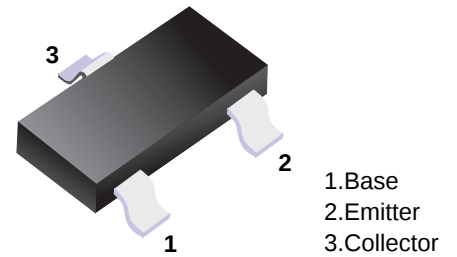


■ NPN Transistors



■ Features

- Complementary to MMBT3906
- Marking: 1AM

■ Simplified outline(SOT-23)

■ Absolute Maximum Ratings $T_a = 25^\circ\text{C}$

Parameter	Symbol	Rating	Unit
Collector - Base Voltage	V_{CBO}	60	V
Collector - Emitter Voltage	V_{CEO}	40	V
Emitter - Base Voltage	V_{EBO}	6	V
Collector Current - Continuous	I_C	0.2	A
Collector Power Dissipation	P_C	0.2	W
Junction Temperature	T_J	150	$^\circ\text{C}$
Storage Temperature	T_{stg}	-55 to 150	$^\circ\text{C}$

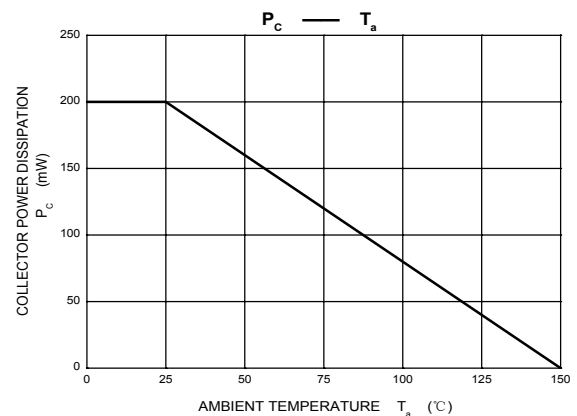
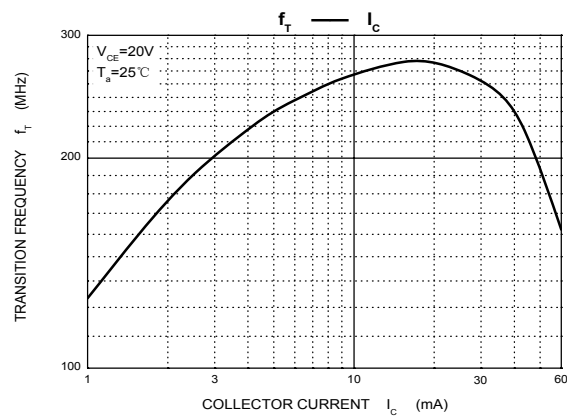
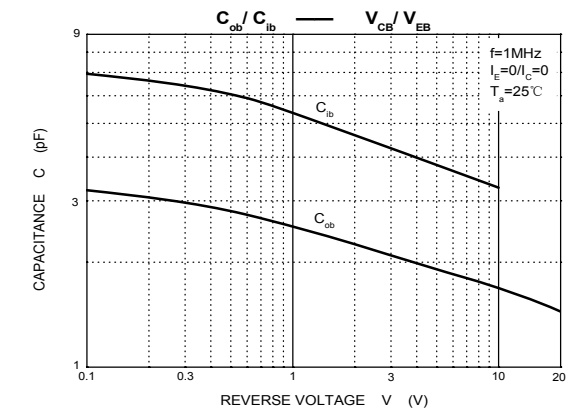
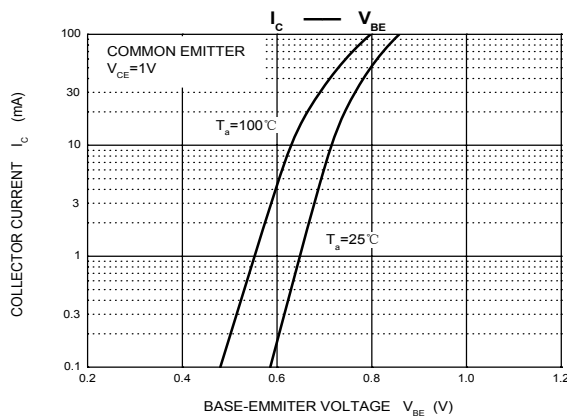
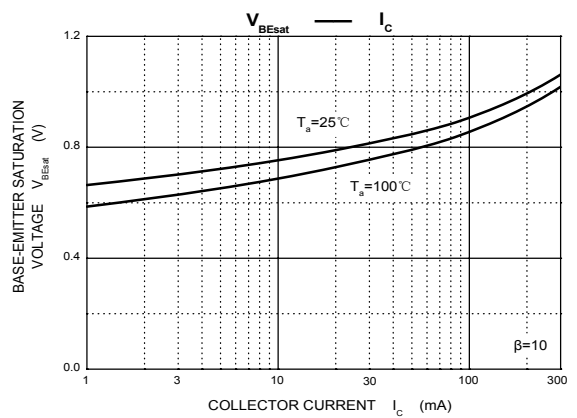
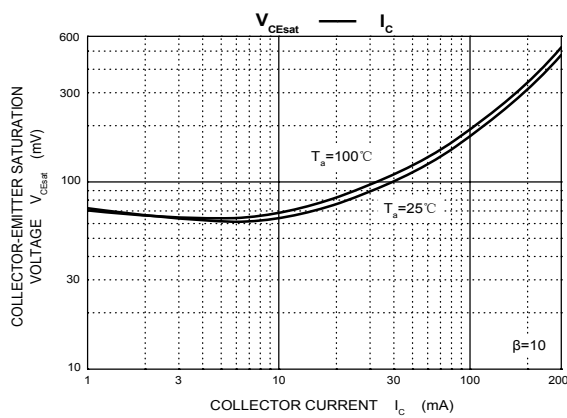
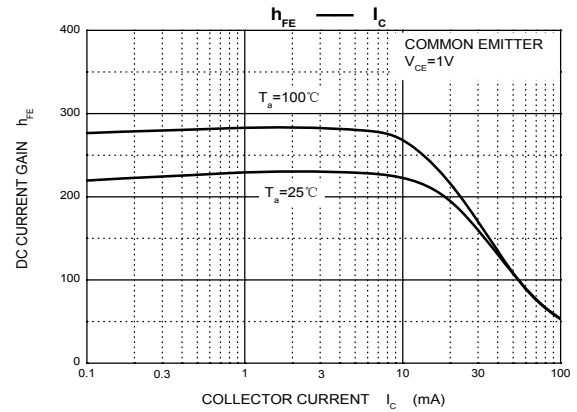
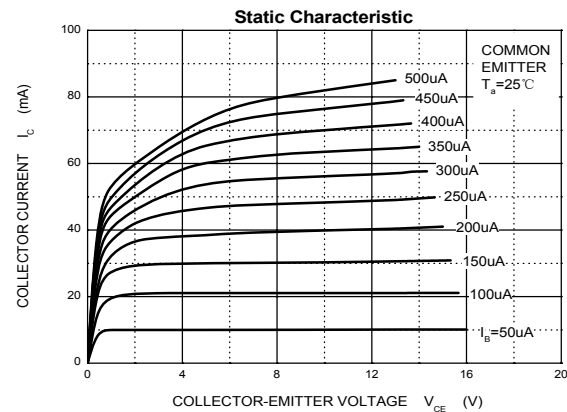
■ Electrical Characteristics $T_a = 25^\circ\text{C}$

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector-base breakdown voltage	V_{CBO}	$I_C = 100\ \mu\text{A}, I_E = 0$	60			V
Collector- emitter breakdown voltage	V_{CEO}	$I_C = 1\ \text{mA}, I_B = 0$	40			
Emitter - base breakdown voltage	V_{EBO}	$I_E = 100\ \mu\text{A}, I_C = 0$	6			
Collector-base cut-off current	I_{CBO}	$V_{CB} = 60\ \text{V}, I_E = 0$			100	nA
Collector- emitter cut-off current	I_{CEX}	$V_{CE} = 30\ \text{V}, V_{EB(off)} = -3\ \text{V}$			50	
Emitter cut-off current	I_{EBO}	$V_{EB} = 5\ \text{V}, I_C = 0$			100	
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C = 10\ \text{mA}, I_B = 1\ \text{mA}$			0.2	V
		$I_C = 50\ \text{mA}, I_B = 5\ \text{mA}$			0.3	
Base - emitter saturation voltage	$V_{BE(sat)}$	$I_C = 10\ \text{mA}, I_B = 1\ \text{mA}$	0.65		0.85	
		$I_C = 50\ \text{mA}, I_B = 5\ \text{mA}$			0.95	
DC current gain	$h_{fe}(1)$	$V_{CE} = 1\ \text{V}, I_C = 10\ \text{mA}$	100		400	
	$h_{fe}(2)$	$V_{CE} = 1\ \text{V}, I_C = 50\ \text{mA}$	60			
	$h_{fe}(3)$	$V_{CE} = 1\ \text{V}, I_C = 100\ \text{mA}$	30			
Delay time	t_d	$V_{CC} = 3\ \text{V}, V_{BE(off)} = -0.5\ \text{V}$			35	ns
Rise time	t_r	$I_C = 10\ \text{mA}, I_{B1} = 1\ \text{mA}$			35	
Storage time	t_s	$V_{CC} = 3\ \text{V}, I_C = 10\ \text{mA}$			200	
Fall time	t_f	$I_{B1} = I_{B2} = 1\ \text{mA}$			50	
Collector input capacitance	C_{ib}	$V_{EB} = 0.5\ \text{V}, I_E = 0, f = 1\ \text{MHz}$			8	pF
Collector output capacitance	C_{ob}	$V_{CB} = 5\ \text{V}, I_E = 0, f = 1\ \text{MHz}$			4	
Transition frequency	f_T	$V_{CE} = 20\ \text{V}, I_C = 10\ \text{mA}, f = 100\ \text{MHz}$	300			MHz

■ Classification of $h_{fe}(1)$

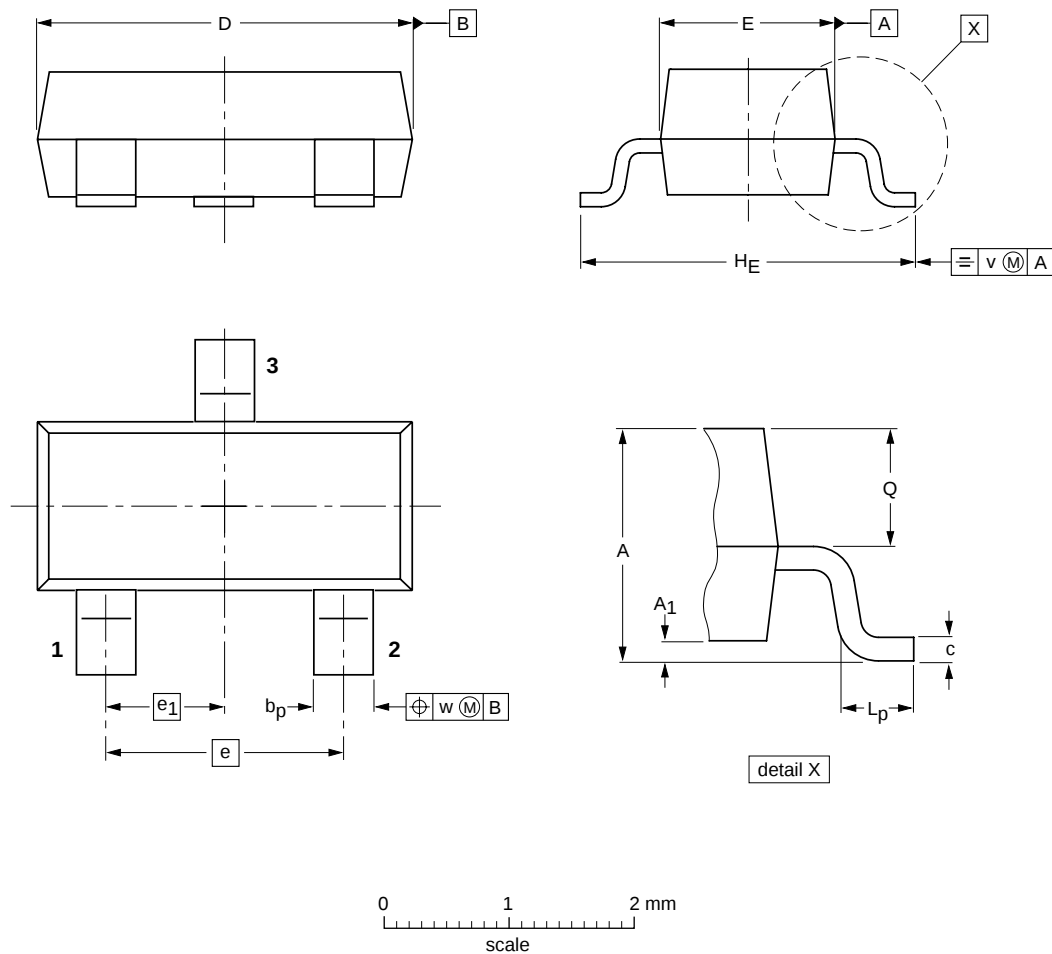
Type	MMBT3904	MMBT3904-L	MMBT3904-H	MMBT3904-J
Range	100-300	100-200	200-300	300-400

■ Typical Characteristics



Package Outline

SOT-23



DIMENSIONS (mm are the original dimensions)

UNIT	A	A ₁ max.	b _p	c	D	E	e	e ₁	H _E	L _p	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