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Fairchild Semiconductor
MMBT3904K

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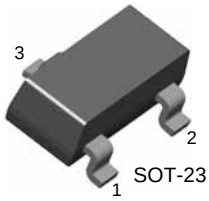
FAIRCHILD SEMICONDUCTOR®

MMBT3904K

NPN Epitaxial Silicon Transistor

General Purpose Transistor



1. Base 2. Emitter 3. Collector

Marking

Absolute Maximum Ratings T_a = 25°C unless otherwise noted

Symbol	Parameter	Value	Units
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	350	mW
T_J, T_{STG}	Operating Junction and Storage Temperature Range	-55 ~ 150	°C

Electrical Characteristics T_a=25°C unless otherwise noted

Symbol	Parameter	Test Condition	Min.	Max.	Units
BV_{CBO}	Collector-Base Breakdown Voltage	I_C = 10μA, I_E = 0	60		V
BV_{CEO}	Collector-Emitter Breakdown Voltage *	I_C = 1mA, I_B = 0	40		V
BV_{EBO}	Emitter-Base Breakdown Voltage	I_E = 10μA, I_C = 0	6		V
I_{CEX}	Collector Cut-off Current	V_{CE} = 30V, V_{EB} = 3V		50	nA
h_{FE}	DC Current Gain *	V_{CE} = 1V, I_C = 0.1mA V_{CE} = 1V, I_C = 1mA V_{CE} = 1V, I_C = 10mA V_{CE} = 1V, I_C = 50mA V_{CE} = 1V, I_C = 100mA	40 70 100 60 30	 300 	
V_{CE}(sat)	Collector-Emitter Saturation Voltage *	I_C = 10mA, I_B = 1mA I_C = 50mA, I_B = 5mA		0.2 0.3	V V
V_{BE}(sat)	Base-Emitter Saturation Voltage *	I_C = 10mA, I_B = 1mA I_C = 50mA, I_B = 5mA	0.65	0.85 0.95	V V
C_{ob}	Output Capacitance	V_{CB} = 5V, I_E = 0, f = 1MHz		4	pF
f_T	Current Gain-Bandwidth Product	V_{CE} = 20V, I_C = 10mA, f = 100MHz	300		MHz
NF	Noise Figure	I_C = 100μA, V_{CE} = 5V, R_S = 1KΩ f = 10Hz to 15.7KHz		5	dB
t_{ON}	Turn On Time	V_{CC} = 3V, V_{BE} = 0.5V I_C = 10mA, I_{B1} = 1mA		70	ns
t_{OFF}	Turn Off Time	V_{CC} = 3V, I_C = 10mA, I_{B1} = I_{B2} = 1mA		250	ns

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

Typical Performance Characteristics

Figure 1. DC current Gain

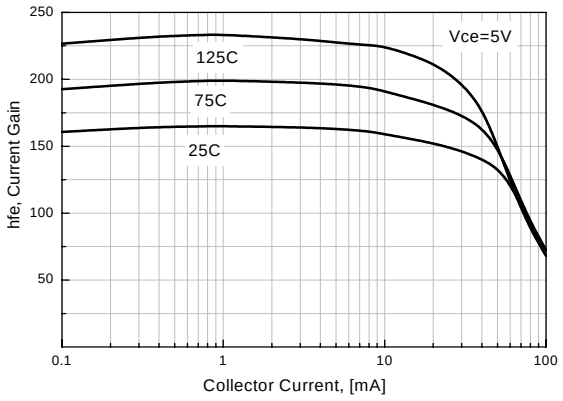


Figure 2. Collector-Emitter Saturation Voltage

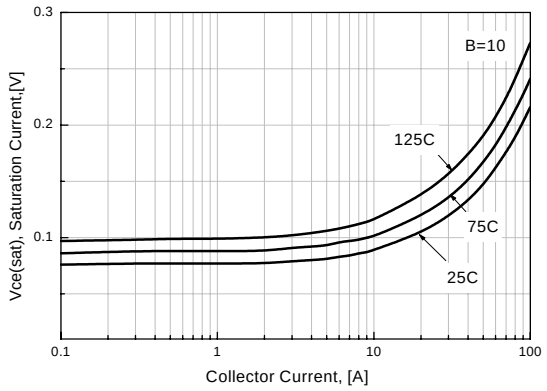


Figure 3. Base-Emitter Saturation Voltage

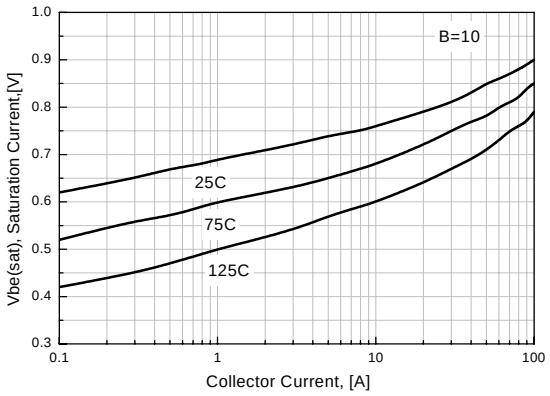


Figure 4. Collector - Base Leakage Current

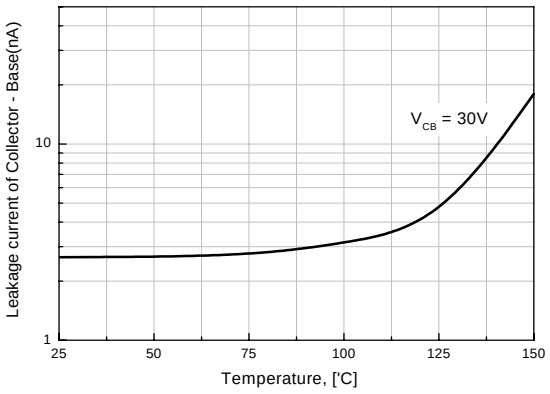


Figure 5. Output Capacitance

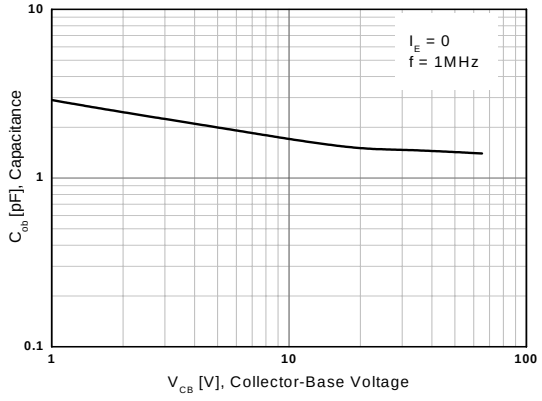
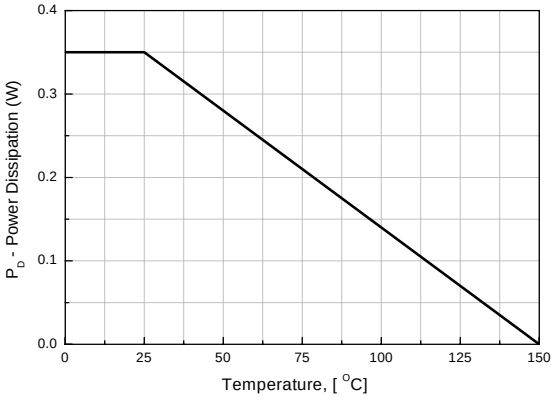
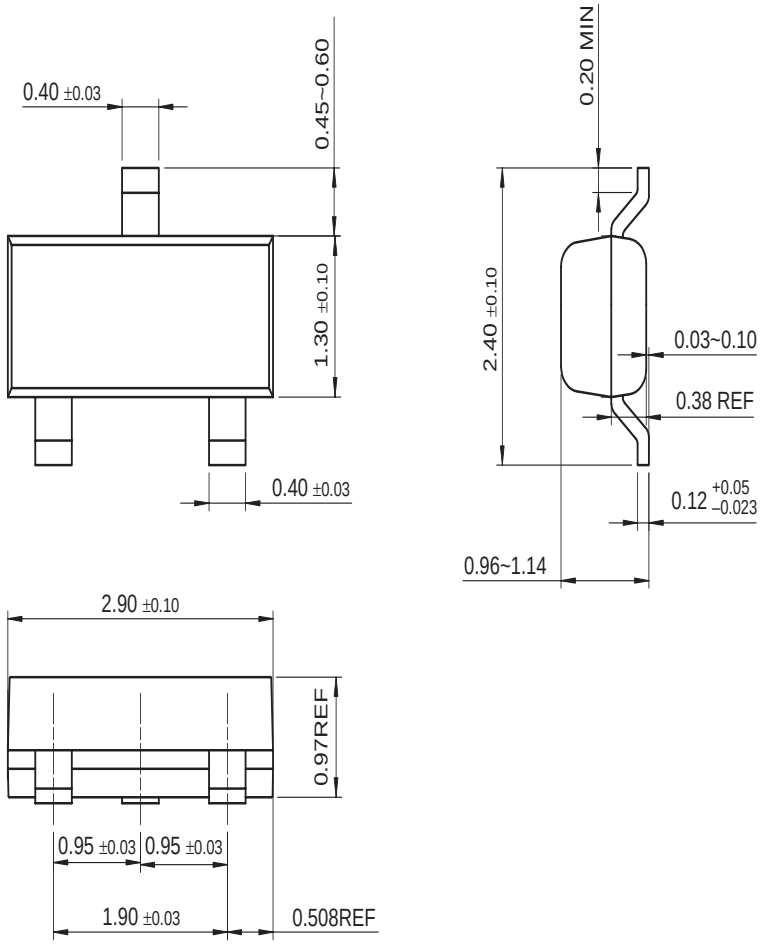


Figure 6. Power Dissipation vs Ambient Temperature



Mechanical Dimensions

SOT-23



Dimensions in Millimeters

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Rev. I17