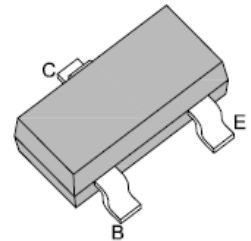


SMD General Purpose Transistor (NPN)

Features

- NPN Silicon Epitaxial Planar Transistor for Switching and Amplifier Applications
- RoHS compliance



SOT-23



Mechanical Data

Case:	SOT-23, Plastic Package
Terminals:	Solderable per MIL-STD-202G, Method 208
Weight:	0.008 gram

Maximum Ratings *(T_{Ambient}=25°C unless noted otherwise)*

Symbol	Description	MMBT3904	Unit
	Marking Code	1A	
V_{CBO}	Collector-Base Voltage	60	V
V_{CEO}	Collector-Emitter Voltage	40	V
V_{EBO}	Emitter-Base Voltage	6.0	V
I_C	Collector Current	200	mA
P_{tot}	Power Dissipation above 25°C	250	mW
R_{θJA}	Thermal Resistance from Junction to Ambient	450	°C/W
T_J	Junction Temperature	150	°C
T_{STG}	Storage Temperature Range	-55 to +150	°C

SMD General Purpose Transistor (NPN)

MMBT3904

Electrical Characteristics ($T_{Ambient}=25^{\circ}C$ unless noted otherwise)

Symbol	Description	Min.	Max.	Unit	Conditions
hFE	D.C. Current Gain	40	-		$V_{CE}=1V, I_C=0.1mA$
		70	-		$V_{CE}=1V, I_C=1mA$
		100	300		$V_{CE}=1V, I_C=10mA$
		60	-		$V_{CE}=1V, I_C=50mA$
		30	-		$V_{CE}=1V, I_C=100mA$
V(BR)CBO	Collector-Base Breakdown Voltage	60	-	V	$I_C=10\mu A, I_E=0$
V(BR)CEO	Collector-Emitter Breakdown Voltage	40	-	V	$I_C=1mA, I_B=0$
V(BR)EBO	Emitter-Base Breakdown Voltage	6.0	-	V	$I_E=10\mu A, I_C=0$
VCEsat	Collector-Emitter Saturation Voltage	-	0.2	V	$I_C=10mA, I_B=1mA$
		-	0.3		$I_C=50mA, I_B=5mA$
VBEsat	Base-Emitter Saturation Voltage	0.65	0.85	V	$I_C=10mA, I_B=1mA$
		-	0.95		$I_C=50mA, I_B=5mA$
ICEV	Collector-Emitter Cut-off Current	-	50	nA	$V_{EB}=3V, V_{CE}=30V$
IEBV	Emitter-Base Cut-off Current	-	50	nA	$V_{EB}=3V, V_{CE}=30V$
ft	Current Gain-Bandwidth Product	300	-	MHz	$V_{CE}=20V, I_C=10mA, f=100MHz$
CCBO	Collector-Base Capacitance	-	4.0	pF	$V_{CB}=5V, f=1.0MHz, I_E=0$
CEBO	Emitter-Base Capacitance	-	8.0	pF	$V_{EB}=0.5V, f=1.0MHz, I_C=0$
NF	Noise Figure	-	5.0	dB	$V_{CE}=5V, I_C=100\mu A, R_S=1k\Omega, f=10Hz$ to $15.7KHz$
td	Delay Time	-	35	ns	$I_{B1}=1mA, I_C=10mA$
tr	Rise Time	-	35		
ts	Storage Time	-	200		
tf	Fall Time	-	50		$I_{B1}=I_{B2}=1mA, I_C=10mA$

SMD General Purpose Transistor (NPN)

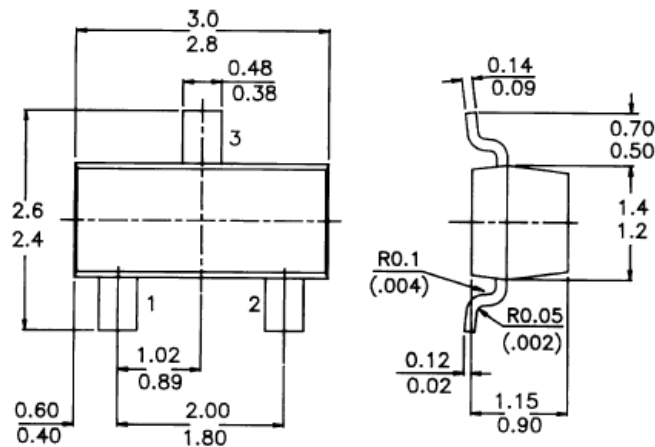
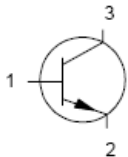
MMBT3904

Dimensions in mm

SOT-23

Pin configuration

- 1 = BASE
- 2 = EMITTER
- 3 = COLLECTOR



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