



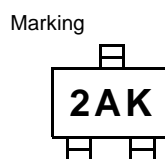
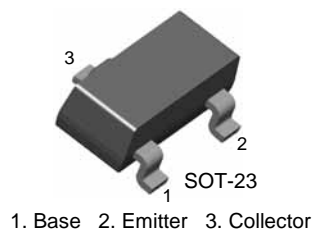
# THE DATASHEET OF MMBT3906K



# MMBT3906K

PNP Epitaxial Silicon Transistor

General Purpose Transistor



## Absolute Maximum Ratings T<sub>a</sub> = 25°C unless otherwise noted

Symbol	Parameter	Value	Units
V <sub>CB0</sub>	Collector-Base Voltage	-40	V
V <sub>CEO</sub>	Collector-Emitter Voltage	-40	V
V <sub>EBO</sub>	Emitter-Base Voltage	-5	V
I <sub>C</sub>	Collector Current	-200	mA
P <sub>C</sub>	Collector Power Dissipation	350	mW
T <sub>J</sub> , T <sub>STG</sub>	Operating Junction and Storage Temperature Range	-55 ~ 150	°C

## Electrical Characteristics T<sub>a</sub> = 25°C unless otherwise noted

Symbol	Parameter	Test Condition	Min.	Max.	Units
BV <sub>CB0</sub>	Collector-Base Breakdown Voltage	I <sub>C</sub> = -10μA, I <sub>E</sub> = 0	-40		V
BV <sub>CEO</sub>	Collector-Emitter Breakdown Voltage *	I <sub>C</sub> = -1.0mA, I <sub>B</sub> = 0	-40		V
BV <sub>EBO</sub>	Emitter-Base Breakdown Voltage	I <sub>E</sub> = 10μA, I <sub>C</sub> = 0	-5		V
I <sub>CEX</sub>	Collector Cut-off Current	V <sub>CE</sub> = -30V, V <sub>EB</sub> = -3V		-50	nA
h <sub>FE</sub>	DC Current Gain *	V <sub>CE</sub> = -1V, I <sub>C</sub> = -0.1mA V <sub>CE</sub> = -1V, I <sub>C</sub> = -1mA V <sub>CE</sub> = -1V, I <sub>C</sub> = -10mA V <sub>CE</sub> = -1V, I <sub>C</sub> = -50mA V <sub>CE</sub> = -1V, I <sub>C</sub> = -100mA	60 80 100 60 30	300	
V <sub>CE</sub> (sat)	Collector-Emitter Saturation Voltage *	I <sub>C</sub> = -10mA, I <sub>B</sub> = -1mA I <sub>C</sub> = -50mA, I <sub>B</sub> = -5.0mA		-0.25 -0.4	V V
V <sub>BE</sub> (sat)	Base-Emitter Saturation Voltage *	I <sub>C</sub> = -10mA, I <sub>B</sub> = -1.0mA I <sub>C</sub> = -50mA, I <sub>B</sub> = -5.0mA	-0.65	-0.85 -0.95	V V
f <sub>T</sub>	Current Gain Bandwidth Product	I <sub>C</sub> = -10mA, V <sub>CE</sub> = -20V, f = 100MHz	250		MHz
C <sub>ob</sub>	Output Capacitance	V <sub>CB</sub> = -5V, I <sub>E</sub> = 0, f = 1.0MHz		4.5	pF
NF	Noise Figure	I <sub>C</sub> = -100μA, V <sub>CE</sub> = -5V, R <sub>S</sub> = 1KΩ f = 10Hz to 15.7KHz		4	dB
t <sub>ON</sub>	Turn On Time	V <sub>CC</sub> = -3V, V <sub>BE</sub> = -0.5V I <sub>C</sub> = -10mA, I <sub>B1</sub> = -1mA		70	ns
t <sub>OFF</sub>	Turn Off Time	V <sub>CC</sub> = -3V, I <sub>C</sub> = -10mA, I <sub>B1</sub> = I <sub>B2</sub> = -1mA		300	ns

\* Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%

## Typical Performance Characteristics

Figure 1. DC current Gain

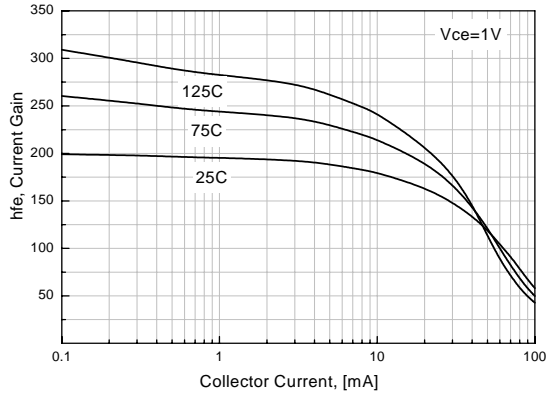


Figure 2. Collector-Emitter Saturation Voltage

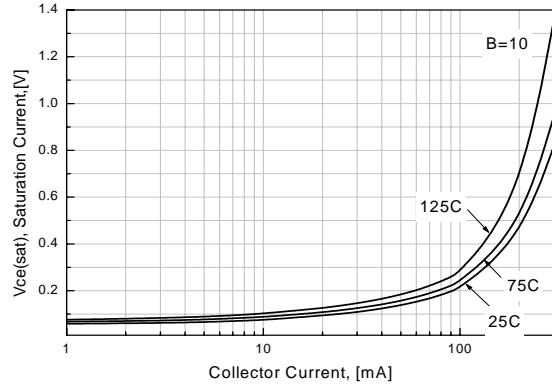


Figure 3. Base-Emitter Saturation Voltage

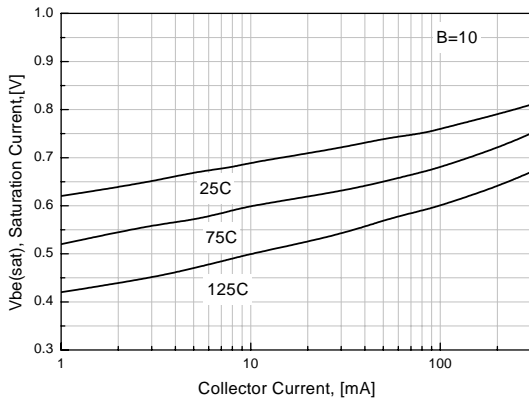


Figure 4. Collector - Base Leakage Current

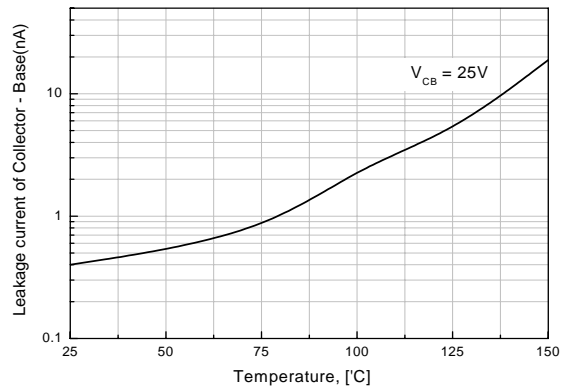


Figure 5. Output Capacitance

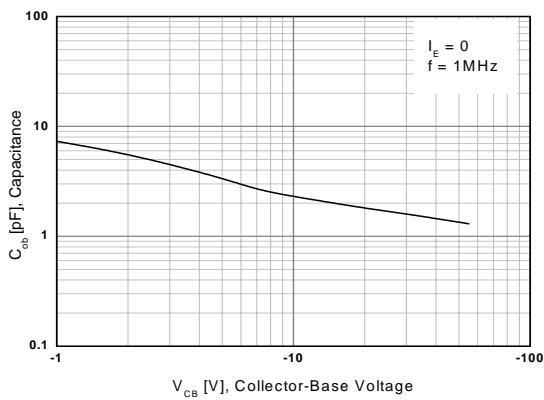
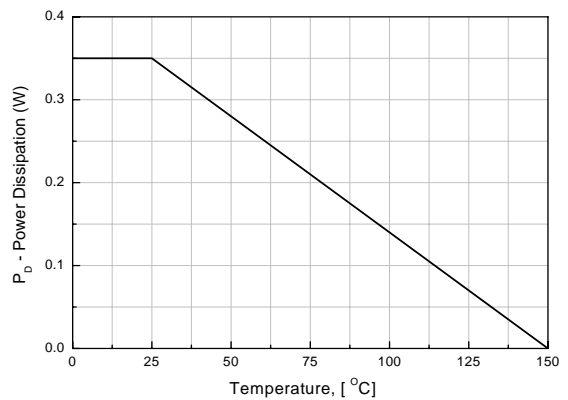
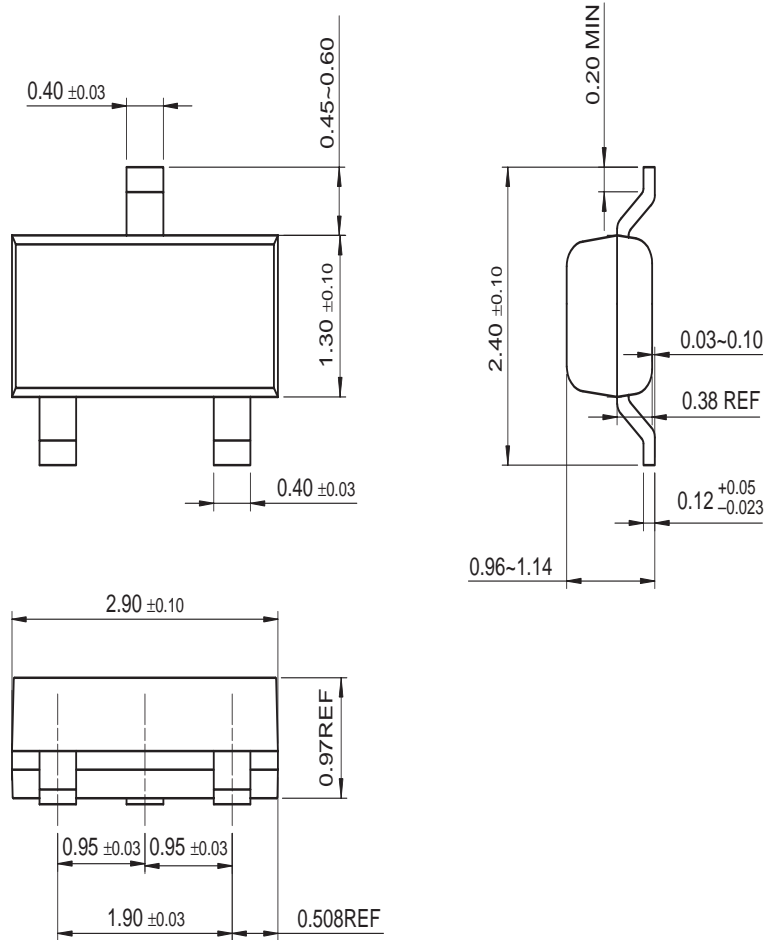


Figure 6. Power Dissipation vs Ambient Temperature



Mechanical Dimensions

SOT-23



Dimensions in Millimeters

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