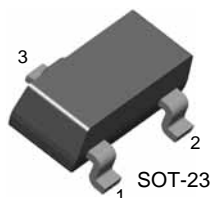


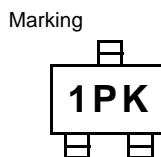
# MMBT2222AK

## NPN Epitaxial Silicon Transistor

### General Purpose Transistor



1. Base 2. Emitter 3. Collector



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

Symbol	Parameter	Value	Units
V <sub>CB0</sub>	Collector-Base Voltage	75	V
V <sub>CEO</sub>	Collector-Emitter Voltage	40	V
V <sub>EBO</sub>	Emitter-Base Voltage	6	V
I <sub>C</sub>	Collector Current	600	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	75		V
BV <sub>CEO</sub>	Collector-Emitter Breakdown Voltage	I <sub>C</sub> = 10mA, 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	6		V
I <sub>CB0</sub>	Collector Cut-off Current	V <sub>CB</sub> = 60V, I <sub>E</sub> = 0		0.01	μA
h <sub>FE</sub>	DC Current Gain *	V <sub>CE</sub> = 10V, I <sub>C</sub> = 0.1mA V <sub>CE</sub> = 10V, I <sub>C</sub> = 1mA V <sub>CE</sub> = 10V, I <sub>C</sub> = 10mA V <sub>CE</sub> = 10V, I <sub>C</sub> = 150mA V <sub>CE</sub> = 10V, I <sub>C</sub> = 500mA	35 50 75 100 40	300	
V <sub>CE</sub> (sat)	Collector-Emitter Saturation Voltage *	I <sub>C</sub> = 150mA, I <sub>B</sub> = 15mA I <sub>C</sub> = 500mA, I <sub>B</sub> = 50mA		0.3 1.0	V V
V <sub>BE</sub> (sat)	Base-Emitter Saturation Voltage *	I <sub>C</sub> = 150mA, I <sub>B</sub> = 15mA I <sub>C</sub> = 500mA, I <sub>B</sub> = 50mA	0.6	1.2 2.0	V V
f <sub>T</sub>	Current Gain Bandwidth Product	I <sub>C</sub> = 20mA, V <sub>CE</sub> = 20V, f = 100MHz	300		MHz
C <sub>ob</sub>	Output Capacitance	V <sub>CB</sub> = 10V, I <sub>E</sub> = 0, f = 1MHz		8	pF
NF	Noise Figure	I <sub>C</sub> = 100μA, V <sub>CE</sub> = 10V R <sub>S</sub> = 1KΩ, f = 1MHz		4	dB
t <sub>ON</sub>	Turn On Time	V <sub>CC</sub> = 30V, I <sub>C</sub> = 150mA V <sub>BE</sub> = 0.5V, I <sub>B1</sub> = 15mA		35	ns
t <sub>OFF</sub>	Turn Off Time	V <sub>CC</sub> = 30V, I <sub>C</sub> = 150mA, I <sub>B1</sub> = I <sub>B2</sub> = 15mA		285	ns

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

## Typical Performance Characteristics

Figure 1. DC Current Gain

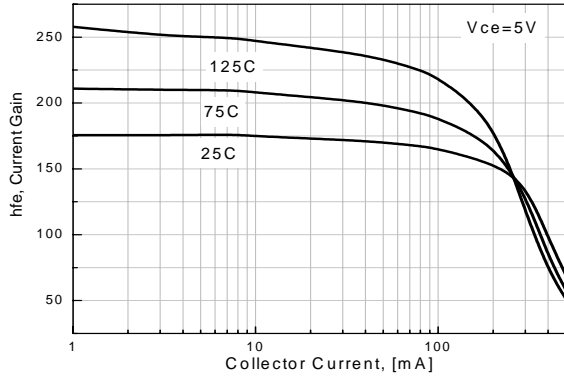


Figure 2. Collector-Emitter Saturation Voltage

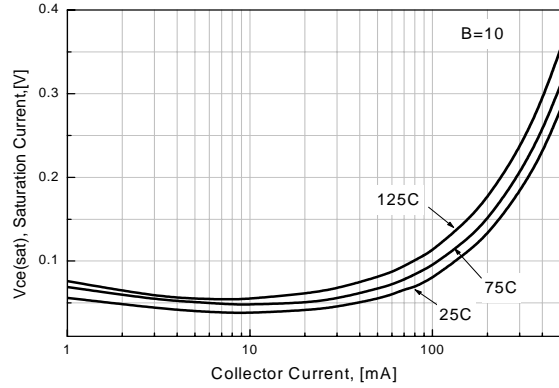


Figure 3. Base-Emitter Saturation Voltage

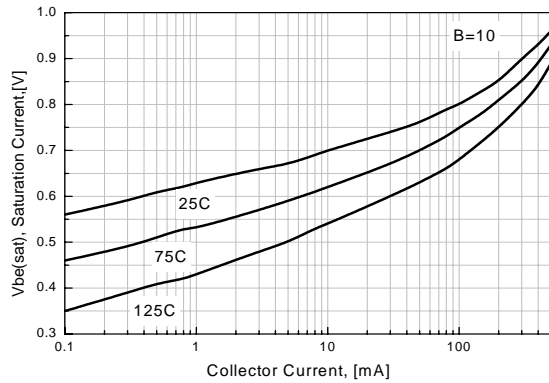


Figure 4. Collector - Base Leakage Current

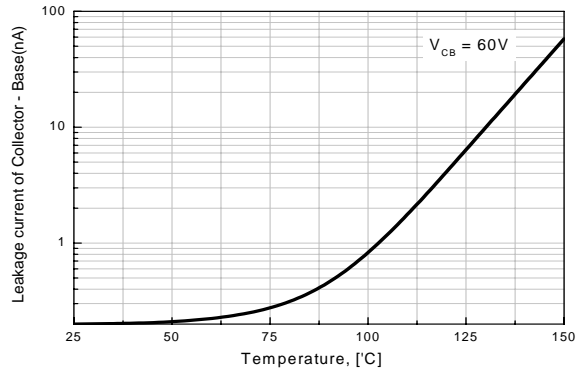


Figure 5. Output Capacitance

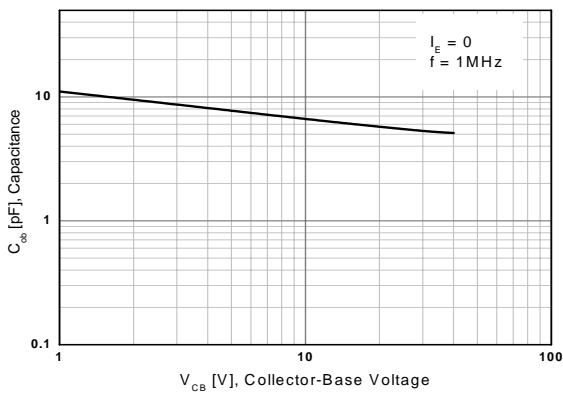
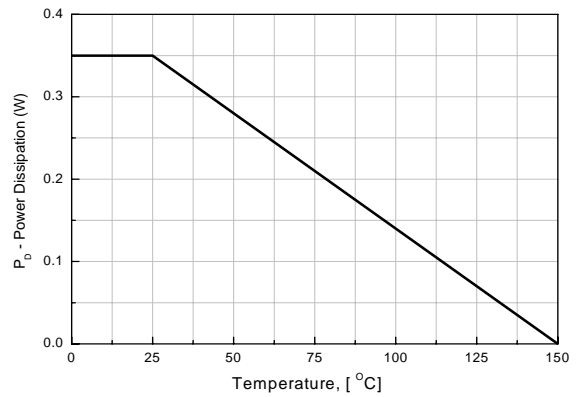
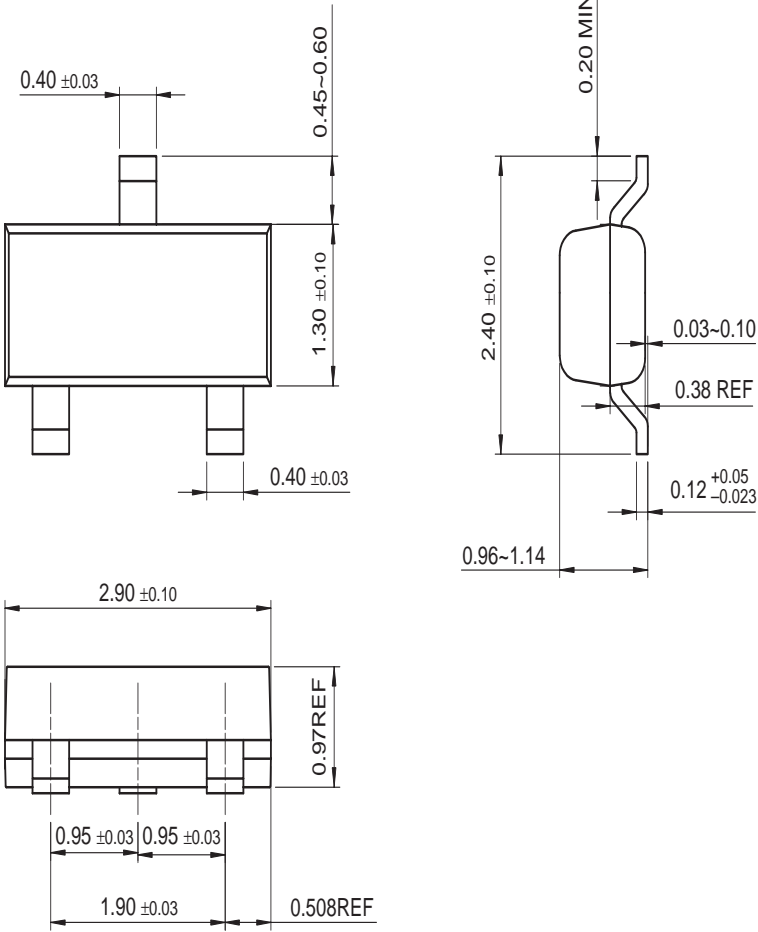


Figure 6. Power Dissipation vs Ambient Temperature



Mechanical Dimensions

SOT-23



Dimensions in Millimeters

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