

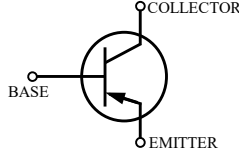
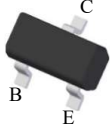


MMBT3906H

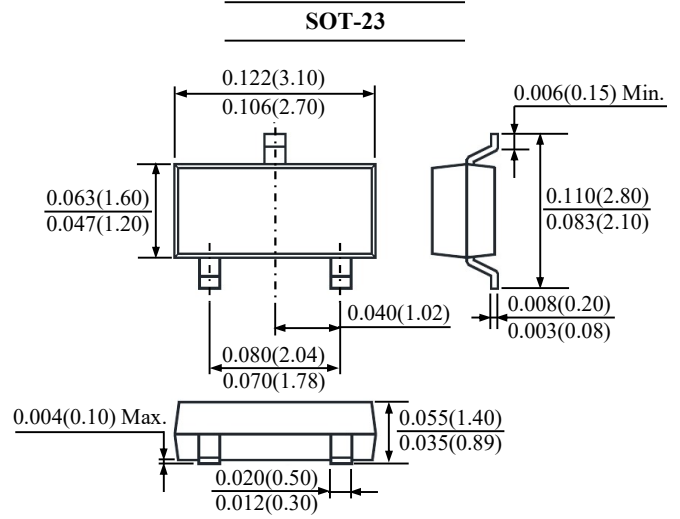
PNP TRANSISTOR

FEATURES

· Suffix "H" indicates Halogen-free parts, ex. MMBT3906H



B	Base
C	Collector
E	Emitter



Dimensions in inches and (millimeter)

Maximum Ratings ($T_A = 25\text{ }^\circ\text{C}$ 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}	-6	V
Collector Current	I_C	-200	mA
Power Dissipation	P_D	350	mW
Thermal Resistance from Junction to Ambient (Note 1)	$R_{\theta JA}$	357	$^\circ\text{C}/\text{W}$
Junction Temperature	T_J	150	$^\circ\text{C}$
Storage Temperature Range	T_{STG}	- 55 to + 150	$^\circ\text{C}$

Note :

1. Device mounted on FR-4 substrate PC board, with minimum recommended pad layout



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Electrical Characteristics ($T_A = 25\text{ }^\circ\text{C}$ unless otherwise specified)

Parameter	Conditions	Symbol	Min.	Max.	Unit
DC Current Gain	$I_C = -0.1\text{mA}$, $V_{CE} = -1\text{V}$	h_{FE}	60	-	-
	$I_C = -1\text{mA}$, $V_{CE} = -1\text{V}$		80	-	
	$I_C = -10\text{mA}$, $V_{CE} = -1\text{V}$		100	300	
	$I_C = -50\text{mA}$, $V_{CE} = -1\text{V}$		60	-	
	$I_C = -100\text{mA}$, $V_{CE} = -1\text{V}$		30	-	
Collector Base Cutoff Current	$V_{CB} = -30\text{V}$	I_{CBO}	-	-50	nA
Emitter Base Cutoff Current	$V_{EB} = -6\text{V}$	I_{EBO}	-	-50	nA
Collector Base Breakdown Voltage	$I_C = -10\mu\text{A}$	$V_{(BR)CBO}$	-40	-	V
Collector Emitter Breakdown Voltage	$I_C = -1\text{mA}$	$V_{(BR)CEO}$	-40	-	V
Emitter Base Breakdown Voltage	$I_E = -10\mu\text{A}$	$V_{(BR)EBO}$	-6	-	V
Collector Emitter Saturation Voltage	$I_C = -10\text{mA}$, $I_B = -1\text{mA}$	$V_{CE(sat)}$	-	-0.25	V
	$I_C = -50\text{mA}$, $I_B = -5\text{mA}$		-	-0.40	
Base Emitter Saturation Voltage	$I_C = -10\text{mA}$, $I_B = -1\text{mA}$	$V_{BE(sat)}$	-0.65	-0.85	V
	$I_C = -50\text{mA}$, $I_B = -5\text{mA}$		-	-0.95	
Transition Frequency	$I_C = -10\text{mA}$, $V_{CE} = -20\text{V}$, $f = 100\text{MHz}$	f_T	250	-	MHz
Output Capacitance	$V_{CB} = -5\text{V}$, $f = 1\text{MHz}$	C_{ob}	-	4.5	pF
Delay Time	$V_{CC} = -3\text{V}$, $V_{BE} = -0.5\text{V}$,	t_d	-	35	ns
Rise Time	$I_C = -10\text{mA}$, $I_{B1} = -1\text{mA}$				
Storage Time	$V_{CC} = -3\text{V}$, $I_C = -10\text{mA}$,				
Fall Time	$I_{B1} = -I_{B2} = -1\text{mA}$				



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RATINGS AND CHARACTERISTIC CURVES

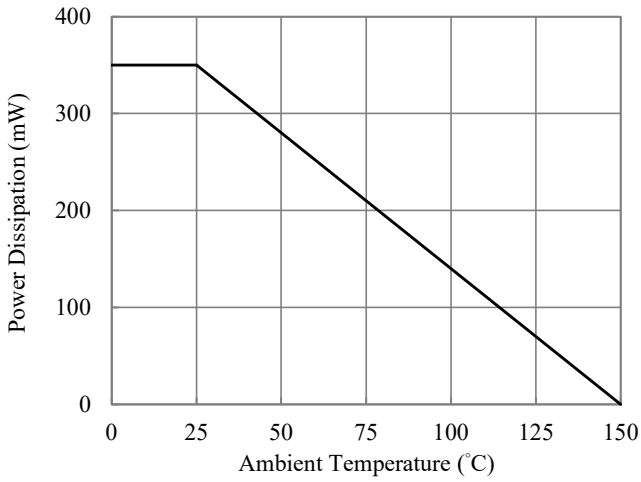


Fig. 1 Power Derating Curves

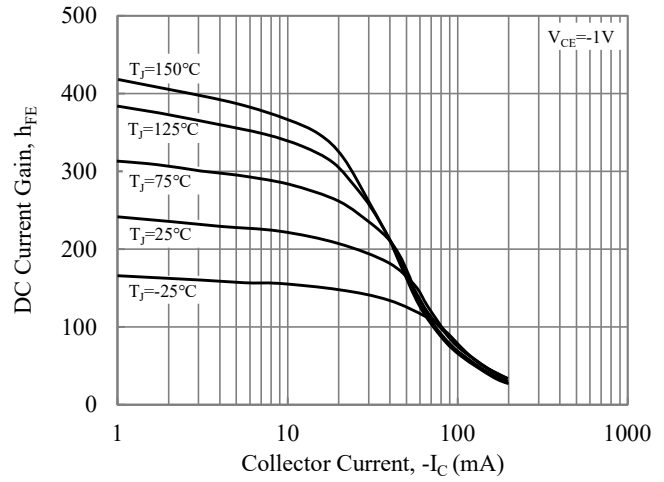


Fig. 2 Current Gain vs. Collector Current

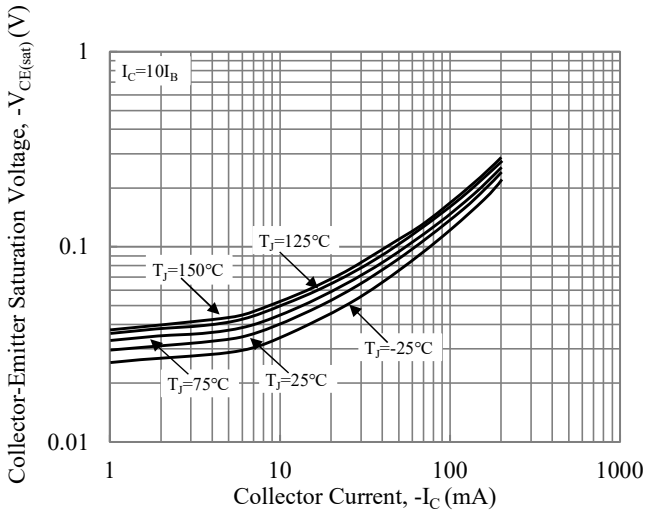


Fig. 3 Collector-Emitter Saturation Voltage vs. Collector Current

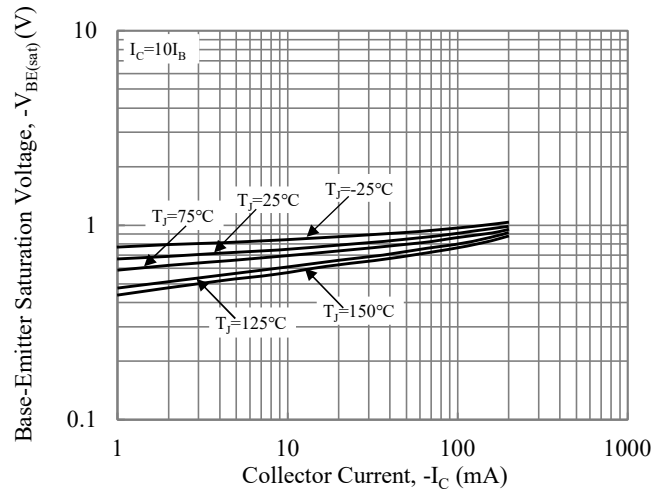


Fig. 4 Base-Emitter Saturation Voltage vs. Collector Current

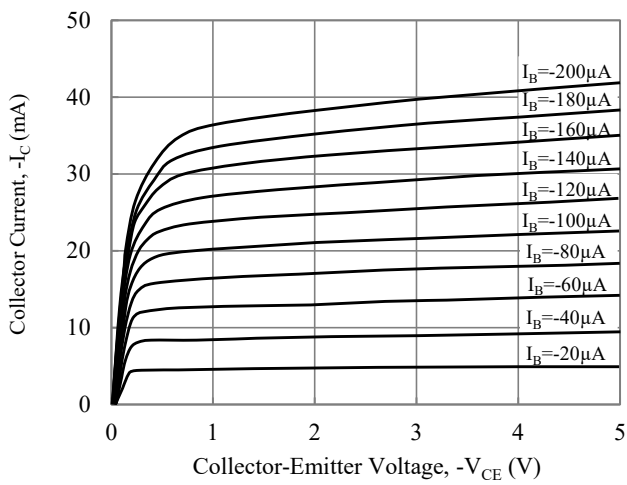


Fig. 5 Output Characteristics

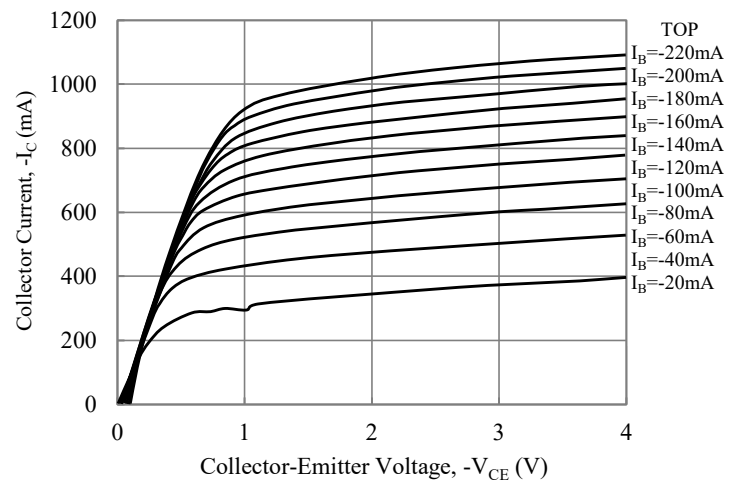


Fig. 6 Output Characteristics



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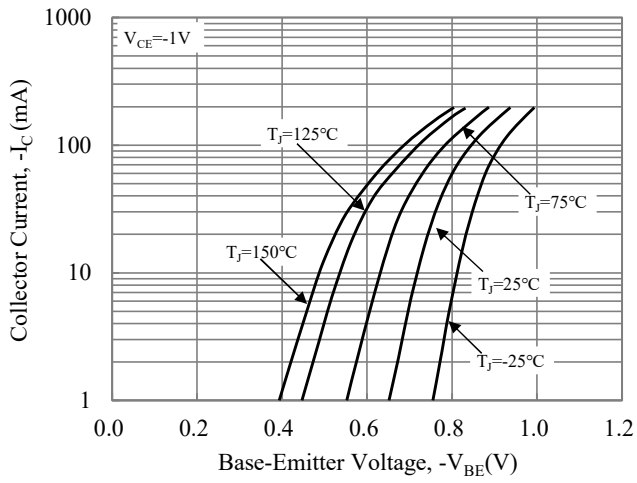


Fig. 7 Base-Emitter Voltage vs. Collector Current

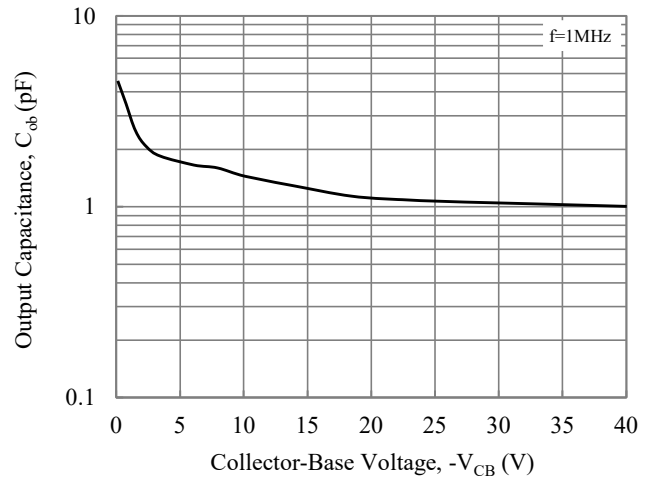


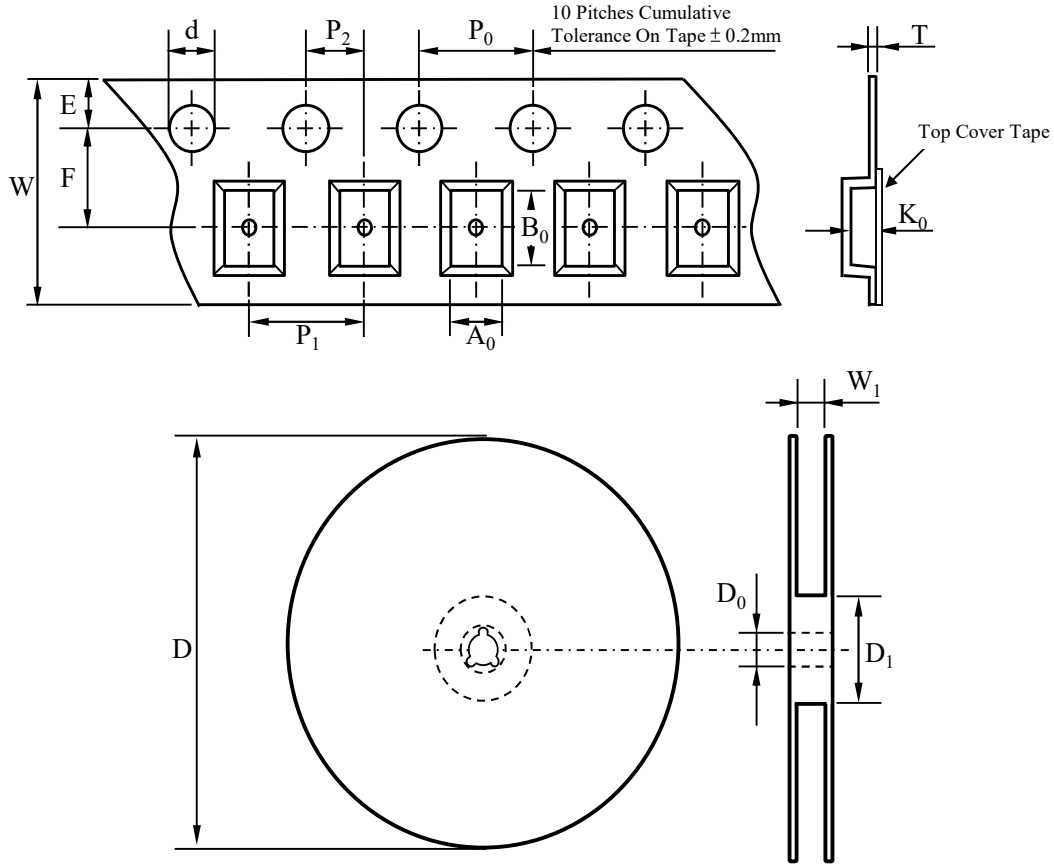
Fig. 8 Output Capacitance



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TAPE & REEL SPECIFICATION



Item	Symbol	SOT-23
Carrier width	A ₀	*
Carrier length	B ₀	
Carrier depth	K ₀	
Sprocket hole	d	1.50 ± 0.10
Reel outside diameter	D	178.00 ± 2.00
Feed hole width	D ₀	13.00 ± 0.50
Reel inner diameter	D ₁	MIN. 50.00
Sprocket hole position	E	1.75 ± 0.10
Punch hole position	F	3.50 ± 0.10
Sprocket hole pitch	P ₀	4.00 ± 0.10
Punch hole pitch	P ₁	4.00 ± 0.10
Embossment center	P ₂	2.00 ± 0.10
Overall tape thickness	T	0.20 ± 0.05
Tape width	W	8.00 ± 0.20
Reel width	W ₁	MAX. 14.50

Note *: A₀, B₀, and K₀ are determined by component size. The clearance between the components and the cavity must be within 0.05 mm min. to 0.5 mm max.

ORDER INFORMATION

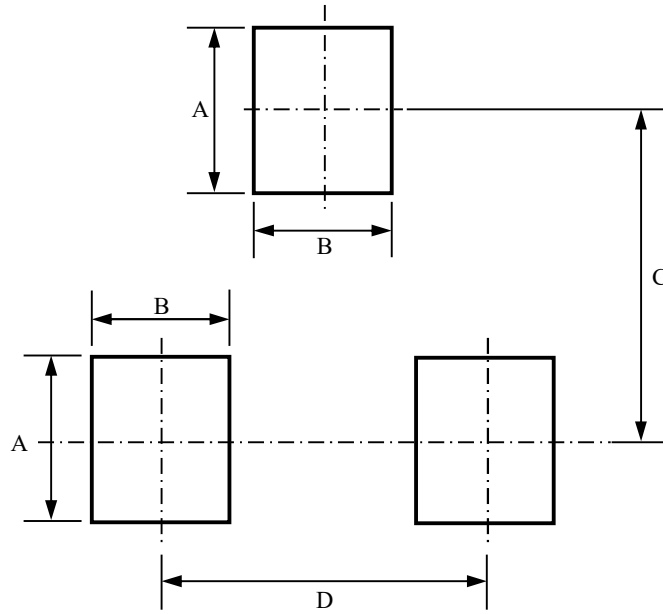
Part Number	Marking Code	Reel Size	Quantity
MMBT3906H	3E	7"	3,000



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SUGGESTED SOLDER PAD LAYOUT



Unit :mm

PACKAGE	A	B	C	D
SOT-23	1.00	0.80	2.00	1.90