



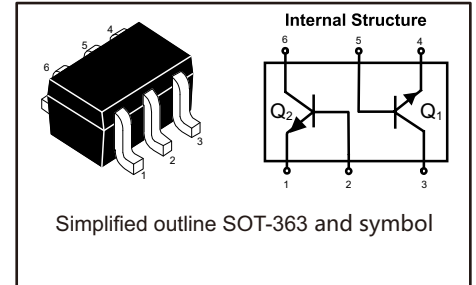
MMBT3904WH
NPN TRANSISTOR

FEATURES

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

PINNING

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



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	°C/W
Operation Junction and Storage Temperature Range	T_J, T_{stg}	-55~+150	°C

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

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Collector-base breakdown voltage	$V_{(BR)CBO}$	$I_C = 10\mu A, I_E = 0$	60			V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	$I_C = 1\text{ mA}, I_B = 0$	40			V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	$I_E = 10\mu A, I_C = 0$	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 CHARACTERISTICS

Fig 1. Static characteristics

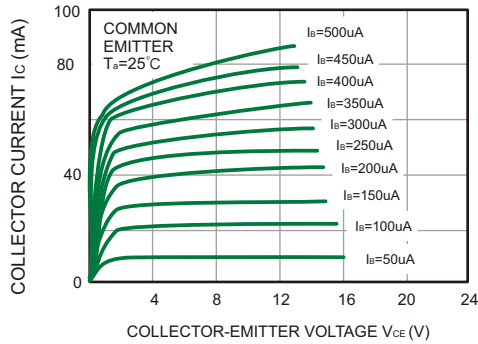


Fig 2. P_c — T_a

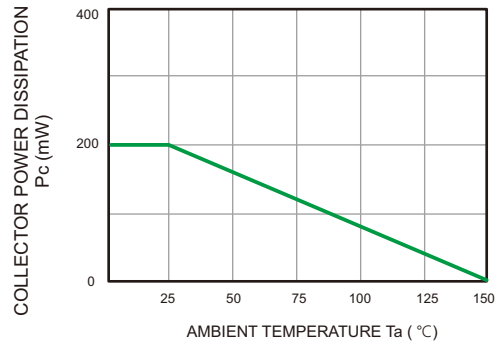


Fig 3. C_{ob} / C_{ib} — V_{CB} / V_{EB}

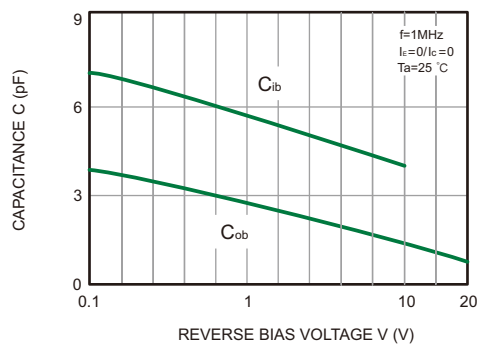


Fig 4. V_{CEsat} — I_c

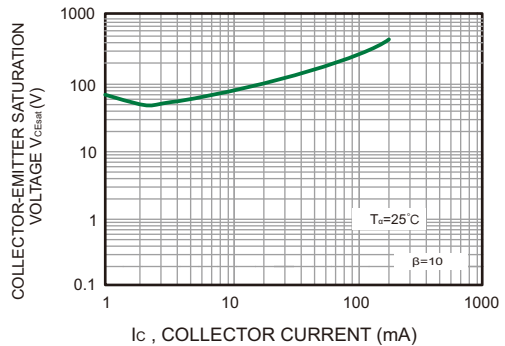


Fig 5. h_{FE} — I_c

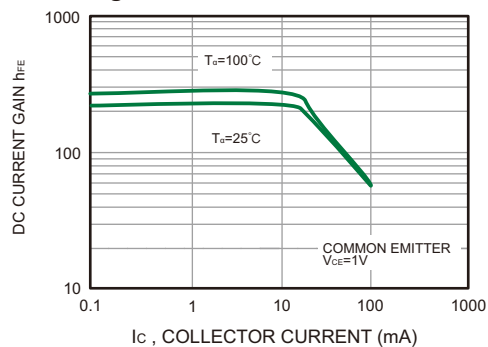


Fig 6. V_{BEsat} — I_c

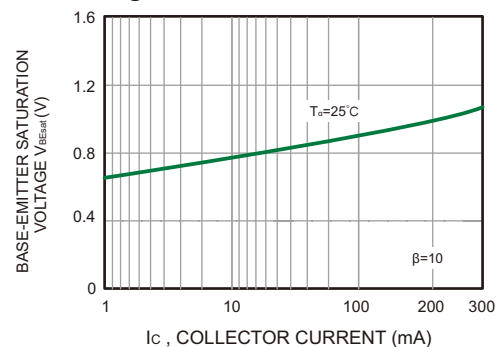


Fig 7. I_c — V_{BE}

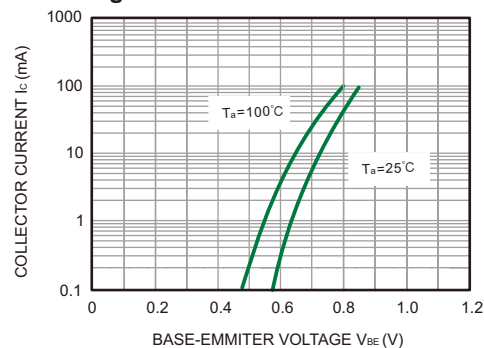
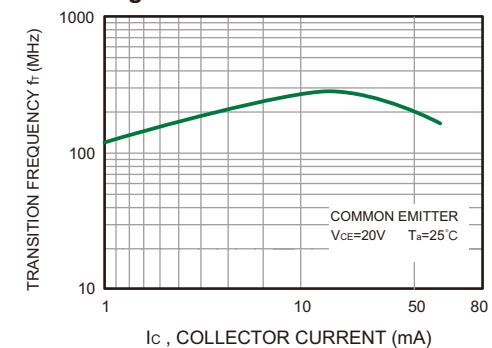
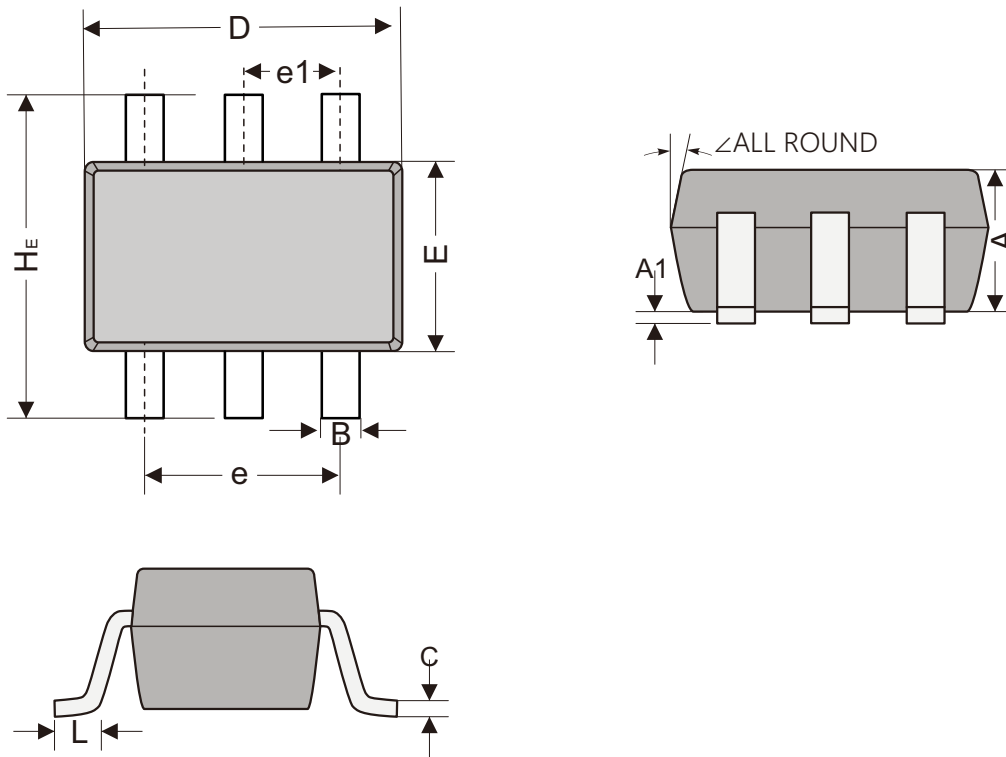


Fig 8. f_T — I_c





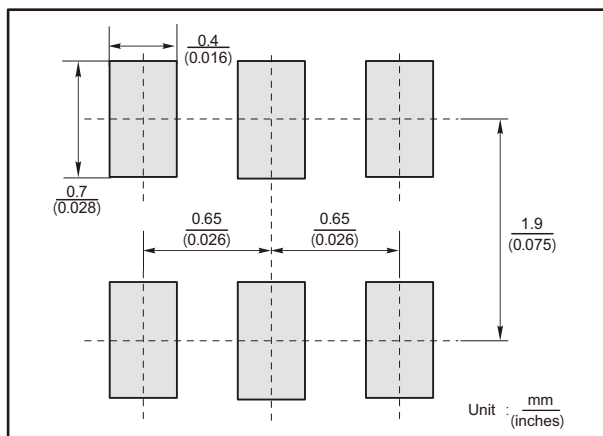
SOT-363 Package Outline Dimensions



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

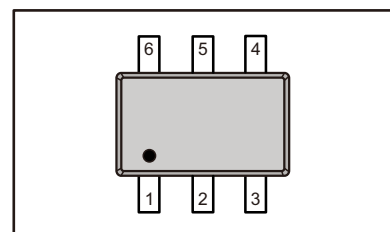
The recommended mounting pad size



Marking

Type number	Marking code
MMBT3904WH	1AM

Pin Point





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