

Descriptions

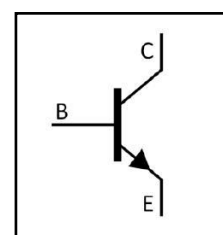
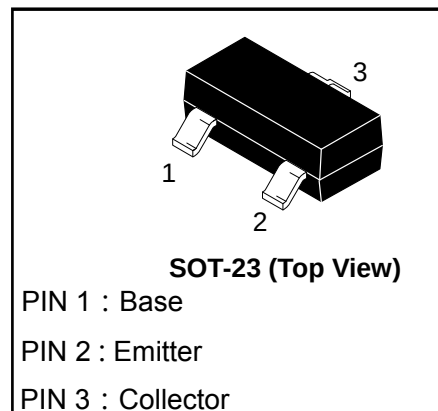
Silicon NPN Digital transistor in a SOT-23 Plastic Package.

Features

With built-in bias resistors, simplify circuit design, reduce a quantity of parts and manufacturing process.

Applications

Switching, inverter circuit, interface circuit and driver circuit applications.



Equivalent Circuit

Absolute Maximum Ratings(Ta=25 °C)

Parameter	Symbol	Rating	Unit
Collector to Base Voltage	V_{CBO}	60	V
Collector to Emitter Voltage	V_{CEO}	40	V
Emitter to Base Voltage	V_{EBO}	6.0	V
Collector Current	I_C	200	mA
Collector Power Dissipation	P_C	200	mW
	$*P_C$	350	mW
Junction Temperature	T_j	150	°C
Storage Temperature Range	T_{stg}	-55~150	°C

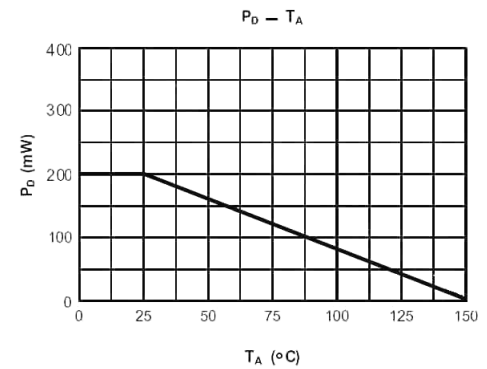
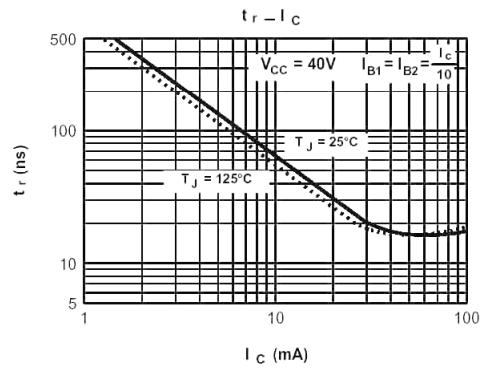
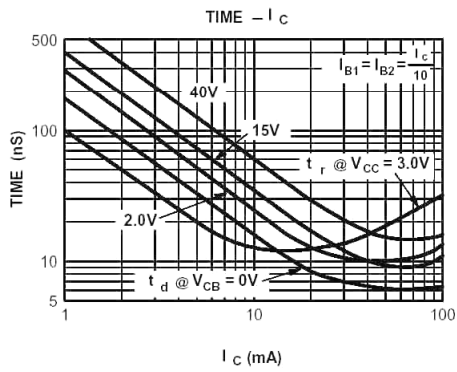
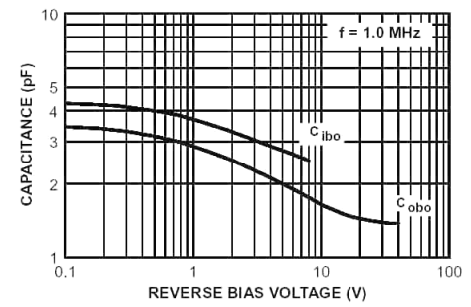
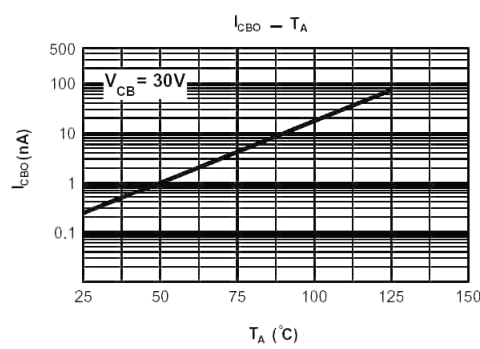
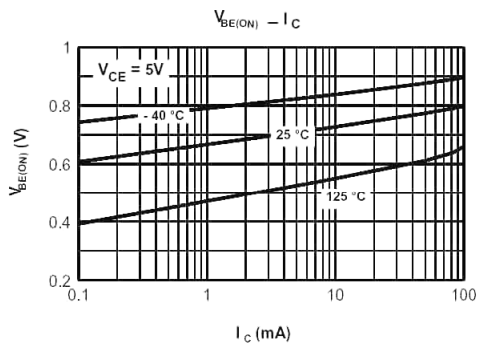
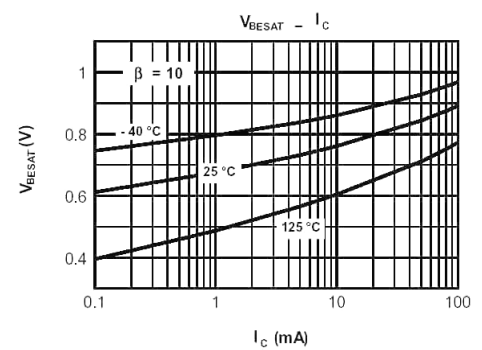
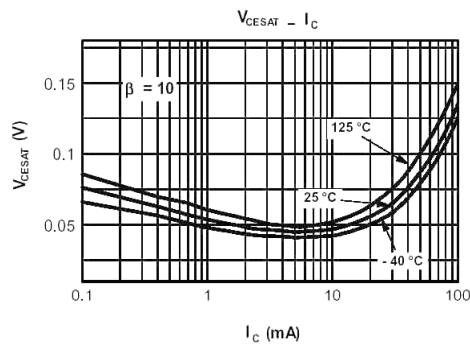
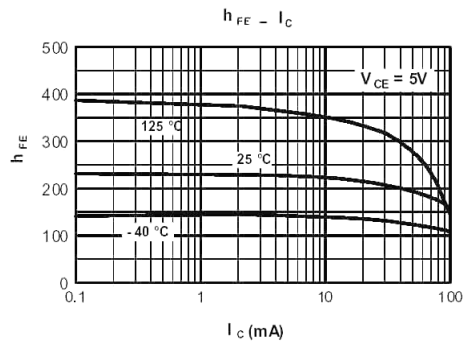
*When mounted on a 7×5×0.6mm ceramic board

Model	Marking	Package	shipping
MMBT3904C	H1A	SOT-23	3000/Tape&Reel

Electrical Characteristics(Ta=25°C)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector to Base Breakdown Voltage	V_{CBO}	$I_C=10\mu A$ $I_E=0$	60			V
Collector to Emitter Breakdown Voltage	V_{CEO}	$I_C=1.0mA$ $I_B=0$	40			V
Emitter to Base Breakdown Voltage	V_{EBO}	$I_E=10\mu A$ $I_C=0$	6.0			V
Collector Cut-Off Current	I_{CBO}	$V_{CB}=30V$ $I_E=0$			0.05	μA
Emitter Cut-Off Current	I_{EBO}	$V_{EB}=3.0V$ $I_C=0$			0.05	μA
DC Current Gain	$h_{FE(1)}$	$V_{CE}=1.0V$ $I_C=10mA$	100		300	
	$h_{FE(2)}$	$V_{CE}=1.0V$ $I_C=100mA$	30			
	$h_{FE(3)}$	$V_{CE}=1.0V$ $I_C=50mA$	60			
	$h_{FE(4)}$	$V_{CE}=1.0V$ $I_C=1.0mA$	70			
	$h_{FE(5)}$	$V_{CE}=1.0V$ $I_C=0.1mA$	40			
Collector-Emitter Saturation Voltage	$V_{CE(sat)(1)}$	$I_C=10mA$ $I_B=1.0mA$			0.2	V
	$V_{CE(sat)(2)}$	$I_C=50mA$ $I_B=5.0mA$			0.3	V
Base-Emitter Saturation Voltage	$V_{BE(sat)(1)}$	$I_C=10mA$ $I_B=1.0mA$	0.65		0.85	V
	$V_{BE(sat)(2)}$	$I_C=50mA$ $I_B=5.0mA$			0.95	V
Transition Frequency	f_T	$V_{CE}=20V$ $I_C=10mA$ $f=100MHz$	300			MHz
Output Capacitance	C_{ob}	$V_{CB}=5.0V$ $f=1.0MHz$			4.0	pF
Storage Time	t_{stg}	$V_{CC}=3.0V$ $I_C=10mA$ $I_{B1}=-I_{B2}=1.0mA$			200	ns
Fall Time	t_f	$V_{CC}=3.0V$ $I_C=10mA$ $I_{B1}=-I_{B2}=1.0mA$			50	ns
Delay Time	t_d	$V_{CC}=3.0V$ $V_{BE}=0.5V$ $I_C=10mA$ $I_{B1}=1.0mA$			35	ns
Rise Time	t_r	$V_{CC}=3.0V$ $V_{BE}=0.5V$ $I_C=10mA$ $I_{B1}=1.0mA$			35	ns
Input Capacitance	C_{ib}	$V_{EB}=0.5V$ $f=1.0MHz$			8.0	pF

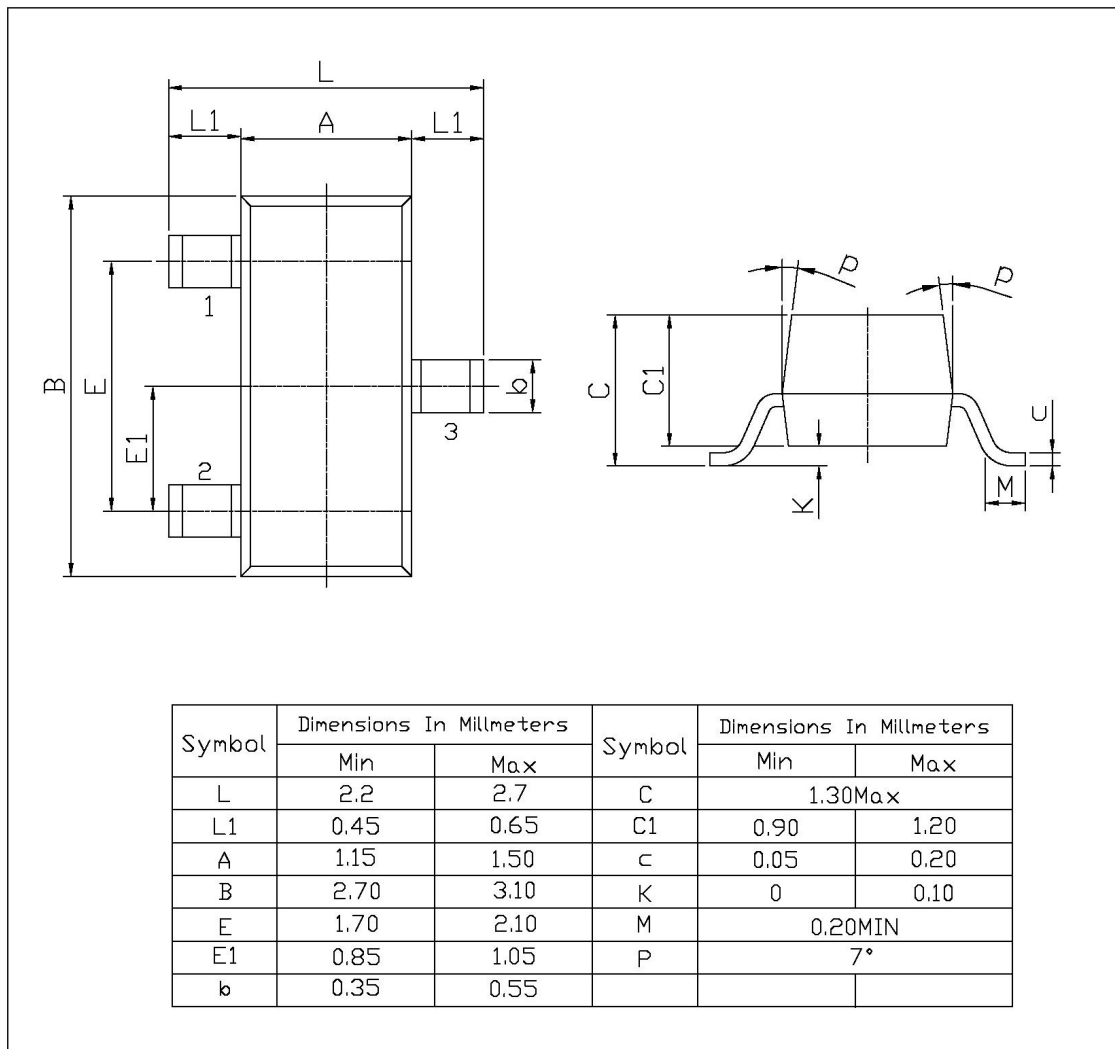
Electrical Characteristic Curve



Package Dimensions

SOT-23

单位: mm



Suggested Pad Layout

