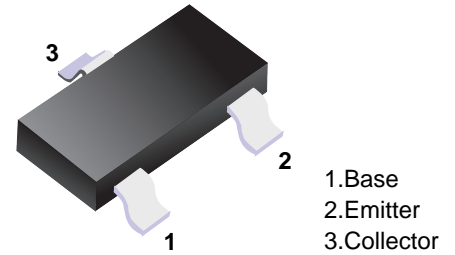


■ NPN Transistors



■ Simplified outline(SOT-23)

■ Features

- Complementary to MMBT3906
- Marking: 1AM

■ Absolute Maximum Ratings Ta = 25°C

Parameter	Symbol	Rating	Unit
Collector - Base Voltage	V <sub>CB0</sub>	60	V
Collector - Emitter Voltage	V <sub>CE0</sub>	40	V
Emitter - Base Voltage	V <sub>EB0</sub>	6	V
Collector Current - Continuous	I <sub>c</sub>	0.2	A
Collector Power Dissipation	P <sub>c</sub>	0.2	W
Junction Temperature	T <sub>J</sub>	150	°C
Storage Temperature	T <sub>stg</sub>	-55 to 150	°C

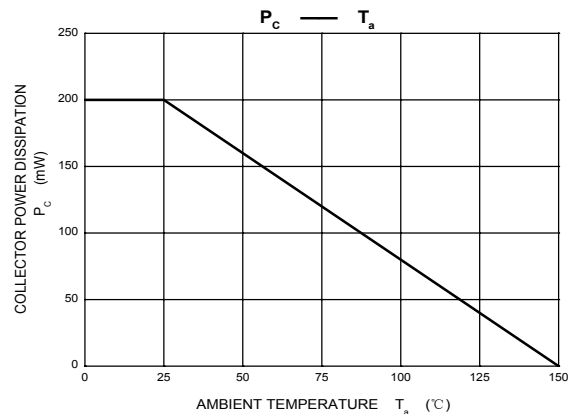
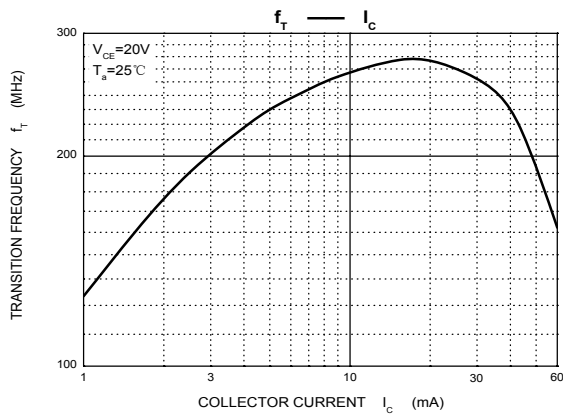
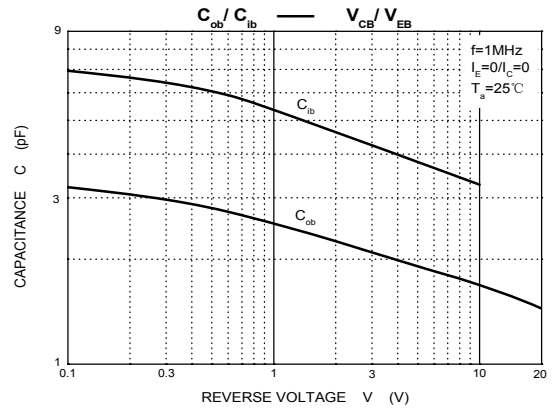
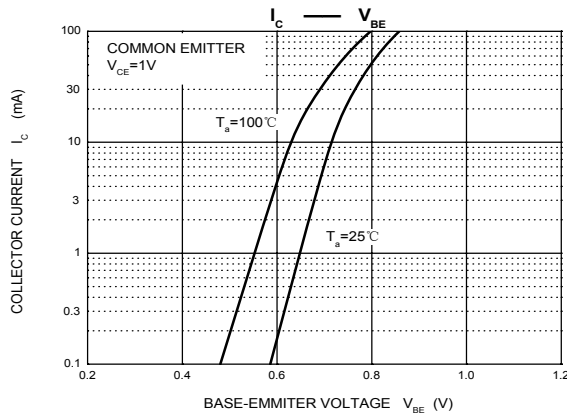
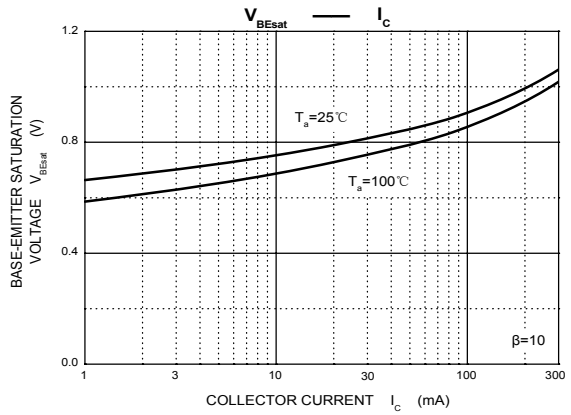
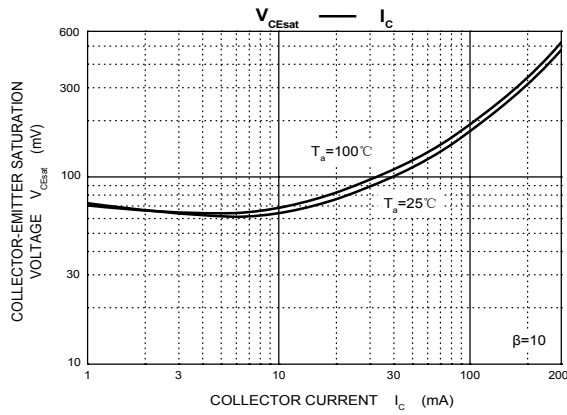
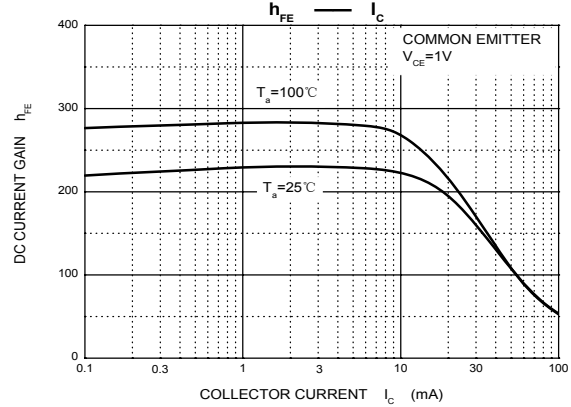
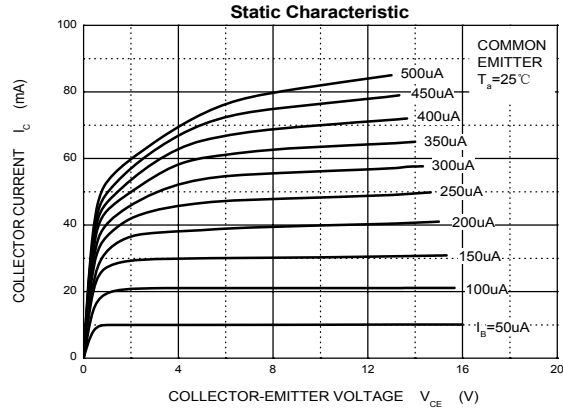
■ Electrical Characteristics Ta = 25°C

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector-base breakdown voltage	V <sub>CB0</sub>	I <sub>c</sub> = 100 μA, I <sub>E</sub> = 0	60			V
Collector- emitter breakdown voltage	V <sub>CE0</sub>	I <sub>c</sub> = 1 mA, I <sub>B</sub> = 0	40			
Emitter - base breakdown voltage	V <sub>EB0</sub>	I <sub>E</sub> = 100 μA, I <sub>c</sub> = 0	6			
Collector-base cut-off current	I <sub>CB0</sub>	V <sub>CB</sub> = 60 V, I <sub>E</sub> = 0			100	nA
Collector- emitter cut-off current	I <sub>CEX</sub>	V <sub>CE</sub> = 30 V, V <sub>EB(off)</sub> = -3V			50	
Emitter cut-off current	I <sub>EB0</sub>	V <sub>EB</sub> = 5V, I <sub>c</sub> =0			100	
Collector-emitter saturation voltage	V <sub>CE(sat)</sub>	I <sub>c</sub> = 10 mA, I <sub>B</sub> = 1mA			0.2	V
		I <sub>c</sub> = 50 mA, I <sub>B</sub> = 5mA			0.3	
Base - emitter saturation voltage	V <sub>BE(sat)</sub>	I <sub>c</sub> = 10 mA, I <sub>B</sub> = 1mA	0.65		0.85	
		I <sub>c</sub> = 50 mA, I <sub>B</sub> = 5mA			0.95	
DC current gain	h <sub>fe</sub> (1)	V <sub>CE</sub> = 1V, I <sub>c</sub> = 10mA	100		400	
	h <sub>fe</sub> (2)	V <sub>CE</sub> = 1V, I <sub>c</sub> = 50mA	60			
	h <sub>fe</sub> (3)	V <sub>CE</sub> = 1V, I <sub>c</sub> = 100mA	30			
Delay time	t <sub>d</sub>	V <sub>CC</sub> = 3V, V <sub>BE(off)</sub> = -0.5V			35	ns
Rise time	t <sub>r</sub>	I <sub>c</sub> = 10mA, I <sub>B1</sub> = 1mA			35	
Storage time	t <sub>s</sub>	V <sub>CC</sub> = 3V, I <sub>c</sub> = 10mA			200	
Fall time	t <sub>f</sub>	I <sub>B1</sub> =I <sub>B2</sub> = 1mA			50	
Collector input capacitance	C <sub>ib</sub>	V <sub>EB</sub> = 0.5V, I <sub>E</sub> = 0, f=1MHz			8	pF
Collector output capacitance	C <sub>ob</sub>	V <sub>CB</sub> = 5V, I <sub>E</sub> = 0, f=1MHz			4	
Transition frequency	f <sub>r</sub>	V <sub>CE</sub> = 20V, I <sub>c</sub> = 10mA, f=100MHz	300			MHz

■ Classification of h<sub>fe</sub>(1)

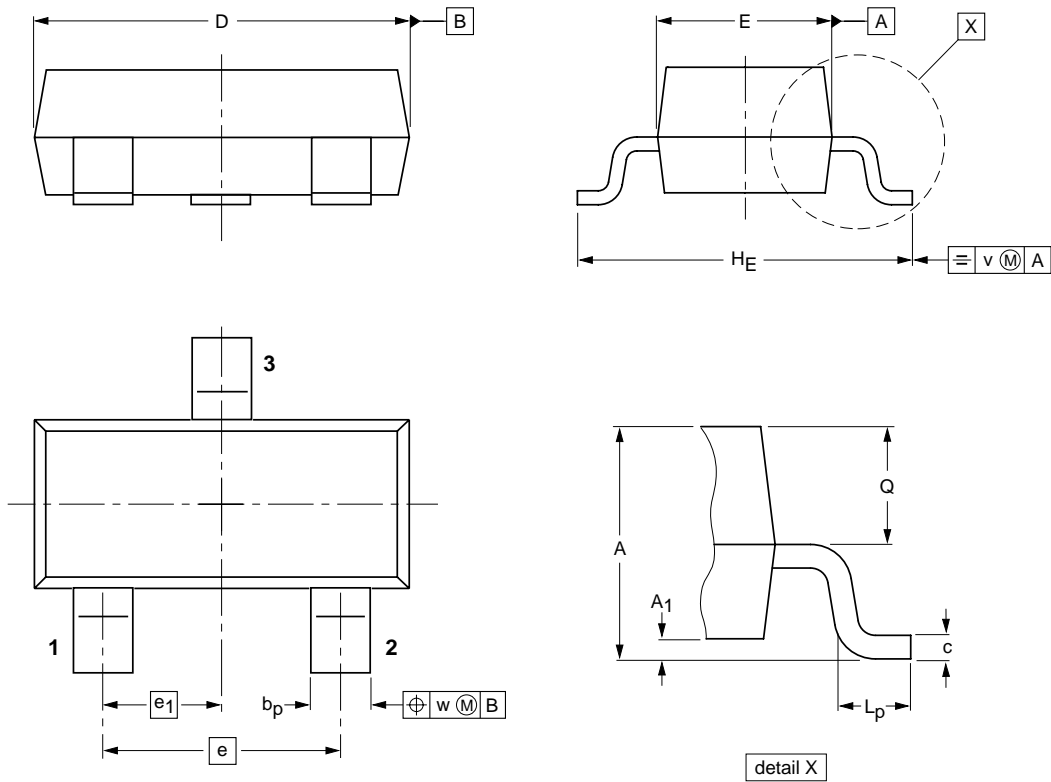
Type	MMBT3904	MMBT3904-L	MMBT3904-H	MMBT3904-J
Range	100-300	100-200	200-300	300-400

■ Typical Characteristics



**Package Outline**

**SOT-23**



**DIMENSIONS (mm are the original dimensions)**

UNIT	A	A <sub>1</sub> max.	b <sub>p</sub>	c	D	E	e	e <sub>1</sub>	H <sub>E</sub>	L <sub>p</sub>	Q	v	w
mm	1.1 0.9	0.1	0.48 0.38	0.15 0.09	3.0 2.8	1.4 1.2	1.9	0.95	2.5 2.1	0.45 0.15	0.55 0.45	0.2	0.1

**Summary of Packing Options**

Package	Packing Description	Packing Quantity	Industry Standard
SOT-23	Tape/Reel, 7" reel	3000	EIA-481-1

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