

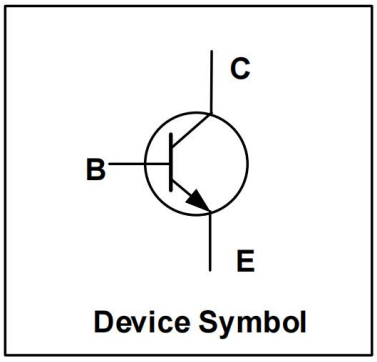
Features

- Complementary to MMBT3906H
- Epitaxial Planar Die Construction
- Ideal for Low Power Amplification and Switching

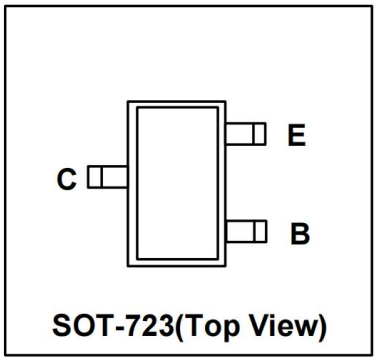
Applications

- SOT-723 Package
- Marking : Making Code
- RoHS Compliant

Mechanical Characteristics



Device Symbol



SOT-723(Top View)

Marking

See Marking Instructions.

Absolute Maximum Ratings(Ta=25℃)

Parameter	Symbol	Value	Unit
Collector Base Voltage	V_{CBO}	60	V
Collector Emitter Voltage	V_{CEO}	40	V
Emitter Base Voltage	V_{EBO}	6	V
Collector Current Continuous	I_C	0.2	A
Collector Power Dissipation	P_C	0.1	W
Junction Temperature	T_J	150	°C
Storage Temperature	T_{STG}	-55 ~ 150	°C

Electrical Characteristics(Ta=25℃)

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	I_C = 10μA, I_E = 0	60	_	_	V
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	I_C = 1mA, I_B = 0	40	_	_	V
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	I_E = 10μA, I_C = 0	6	_	_	V
Collector Cut-off Current	I_{CBO}	V_{CB} = 30V, I_E = 0	_	_	100	nA
Collector Cut-off Current	I_{CEX}	V_{CE} = 30V, $V_{BE(off)}$ = 3V	_	_	50	nA
Emitter Cut-off Current	I_{EBO}	V_{EB} = 5V, I_C = 0	_	_	100	nA
DC Current Gain	$h_{FE(1)}$	V_{CE} = 1V, I_C = 0.1mA	40	_	_	_
	$h_{FE(2)}$	V_{CE} = 1V, I_C = 1mA	70	_	_	_
	$h_{FE(3)}$	V_{CE} = 1V, I_C = 10mA	100	_	300	_
	$h_{FE(4)}$	V_{CE} = 1V, I_C = 50mA	60	_	_	_
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	I_C = 10mA, I_B = 1mA	_	_	0.2	V
		I_C = 50mA, I_B = 5mA	_	_	0.3	
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	I_C = 10mA, I_B = 1mA	0.65	_	0.85	V
		I_C = 50mA, I_B = 5mA	_	_	0.95	
Transition Frequency	f_T	V_{CE}=20V, I_C=10mA, f=100MHz	300	_	_	MHz
Collector Output Capacitance	C_{ob}	V_{CB} = 5V, I_E = 0, f=1MHz	_	3	_	pF
Collector Input Capacitance	C_{ib}	V_{EB} = 0.5V, I_C = 0, f=1MHz	_	7	_	pF
Delay Time	t_d	V_{CC} = 3V, $V_{BE(off)}$ = -0.5V, I_C = 10mA, I_{B1}=1mA	_	31	_	ns
Rise Time	t_r		_	31	_	ns
Storage Time	t_s	V_{CC} = 3V, I_C = 10mA, I_{B1} =I_{B2} =1mA	_	180	_	ns
Fall Time	t_f		_	45	_	ns

Typical Characteristics

Figure 1.Static Characteristic

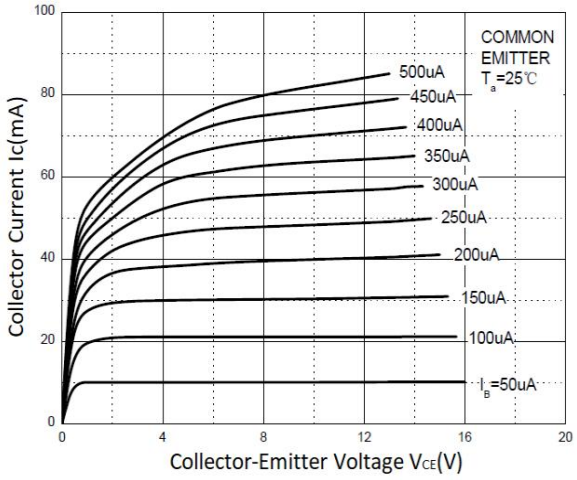


Figure 2. h_{fe} vs. I_C

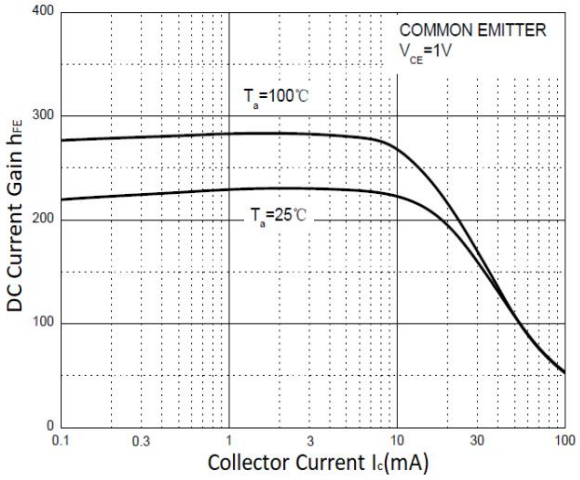


Figure 3. V_{CEsat} vs. I_C

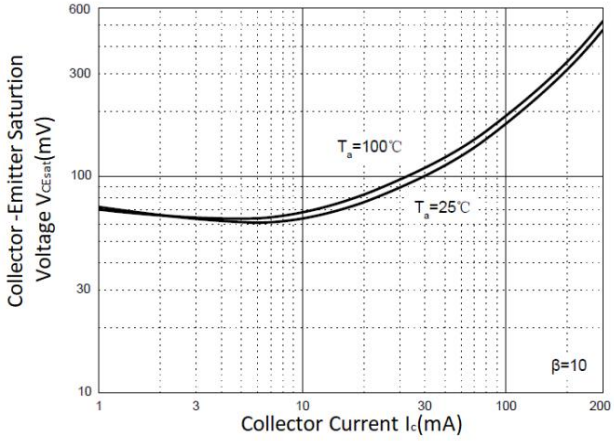


Figure 4. V_{BEsat} vs. I_C

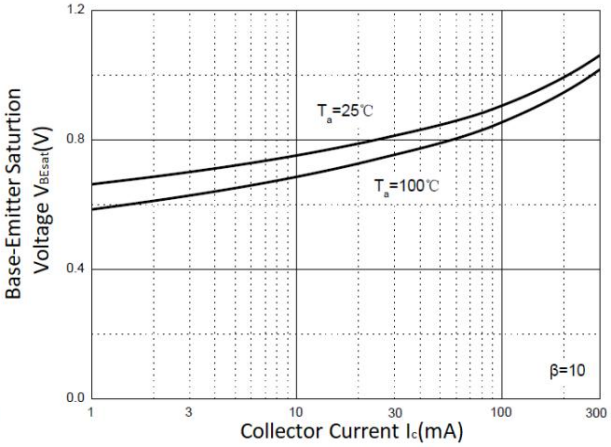


Figure 5. I_C vs. V_{BE}

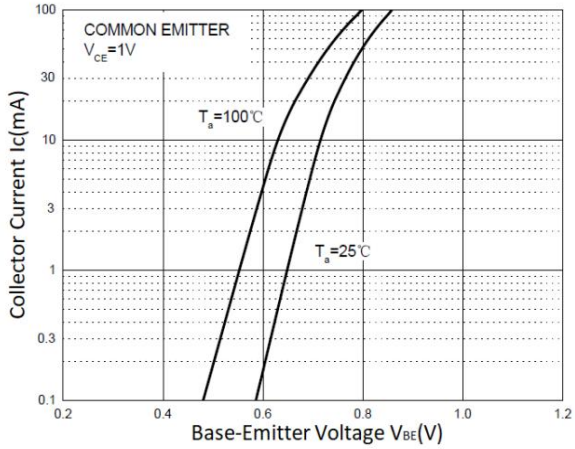
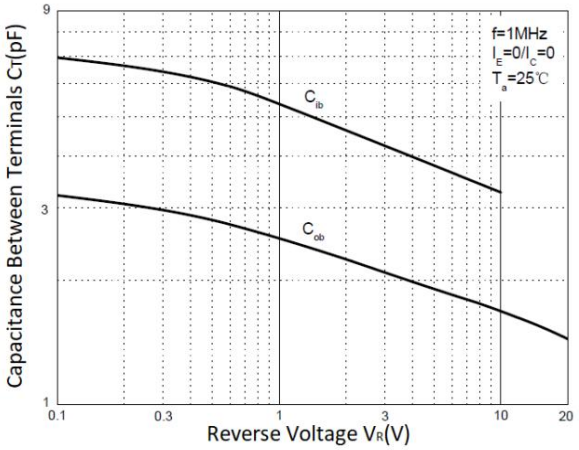


Figure 6. C_{ob} / C_{ib} vs. V_{CB} / V_{EB}



Typical Characteristics

Figure 7. f_T vs. I_C

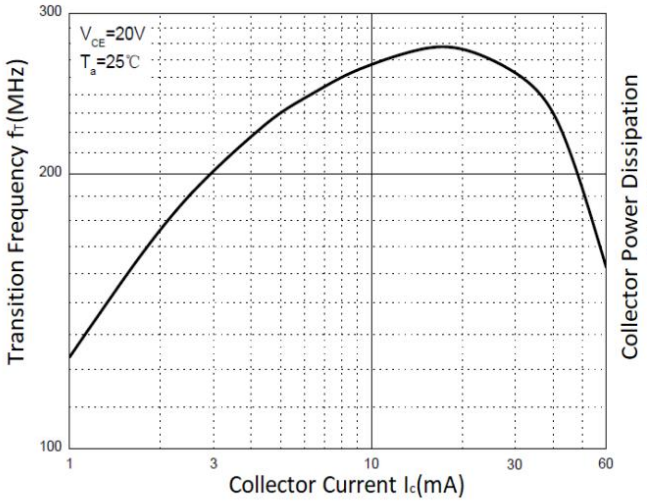
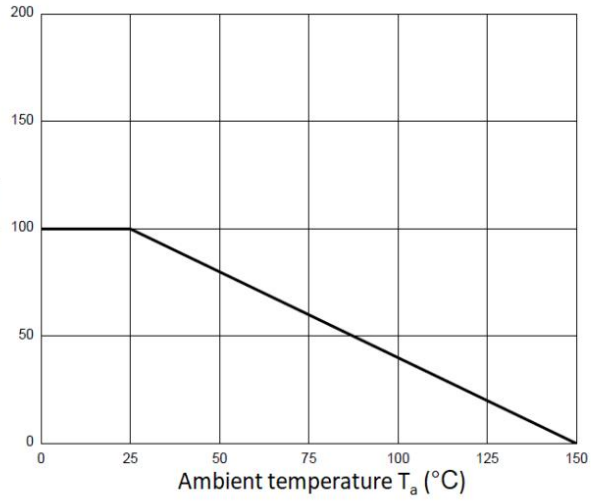
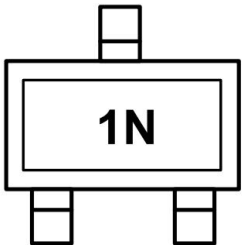


Figure 8. P_D vs. T_a



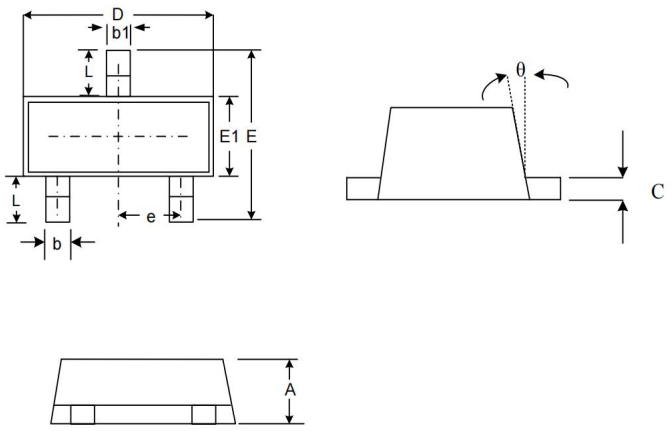
Marking Code & Package Information

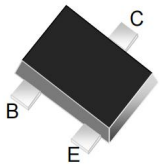


Qty: 8k/Reel

Outline Drawing - SOT-723

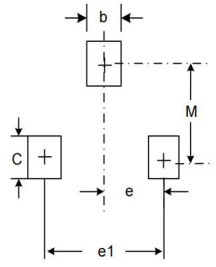
PACKAGE OUTLINE





SOT-723

DIMENSIONS				
SYMBOL	MILLIMETER		INCHES	
	MIN	MAX	MIN	MAX
A	0.450	0.550	0.018	0.022
b	0.150	0.270	0.0059	0.0106
b1	0.250	0.370	0.010	0.015
L	0.150	0.250	0.006	0.010
C	0.070	0.170	0.0028	0.0067
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	0.400BSC		0.016 BSC	
θ	7°	11°	7°	11°



DIMENSIONS		
DIM	INCHES	MILLIMETERS
C	0.0157	0.40
M	0.039	1.0
e	0.0157	0.40
e1	0.0314	0.80
b	0.0157	0.40

Notes

1. Dimensioning and tolerances per ANSI Y14.5M, 1985.
2. Controlling Dimension: Millimeters.