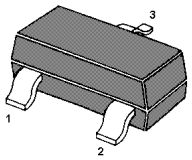
MMBT3906-AH

PNP Silicon General Purpose Transistor

for switching and amplifier applications.

As complementary types the NPN transistors
MMBT3904 is recommended.



1. Base 2. Emitter 3. Collector
TO-236 Plastic Package

Features

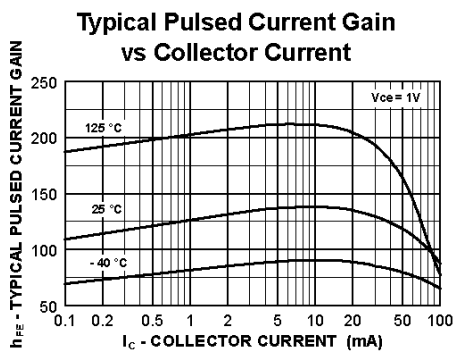
- AEC-Q101 Qualified and PPAP Capable
- Halogen and Antimony Free(HAF), RoHS compliant

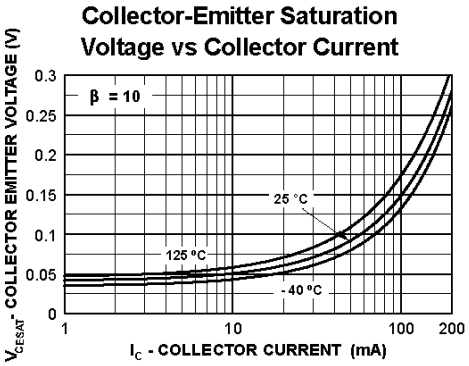
Absolute Maximum Ratings (T_a = 25℃)

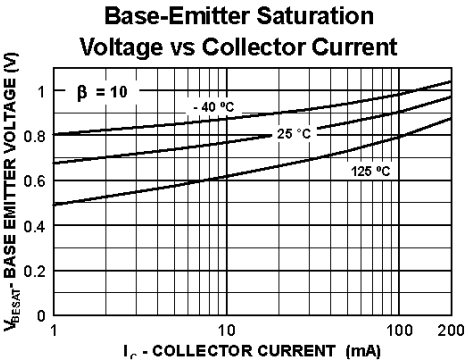
Parameter	Symbol	Value	Unit
Collector Base Voltage	$-V_{CBO}$	40	V
Collector Emitter Voltage	$-V_{CEO}$	40	V
Emitter Base Voltage	$-V_{EBO}$	6	V
Collector Current	$-I_C$	200	mA
Power Dissipation	P_{tot}	200	mW
Junction Temperature	T_j	150	℃
Storage Temperature Range	T_{stg}	- 55 to + 150	℃

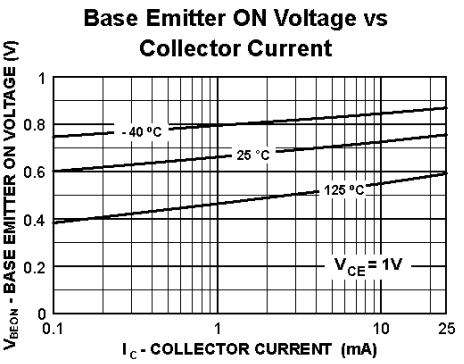
Characteristics at T_a = 25℃

Parameter	Symbol	Min.	Max.	Unit
DC Current Gain				
at $-V_{CE}$ = 1 V, $-I_C$ = 0.1 mA	h_{FE}	60	-	-
at $-V_{CE}$ = 1 V, $-I_C$ = 1 mA	h_{FE}	80	-	-
at $-V_{CE}$ = 1 V, $-I_C$ = 10 mA	h_{FE}	100	300	-
at $-V_{CE}$ = 1 V, $-I_C$ = 50 mA	h_{FE}	60	-	-
at $-V_{CE}$ = 1 V, $-I_C$ = 100 mA	h_{FE}	30	-	-
Collector Base Cutoff Current at $-V_{CB}$ = 30 V	$-I_{CBO}$	-	50	nA
Emitter Base Cutoff Current at $-V_{EB}$ = 6 V	$-I_{EBO}$	-	50	nA
Collector Base Breakdown Voltage at $-I_C$ = 10 µA	$-V_{(BR)CBO}$	40	-	V
Collector Emitter Breakdown Voltage at $-I_C$ = 1 mA	$-V_{(BR)CEO}$	40	-	V
Emitter - Base Breakdown Voltage at $-I_E$ = 10 µA	$-V_{(BR)EBO}$	6	-	V
Collector Emitter Saturation Voltage				
at $-I_C$ = 10 mA, $-I_B$ =1 mA	$-V_{CE(sat)}$	-	0.25	V
at $-I_C$ = 50 mA, $-I_B$ = 5 mA	$-V_{CE(sat)}$	-	0.4	V
Base Emitter Saturation Voltage				
at $-I_C$ = 10 mA, $-I_B$ = 1 mA	$-V_{BE(sat)}$	0.65	0.85	V
at $-I_C$ = 50 mA, $-I_B$ = 5 mA	$-V_{BE(sat)}$	-	0.95	V
Current Gain Bandwidth Product at $-V_{CE}$ = 20 V, $-I_C$ = 10 mA, f = 100 MHz	f_T	250	-	MHz
Output Capacitance at $-V_{CB}$ = 5V, I_E = 0, f = 1 MHz	C_{obo}	-	4.5	pF
Delay Time at $-V_{CC}$ = 3 V, $-V_{BE}$ = 0.5 V, $-I_C$ = 10 mA, $-I_{B1}$ = 1 mA	t_d	-	35	ns
Rise Time at $-V_{CC}$ = 3 V, $-V_{BE}$ = 0.5 V, $-I_C$ = 10 mA, $-I_{B1}$ = 1 mA	t_r	-	35	ns
Storage Time at $-V_{CC}$ = 3 V, $-I_C$ = 10 mA, $-I_{B1}$ = I_{B2} = 1 mA	t_s	-	225	ns
Fall Time at $-V_{CC}$ = 3 V, $-I_C$ = 10 mA, $-I_{B1}$ = I_{B2} = 1 mA	t_f	-	75	ns


Typical Pulsed Current Gain
vs Collector Current
h_{FE} - TYPICAL PULSED CURRENT GAIN
250
200
150
100
50
Vce = 1V
125 °C
25 °C
- 40 °C
0.1 0.2 0.5 1 2 5 10 20 50 100
I_C - COLLECTOR CURRENT (mA)


Collector-Emitter Saturation
Voltage vs Collector Current
V_{CESAT} - COLLECTOR EMITTER VOLTAGE (V)
0.3
0.25
0.2
0.15
0.1
0.05
0
β = 10
25 °C
125 °C
- 40 °C
1 10 100 200
I_C - COLLECTOR CURRENT (mA)


Base-Emitter Saturation
Voltage vs Collector Current
V_{BESAT} - BASE EMITTER VOLTAGE (V)
1
0.8
0.6
0.4
0.2
0
β = 10
- 40 °C
25 °C
125 °C
1 10 100 200
I_C - COLLECTOR CURRENT (mA)


Base Emitter ON Voltage vs
Collector Current
V_{BEON} - BASE EMITTER ON VOLTAGE (V)
1
0.8
0.6
0.4
0.2
0
- 40 °C
25 °C
125 °C
V_{CE} = 1V
0.1 1 10 25
I_C - COLLECTOR CURRENT (mA)