



DESCRIPTION

The MMBT5401, MMBT5401-L, and MMBT5401-H are available in the SOT-23 package.

PIN DESCRIPTION



ORDERING INFORMATION

Package Type	Part Number
SOT-23	MMBT5401
	MMBT5401-L
	MMBT5401-H
SPQ	3,000pcs/Reel
AiT provides all RoHS Compliant Products	

PIN#	DESCRIPTION
1	Base
2	Emitter
3	Collector

h_{FE} CLASSIFICATION

Rank	Range
MMBT5401	100~300
MMBT5401-L	100 ~ 200
MMBT5401-H	200 ~ 300

ABSOLUTE MAXIMUM RATINGS

T_A = 25°C, unless otherwise specified.

V _{CBO} , Collector-Base Voltage	-160V
V _{CEO} , Collector-Emitter Voltage	-150V
V _{EBO} , Emitter-Base Voltage	-5V
I _C , Collector Current-Continuous	-0.6A
P _C , Collector Power Dissipation	300mW
T _J , Junction Temperature	150°C
T _{stg} , Storage Temperature	-55°C ~ +150°C

Stresses above may cause permanent damage to the device. These are stress ratings only and functional operation of the device at these or any other conditions beyond those indicated in the Electrical Characteristics are not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.



ELECTRICAL CHARACTERISTICS

$T_A=25^\circ\text{C}$ unless otherwise specified.

Parameter	Symbols	Conditions	Min.	Typ.	Max.	Unit
Collector-Base Breakdown Voltage	V_{CBO}	$I_C = -100 \mu\text{A}, I_E = 0$	-160	-	-	V
Collector-Emitter Breakdown Voltage	V_{CEO}	$I_C = -1 \text{ mA}, I_B = 0$	-150	-	-	V
Collector-Base Breakdown Voltage	V_{EBO}	$I_E = -10 \mu\text{A}, I_C = 0$	-5	-	-	V
Collector Cut-off Current	I_{CBO}	$V_{CB} = -120 \text{ V}, I_E = 0$	-	-	-0.1	μA
Emitter Cut-off Current	I_{EBO}	$V_{EB} = -4 \text{ V}, I_C = 0$	-	-	-0.1	μA
DC Current Gain	h_{FE}	$V_{CE} = -5 \text{ V}, I_C = -1 \text{ mA}$	80	-	-	-
		$V_{CE} = -5 \text{ V}, I_C = -10 \text{ mA}$	100	-	300	
		$V_{CE} = -5 \text{ V}, I_C = -50 \text{ mA}$	50	-	-	
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = -50 \text{ mA}, I_B = -5 \text{ mA}$	-	-	-0.5	V
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C = -50 \text{ mA}, I_B = -5 \text{ mA}$	-	-	-1.0	V
Transition Frequency	f_t	$V_{CE} = -5 \text{ V}, I_C = -10 \text{ mA}, f = 300 \text{ MHz}$	100	-	-	MHz

TYPICAL CHARACTERISTICS

Fig 1. Static Characteristic

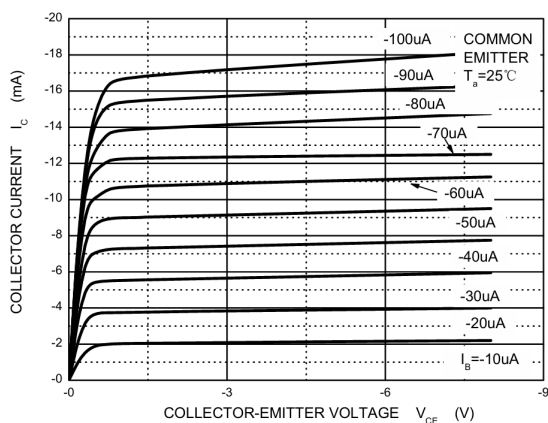


Fig 2. h_{FE} vs. I_C

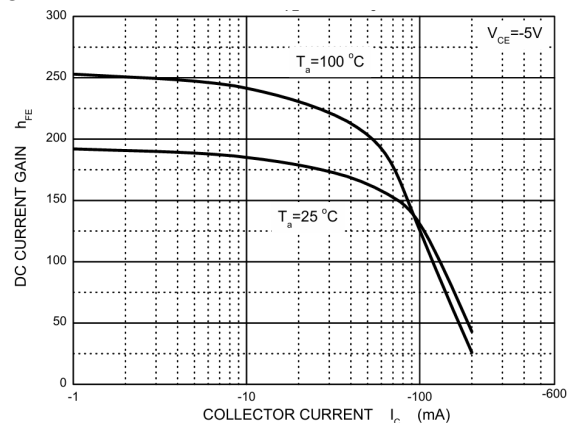




Fig 3. $V_{BE(sat)}$ vs. I_c

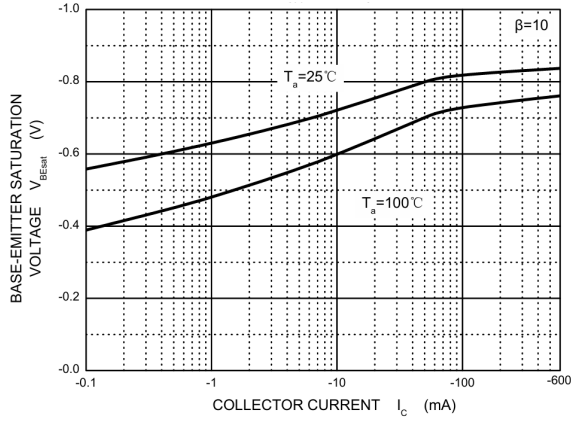


Fig 4. $V_{CE(sat)}$ vs. I_c

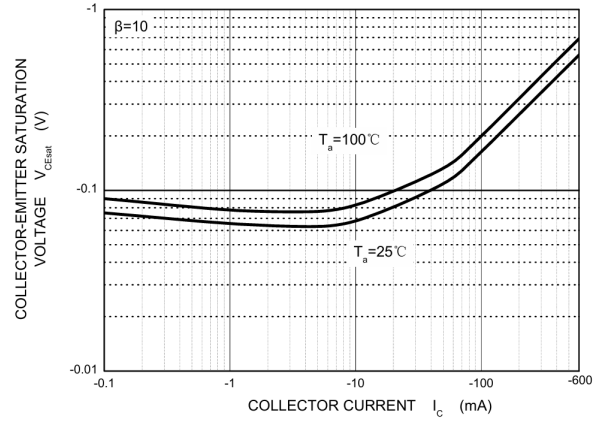


Fig 5. I_c vs. V_{BE}

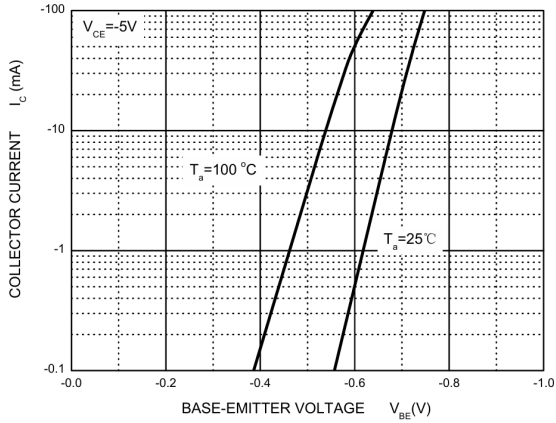


Fig 6. C_{ob}/C_{ib} vs. V_{CB}/V_{EB}

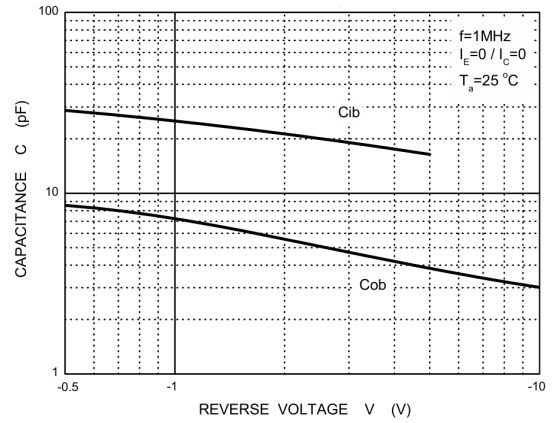


Fig 7. f_T vs. I_c

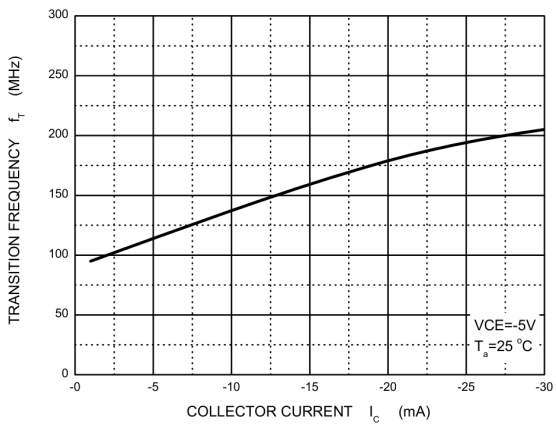
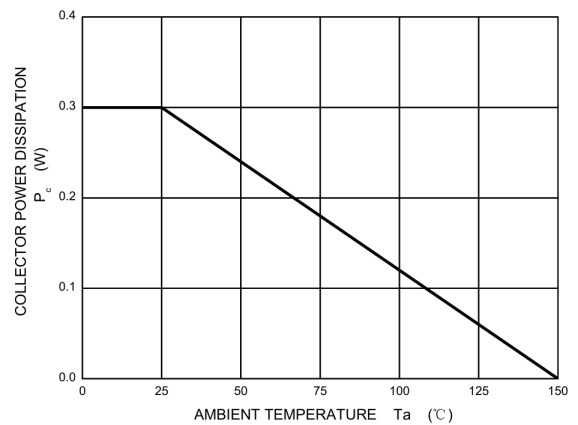


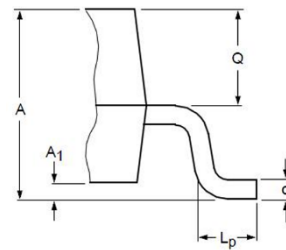
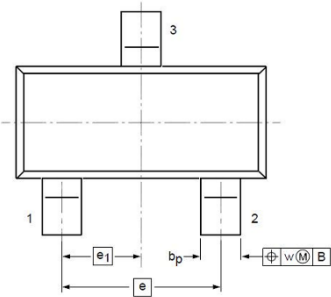
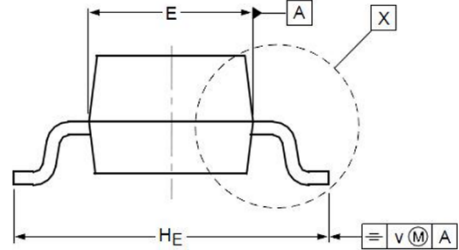
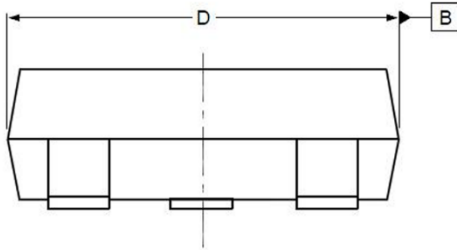
Fig 8. P_c vs. T_a



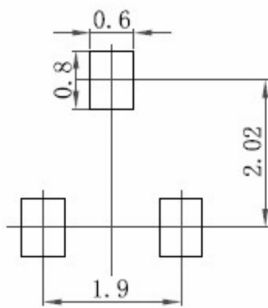


PACKAGE INFORMATION

Dimension in SOT-23 (Unit: mm)



detail X



SOLDERING FOOTPRINT

Symbol	Millimeters (mm)	
	Min.	Max.
A	0.900	1.150
A1	0.010	0.100
bp	0.300	0.500
c	0.800	0.150
D	2.800	3.000
E	1.200	1.400
e	1.900 TYP.	
e1	0.950 TYP.	
HE	2.250	2.550
Lp	0.300	0.500
Q	0.450	0.550
v	0.200 TYP.	
w	0.100 TYP.	



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