

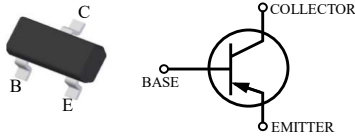


# MMBT5401H

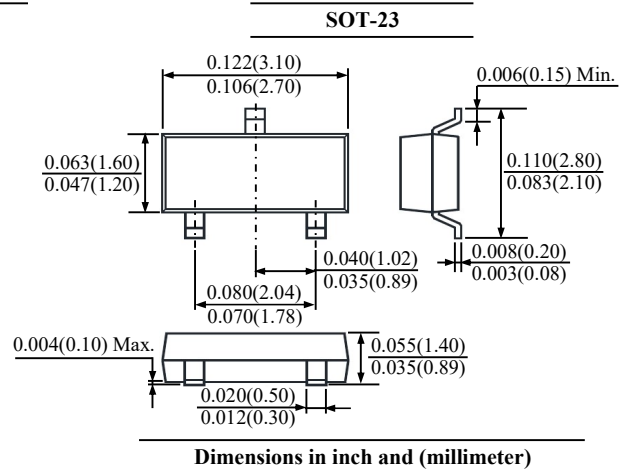
## PNP TRANSISTOR

### FEATURES

- For high voltage amplifier applications
- Suffix "H" indicates Halogen-free parts, ex. MMBT5401H



B	Base
C	Collector
E	Emitter



### Maximum Ratings ( $T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Collector Base Voltage	$V_{CBO}$	-160	V
Collector Emitter Voltage	$V_{CEO}$	-150	V
Emitter Base Voltage	$V_{EBO}$	-5	V
Collector Current	$I_C$	-600	mA
Power Dissipation	$P_D$	200	mW
Thermal Resistance from Junction to Ambient (Note 1)	$R_{\theta JA}$	625	$^\circ\text{C}/\text{W}$
Operating Junction Temperature Range	$T_J$	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, 2oz copper, with minimum recommended pad layout.

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

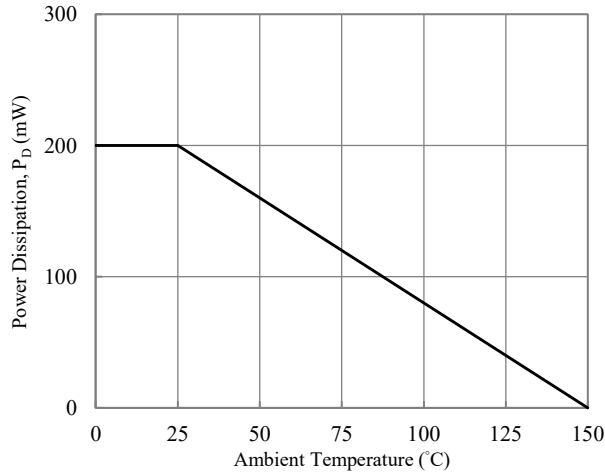
Parameter	Conditions	Symbol	Min.	Max.	Unit
DC Current Gain	$V_{CE} = -5\text{V}, I_C = -1\text{mA}$	$h_{FE}$	50	-	-
	$V_{CE} = -5\text{V}, I_C = -10\text{mA}$		60	240	
	$V_{CE} = -5\text{V}, I_C = -50\text{mA}$		50	-	
Collector Base Cutoff Current	$V_{CB} = -120\text{V}$	$I_{CBO}$	-	-50	nA
Emitter Base Cutoff Current	$V_{EB} = -3\text{V}$	$I_{EBO}$	-	-50	nA
Collector Base Breakdown Voltage	$I_C = -100\mu\text{A}$	$V_{(BR)CBO}$	-160	-	V
Collector Emitter Breakdown Voltage	$I_C = -1\text{mA}$	$V_{(BR)CEO}$	-150	-	V
Emitter Base Breakdown Voltage	$I_E = -10\mu\text{A}$	$V_{(BR)EBO}$	-5	-	V
Collector Emitter Saturation Voltage	$I_C = -10\text{mA}, I_B = -1\text{mA}$	$V_{CE(sat)}$	-	-0.2	V
	$I_C = -50\text{mA}, I_B = -5\text{mA}$		-	-0.5	
Base Emitter Saturation Voltage	$I_C = -10\text{mA}, I_B = -1\text{mA}$	$V_{BE(sat)}$	-	-1.0	V
	$I_C = -50\text{mA}, I_B = -5\text{mA}$		-	-1.0	
Gain Bandwidth Product	$I_C = -10\text{mA}, V_{CE} = -10\text{V}, f = 100\text{MHz}$	$f_T$	100	300	MHz
Output Capacitance	$V_{CB} = -10\text{V}, f = 1\text{MHz}$	$C_{ob}$	-	6	pF



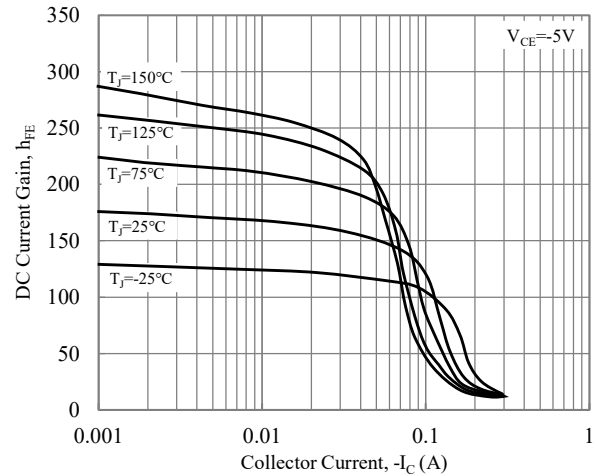
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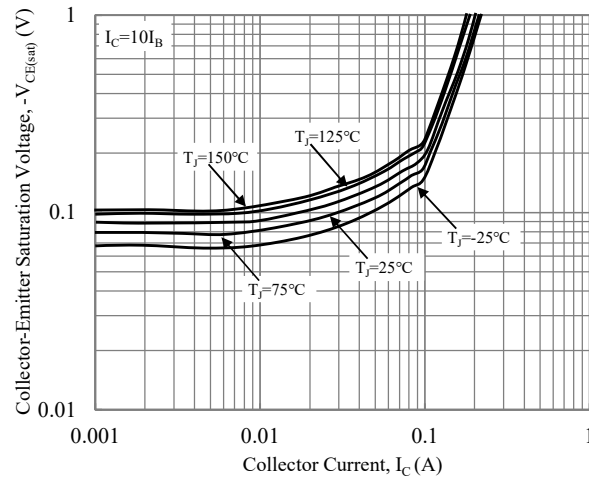
### RATINGS AND CHARACTERISTIC CURVES



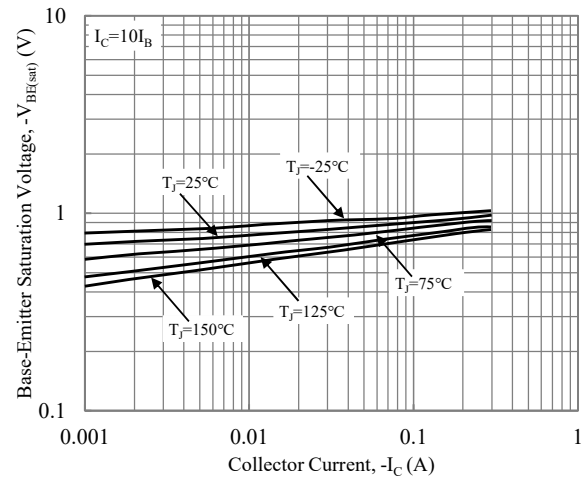
**Fig. 1 Power Derating Curves**



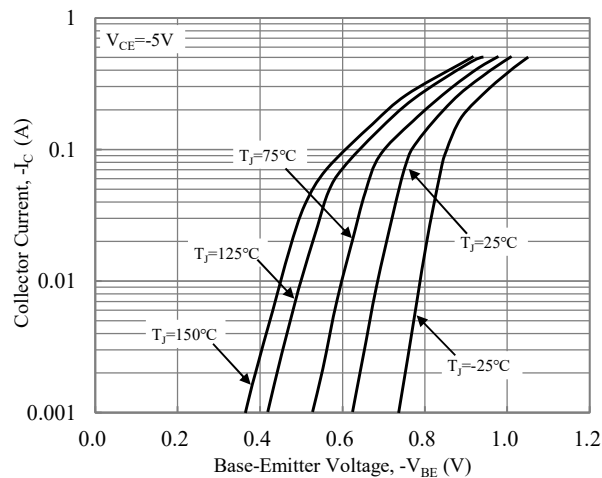
**Fig. 2 Current Gain vs. Collector Current**



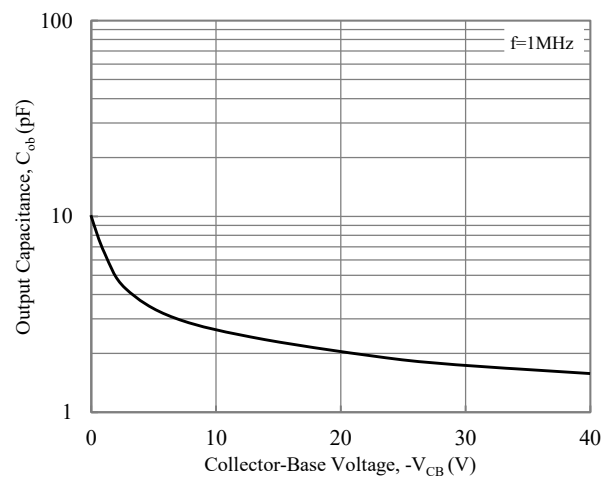
**Fig. 3 Collector-Emitter Saturation Voltage vs. Collector Current**



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



**Fig. 5 Base-Emitter Voltage vs. Collector Current**

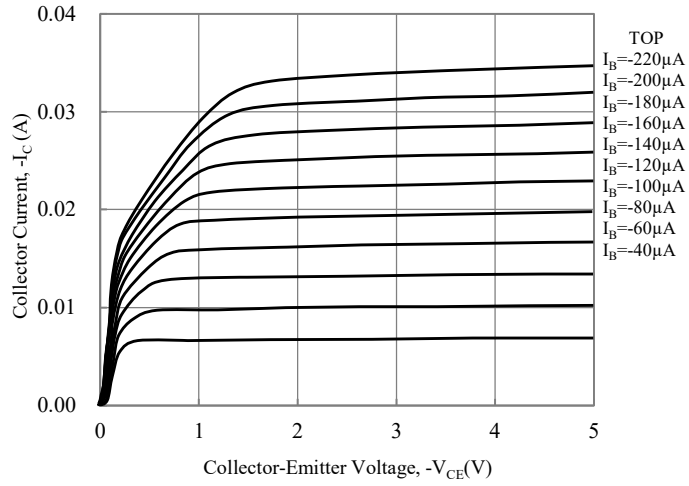


**Fig. 6 Output Capacitance**



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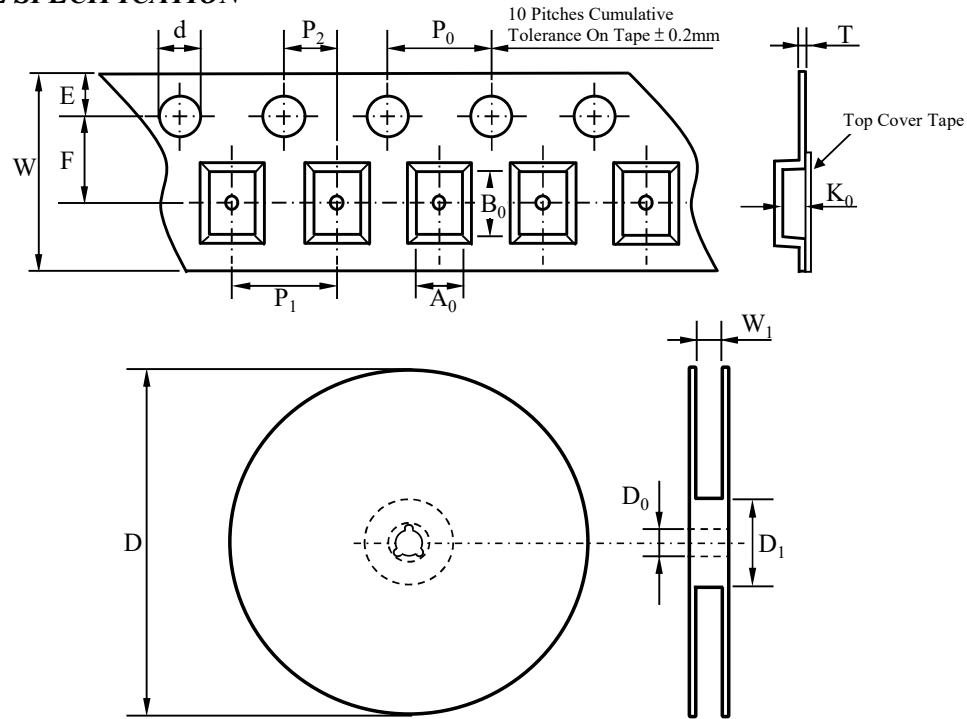
**Fig. 7 Collector-Emitter Voltage vs. Collector Current**



# MMBT5401H

## PNP TRANSISTOR

### TAPE & REEL SPECIFICATION



Item	Symbol	SOT-23
Carrier width	$A_0$	*
Carrier length	$B_0$	
Carrier depth	$K_0$	
Sprocket hole	$d$	$1.50 \pm 0.10$
Reel outside diameter	$D$	$178.00 \pm 2.00$
Feed hole width	$D_0$	$13.00 \pm 0.50$
Reel inner diameter	$D_1$	MIN. 50.00
Sprocket hole position	$E$	$1.75 \pm 0.10$
Punch hole position	$F$	$3.50 \pm 0.10$
Sprocket hole pitch	$P_0$	$4.00 \pm 0.10$
Punch hole pitch	$P_1$	$4.00 \pm 0.10$
Embossment center	$P_2$	$2.00 \pm 0.10$
Overall tape thickness	$T$	$0.20 \pm 0.05$
Tape width	$W$	$8.00 \pm 0.20$
Reel width	$W_1$	MAX. 14.50

Note \*:  $A_0$ ,  $B_0$ , and  $K_0$  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

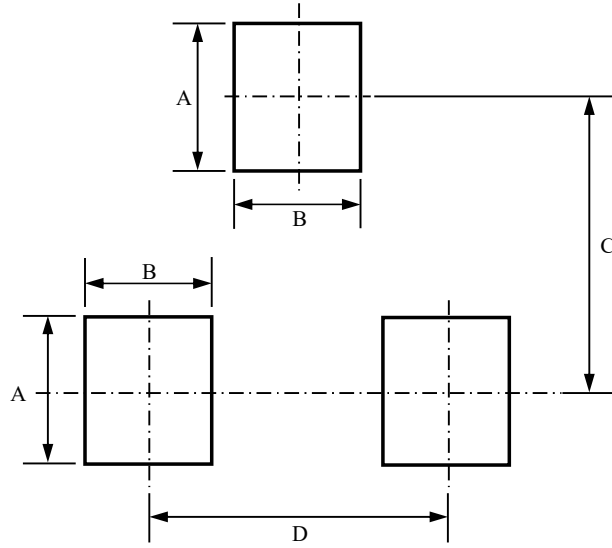
Part Number	Marking Code	Reel Size	Quantity
MMBT5401H	L	7"	3,000



# MMBT5401H

## PNP TRANSISTOR

### SUGGESTED SOLDER PAD LAYOUT



Unit :mm

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