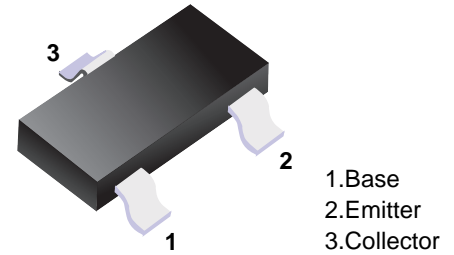


MMBT3904

■ 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 _{CB0}	60	V
Collector - Emitter Voltage	V _{CEO}	40	V
Emitter - Base Voltage	V _{EB0}	6	V
Collector Current - Continuous	I _c	0.2	A
Collector Power Dissipation	P _c	0.2	W
Junction Temperature	T _J	150	°C
Storage Temperature	T _{stg}	-55 to 150	°C

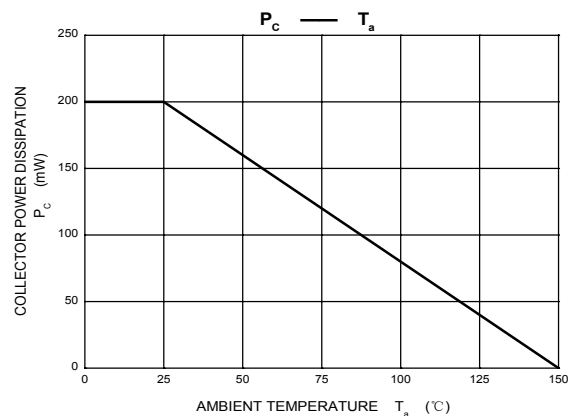
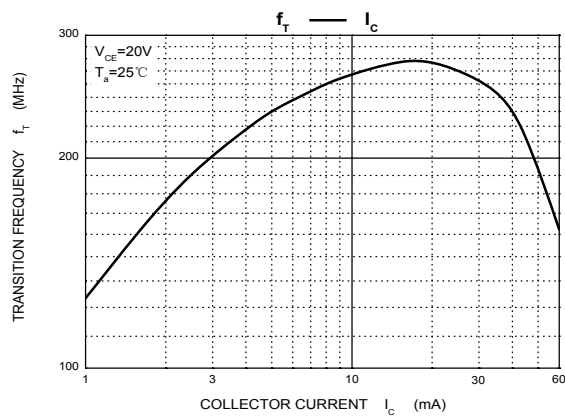
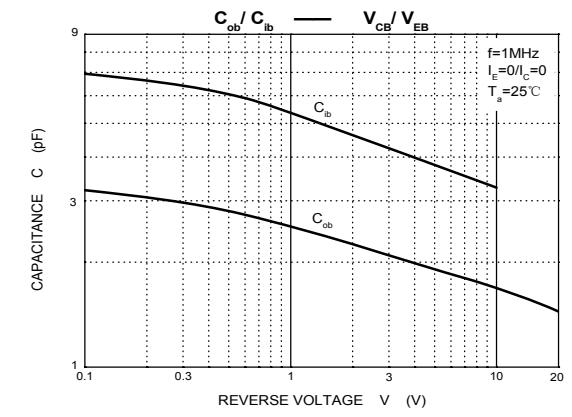
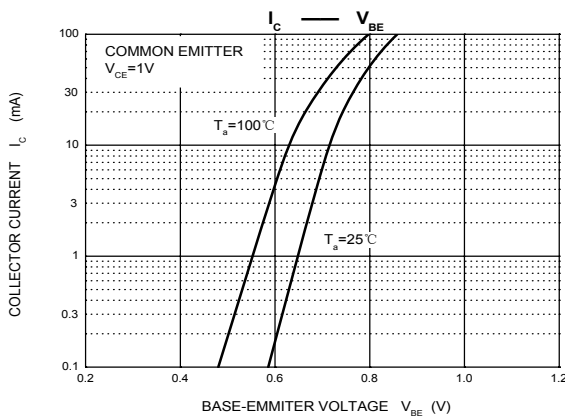
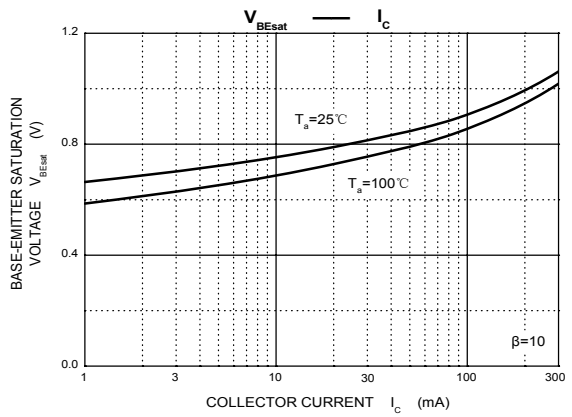
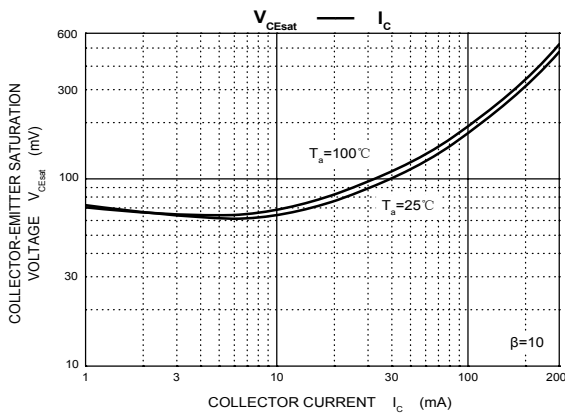
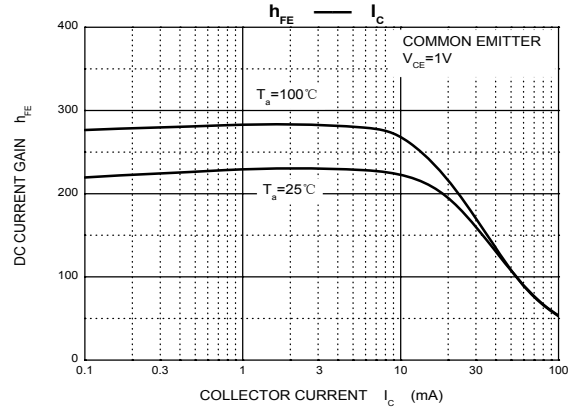
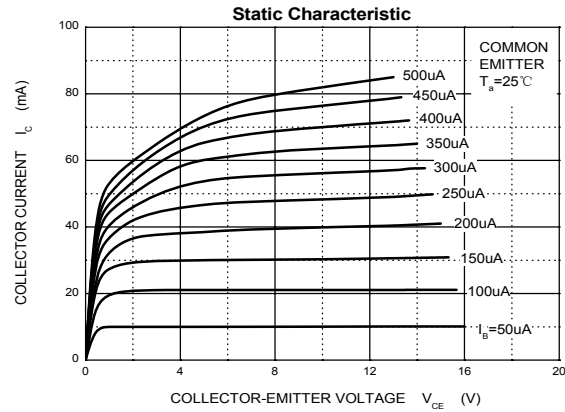
■ Electrical Characteristics Ta = 25°C

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector-base breakdown voltage	V _{CB0}	I _c = 100 μA, I _E = 0	60			V
Collector-emitter breakdown voltage	V _{CEO}	I _c = 1 mA, I _B = 0	40			
Emitter - base breakdown voltage	V _{EB0}	I _E = 100 μA, I _C = 0	6			
Collector-base cut-off current	I _{cBO}	V _{CB} = 60 V, I _E = 0			100	nA
Collector-emitter cut-off current	I _{cEX}	V _{CE} = 30 V, V _{EB(off)} = -3V			50	
Emitter cut-off current	I _{EBO}	V _{EB} = 5 V, I _C =0			100	
Collector-emitter saturation voltage	V _{CE(sat)}	I _c = 10 mA, I _B = 1mA			0.2	V
		I _c = 50 mA, I _B = 5mA			0.3	
Base - emitter saturation voltage	V _{BE(sat)}	I _c = 10 mA, I _B = 1mA	0.65		0.85	
		I _c = 50 mA, I _B = 5mA			0.95	
DC current gain	h _{fe} (1)	V _{CE} = 1V, I _c = 10mA	100		400	
	h _{fe} (2)	V _{CE} = 1V, I _c = 50mA	60			
	h _{fe} (3)	V _{CE} = 1V, I _c = 100mA	30			
Delay time	t _d	V _{CC} = 3V, V _{BE(off)} = -0.5V			35	ns
Rise time	t _r	I _c = 10mA, I _{B1} = 1mA			35	
Storage time	t _s	V _{CC} = 3V, I _c = 10mA			200	
Fall time	t _f	I _{B1} =I _{B2} = 1mA			50	
Collector input capacitance	C _{ib}	V _{EB} = 0.5V, I _E = 0, f=1MHz			8	pF
Collector output capacitance	C _{ob}	V _{CB} = 5V, I _E = 0, f=1MHz			4	
Transition frequency	f _T	V _{CE} = 20V, I _c = 10mA, f=100MHz	300			MHz

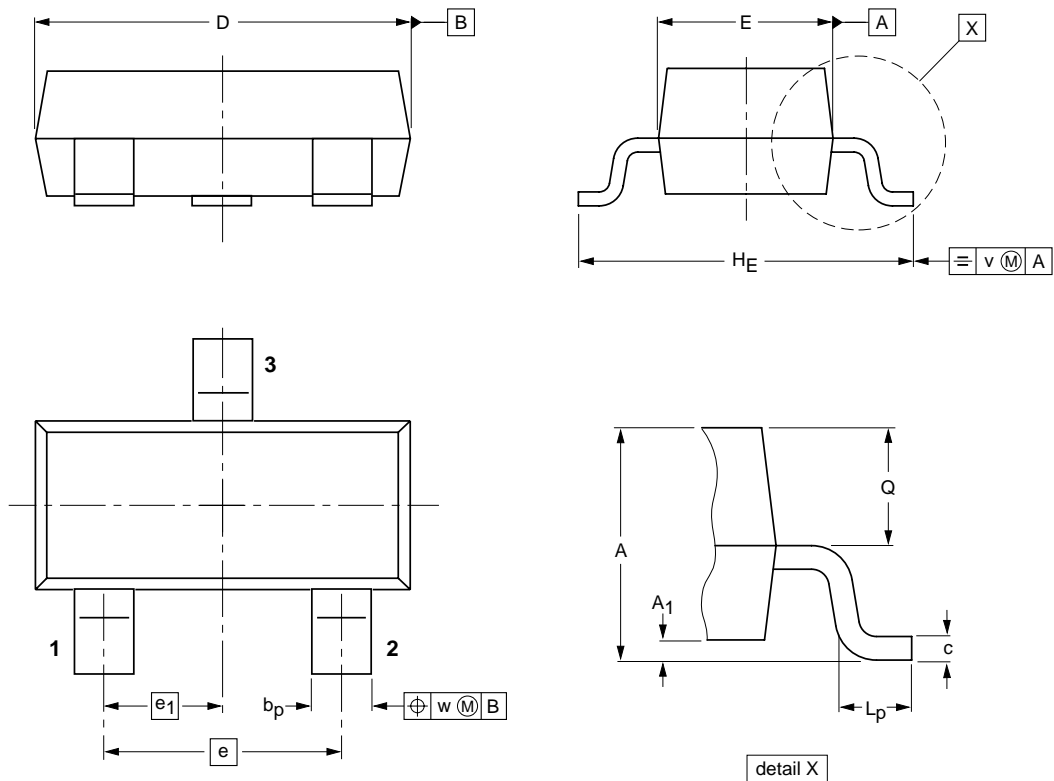
■ Classification of h_{fe}(1)

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

■ Typical Characteristics



■ 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