

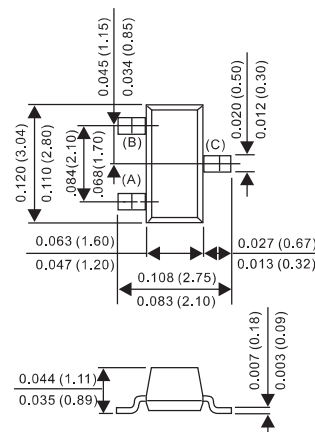
**Features**

- As complementary type, the NPN transistor MMBT3904 is Recommended
- Epitaxial planar die construction

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**Maximum ratings** (AT $T_A=25^{\circ}\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	-40	V
Collector-Emitter Voltage	V_{CEO}	-40	V
Emitter-Base Voltage	V_{EBO}	-5	V
Collector Current — Continuous	I_C	-0.2	A
Collector Dissipation	P_C	0.2	W
Thermal Resistance From Junction To Ambient	R_{thJA}	625	$^{\circ}\text{C/W}$
Operation Junction and Storage Temperature Range	T_J, T_{stg}	-55~+150	$^{\circ}\text{C}$



Dimensions in inches and (millimeters)

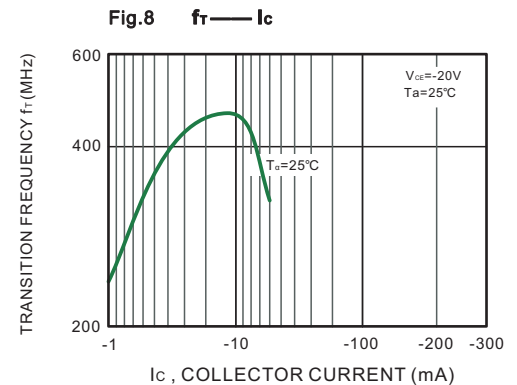
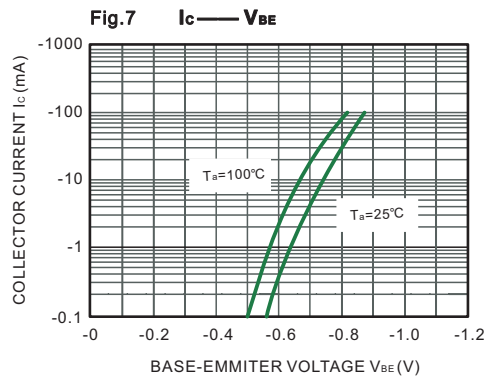
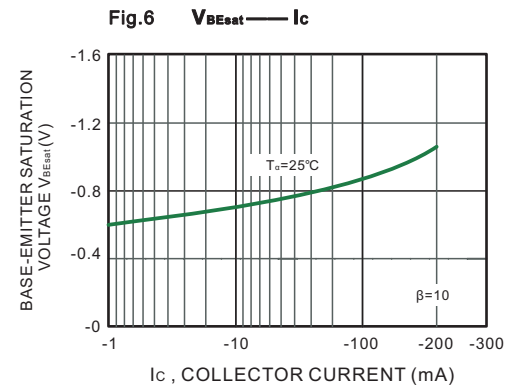
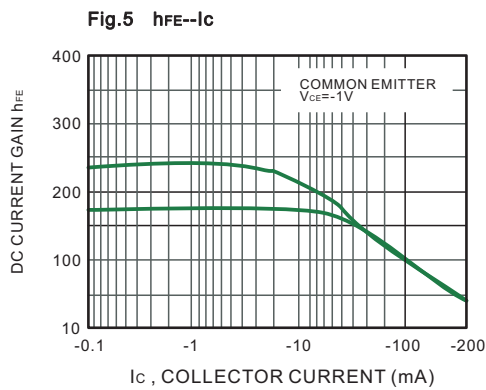
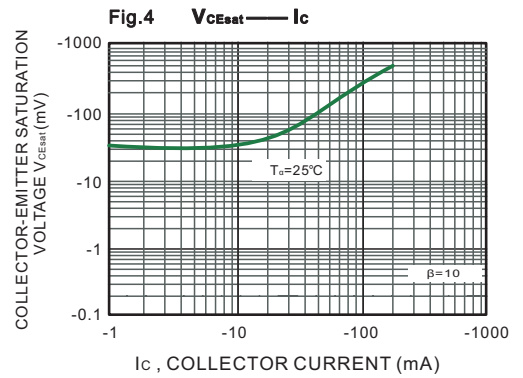
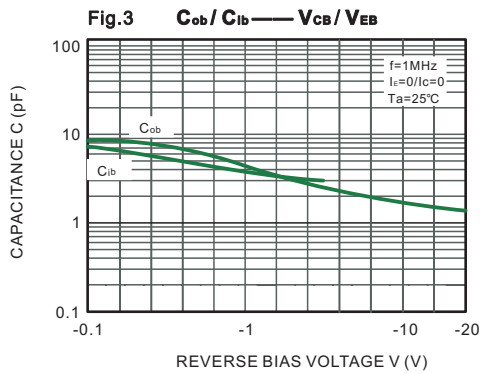
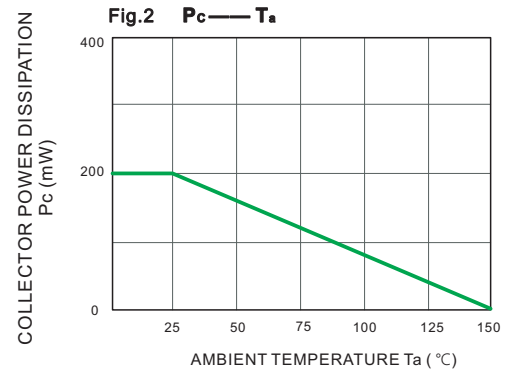
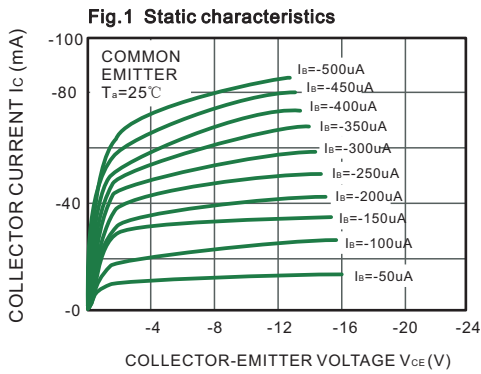
Electrical characteristics (AT $T_A=25^{\circ}\text{C}$ unless otherwise noted)**Off characteristics**

Parameter	Symbol	Test conditions	Min	Max	Unit
Collector-base breakdown voltage	$V_{(BR)CBO}$	$I_C = -10\mu\text{A}, I_E = 0$	-40		V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	$I_C = -1\text{mA}, I_B = 0$	-40		V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	$I_E = -10\mu\text{A}, I_C = 0$	-5		V
Collector cut-off current	I_{CBO}	$V_{CB} = -40\text{V}, I_E = 0$		-100	nA
Collector cut-off current	I_{CEX}	$V_{CE} = -30\text{V}, V_{CE} = -3\text{V}$		-50	nA
Emitter cut-off current	I_{EBO}	$V_{EB} = -5\text{V}, I_C = 0$		-100	nA
DC current gain	h_{FE1}	$V_{CE} = -1\text{V}, I_C = -10\text{mA}$	100	300	
	h_{FE2}	$V_{CE} = -1\text{V}, I_C = -50\text{mA}$	60		
	h_{FE3}	$V_{CE} = -2\text{V}, I_C = -100\text{mA}$	30		
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C = -50\text{mA}, I_B = -5\text{mA}$		-0.3	V
Base-emitter saturation voltage	$V_{BE(sat)}$	$I_C = -50\text{mA}, I_B = -5\text{mA}$		-0.95	V
Transition frequency	f_T	$V_{CE} = -20\text{V}, I_C = -10\text{mA}, f = 100\text{MHz}$	300		MHZ
Delay time	t_d	$V_{CC} = -3\text{V}, V_{BE} = -0.5\text{V}$ $I_C = -10\text{mA}, I_{B1} = I_{B2} = -1\text{mA}$		35	ns
Rise time	t_r			35	ns
Storage time	t_s	$V_{CC} = -3\text{V}, I_C = -10\text{mA}$ $I_{B1} = I_{B2} = -1\text{mA}$		225	ns
Fall time	t_f			75	ns

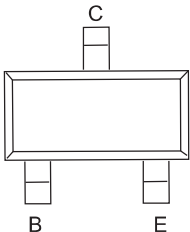
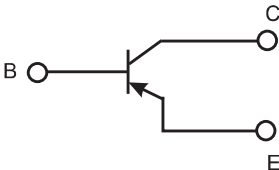
CLASSIFICATION OF $h_{FE(1)}$

HFE	100-300	
RANK	L	H
RANGE	100-200	200-300

Typical Characteristics



Pinning information

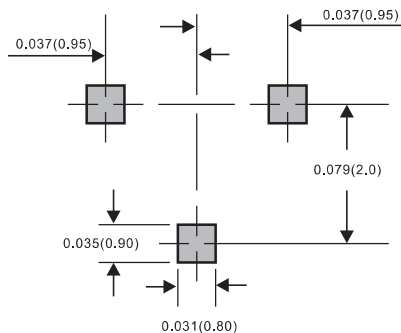
Pin	Simplified outline	Symbol
PinB Base PinC Collector PinE Emitter		

Marking

Type number	Marking code
MMBT3904	2A

Suggested solder pad layout

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Dimensions in inches and (millimeters)