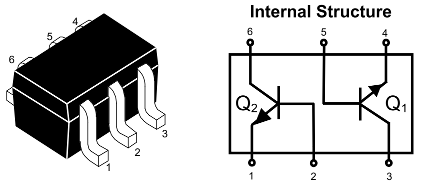
PINNING

PIN	DESCRIPTION
1 / 4	EMITTER
2 / 5	BASE
3 / 6	COLLECTOR

MMBT3904WH
NPN TRANSISTOR

FEATURES

- As complementary type, the NPN transistor MMBT3906WH is Recommended
- Epitaxial planar die construction



Simplified outline SOT-363 and symbol

MAXIMUM RATINGS (Ta=25°C unless otherwise noted)

Parameter	Symbol	Value	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	200	mA
Collector Power Dissipation	P_C	200	mW
Thermal Resistance From Junction To Ambient	$R_{\theta JA}$	625	℃/W
Operation Junction and Storage Temperature Range	T_J,T_{stg}	-55~+150	℃

ELECTRICAL CHARACTERISTICS (TA = 25°C unless otherwise noted.)

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Collector-base breakdown voltage	$V_{(BR)CBO}$	I_C = 10uA, I_E = 0	60			V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	I_C = 1 mA, I_B = 0	40			V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	I_E = 10uA, I_C = 0	6			V
Collector cut-off current	I_{CEX}	V_{CE} = 30V, V_{EB} = 3V			50	nA
Collector cut-off current	I_{CBO}	V_{CB} = 60V, I_E = 0			100	nA
Emitter cut-off current	I_{EBO}	V_{EB} = 5V, I_C =0			100	nA
DC current gain	$h_{FE(1)}$	V_{CE} = 1V, I_C =10mA	100		300	
	$h_{FE(2)}$	V_{CE} = 1V, I_C = 50mA	60			
	$h_{FE(3)}$	V_{CE} = 1V, I_C = 100mA	30			
Collector-emitter saturation voltage	$V_{CE(sat)}$	I_C = 50mA, I_B = 5mA			0.3	V
Base-emitter saturation voltage	$V_{BE(sat)}$	I_C = 50mA, I_B = 5mA			0.95	V
Transition frequency	f_T	V_{CE} = 20V, I_C = 10mA, f=100MHz	300			MHz
Delay time	t_d	V_{CC}=3V,$V_{BE(off)}$=-0.5V I_C=10mA, I_{B1}=1mA			35	ns
Rise time	t_r				35	ns
Storage time	t_s	V_{CC} = 3V, I_C = 10mA I_{B1}= I_{B2}= 1mA			200	ns
Fall time	t_f				50	ns

TYPICAL CHARACTERICS

Fig 1. Static characteristics

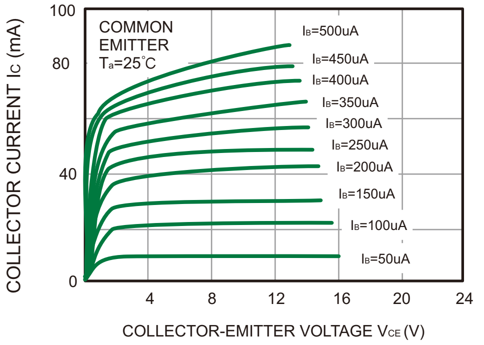


Fig 2. PC —— Ta

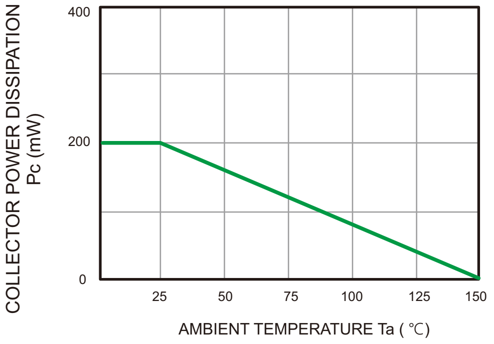


Fig 3. Cob / Cib —— VCB / VEB

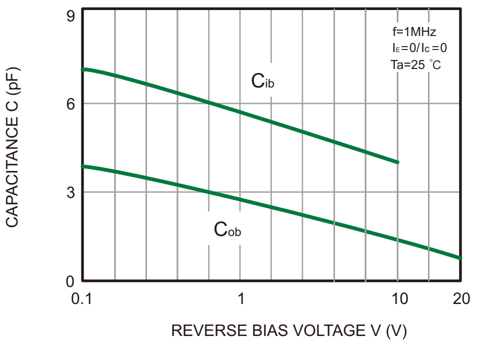


Fig 4. VCEsat —— IC

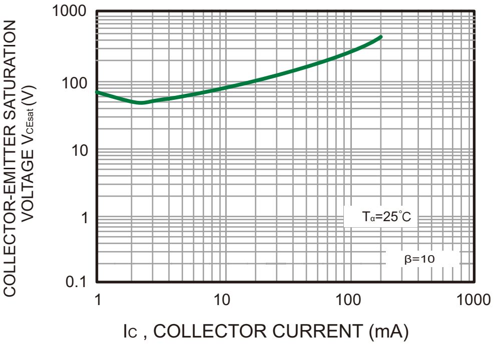


Fig 5. hFE —— IC

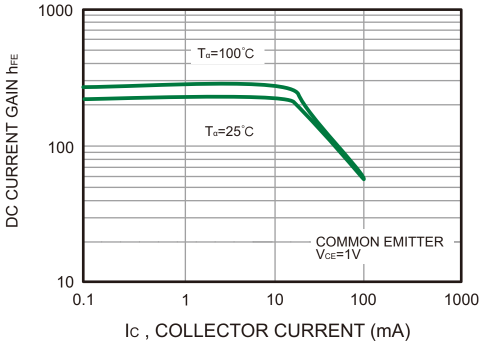


Fig 6. VBEsat —— IC

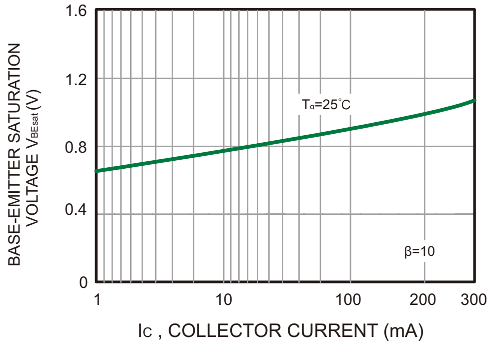


Fig 7. IC —— VBE

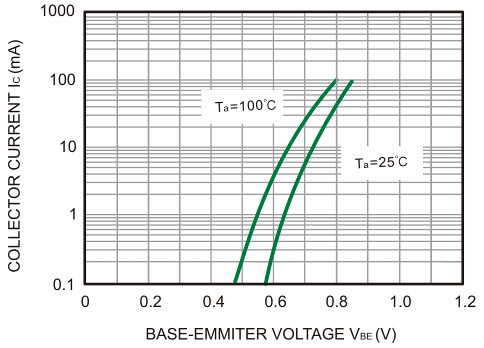
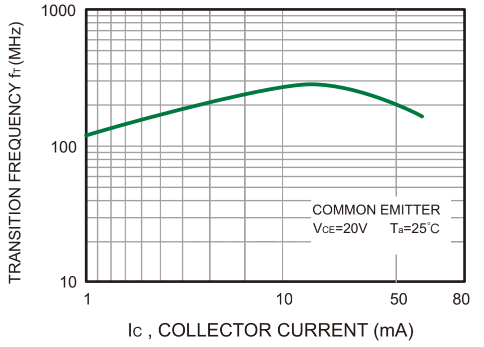
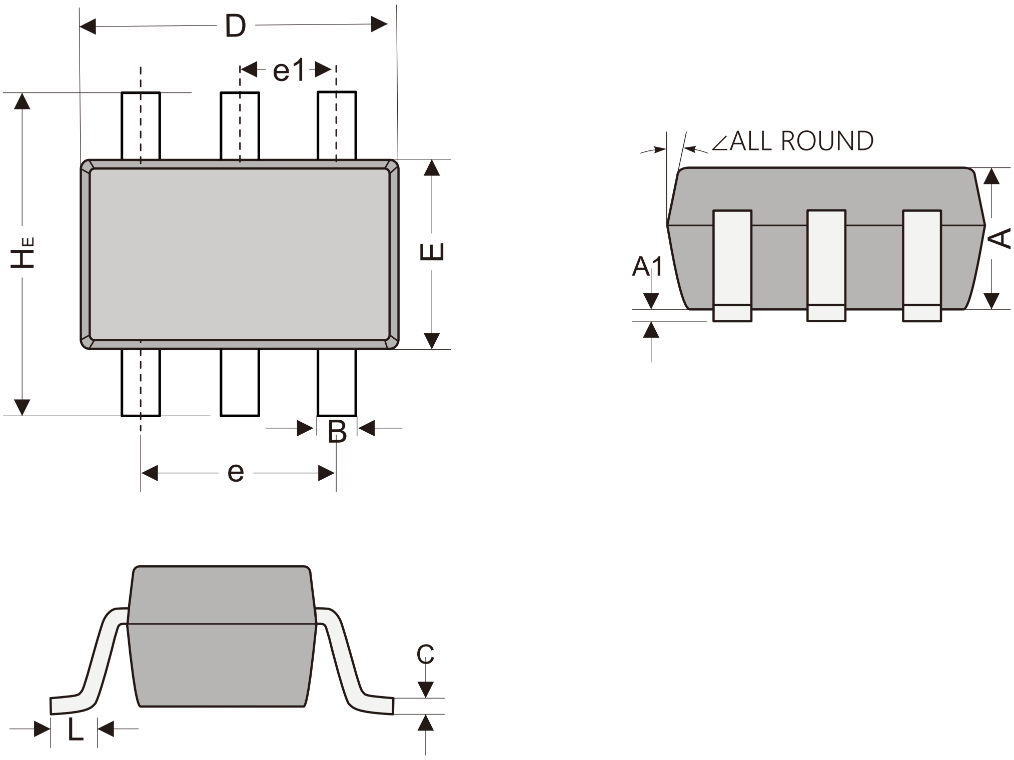


Fig 8. fT ——IC



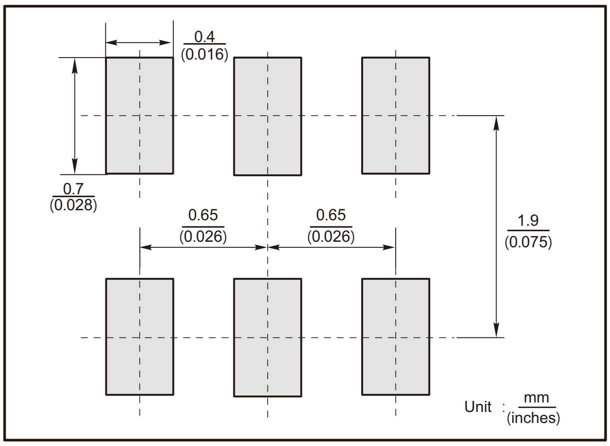
SOT-363 Package Outline Dimensions



SOT-363 mechanical data

UNIT		A	A1	B	C	D	E	e	e1	L	HE
mm	max	1.00	0.10	0.30	0.25	2.20	1.35	1.40	0.65 (BSC)	0.320 REF	2.40
	min	0.80	0.00	0.20	0.10	1.80	1.15	1.20			2.00
mil	max	39.37	3.94	11.81	9.84	86.61	53.15	55.12	25.59 (BSC)	12.56 REF	86.61
	min	31.50	0.00	7.87	3.94	70.87	45.28	47.24			78.74

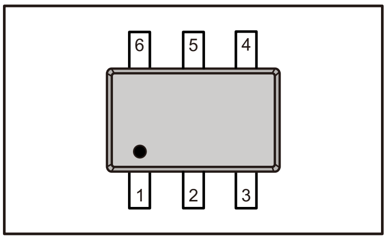
The recommended mounting pad size



Marking

Type number	Marking code
MMBT3904WH	1AM

Pin Point



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