



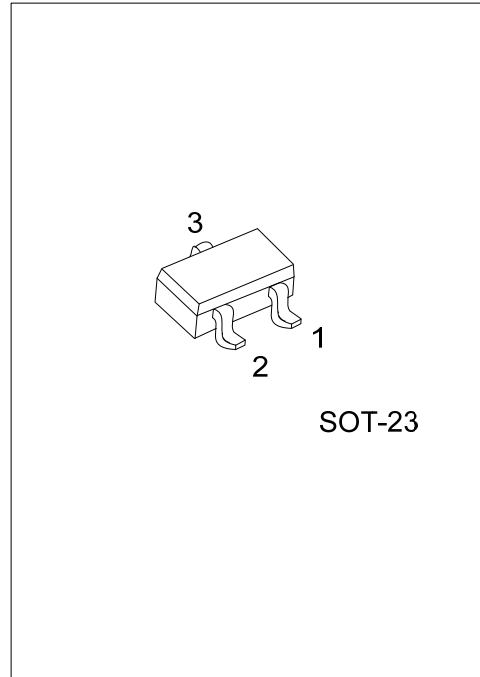
MMBT5401

PNP SILICON TRANSISTOR

HIGH VOLTAGE SWITCHING TRANSISTOR

FEATURES

- *Collector-Emitter Voltage: $V_{CE0}=-150V$
- *High Current Gain

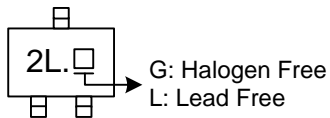


ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen-Free		1	2	3	
MMBT5401L-x-AE3-R	MMBT5401G-x-AE3-R	SOT-23	E	B	C	Tape Reel

<p>MMBT5401L-x-AE3-R</p>	<p>(1) R: Tape Reel</p> <p>(2) AE3: SOT-23</p> <p>(3) x: refer to Classification of h_{FE}</p> <p>(4) G: Halogen Free, L: Lead Free Plating</p>
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MARKING



MMBT5401

PNP SILICON TRANSISTOR

■ ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$)

PARAMETER	SYMBOL	RATINGS	UNIT
Collector -Base Voltage	V_{CBO}	-160	V
Collector -Emitter Voltage	V_{CEO}	-150	V
Emitter -Base Voltage	V_{EBO}	-5	V
DC Collector Current	I_C	-600	mA
Power Dissipation	P_D	350	mW
Junction Temperature	T_J	+150	$^\circ\text{C}$
Storage Temperature	T_{STG}	-55 ~ +150	$^\circ\text{C}$

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.

■ ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Collector-Base Breakdown Voltage	BV_{CBO}	$I_C = -100\mu\text{A}$, $I_E = 0$	-160			V
Collector-Emitter Breakdown Voltage	BV_{CEO}	$I_C = -1\text{mA}$, $I_B = 0$	-150			V
Emitter-Base Breakdown Voltage	BV_{EBO}	$I_E = -10\mu\text{A}$, $I_C = 0$	-5			V
Collector Cut-off Current	I_{CBO}	$V_{CB} = -120\text{V}$, $I_E = 0$			-50	nA
Emitter Cut-off Current	I_{EBO}	$V_{BE} = -3\text{V}$, $I_C = 0$			-50	nA
DC Current Gain(Note)	h_{FE}	$V_{CE} = -5\text{V}$, $I_C = -1\text{mA}$ $V_{CE} = -5\text{V}$, $I_C = -10\text{mA}$ $V_{CE} = -5\text{V}$, $I_C = -50\text{mA}$	80	160	400	
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$	$I_C = -10\text{mA}$, $I_B = -1\text{mA}$ $I_C = -50\text{mA}$, $I_B = -5\text{mA}$			-0.2 -0.5	V
Base-Emitter Saturation Voltage	$V_{BE(SAT)}$	$I_C = -10\text{mA}$, $I_B = -1\text{mA}$ $I_C = -50\text{mA}$, $I_B = -5\text{mA}$			-1 -1	V
Current Gain Bandwidth Product	f_T	$V_{CE} = -10\text{V}$, $I_C = -10\text{mA}$, $f = 100\text{MHz}$	100		300	MHz
Output Capacitance	C_{OB}	$V_{CB} = -10\text{V}$, $I_E = 0$, $f = 1\text{MHz}$			6.0	pF
Noise Figure	NF	$I_C = -0.25\text{mA}$, $V_{CE} = -5\text{V}$ $R_S = 1\text{k}\Omega$, $f = 10\text{Hz} \sim 15.7\text{kHz}$			8	dB

Note: Pulse test: $P_w < 300\mu\text{s}$, Duty Cycle $< 2\%$

■ CLASSIFICATION OF h_{FE}

RANK	A	B	C
RANGE	80-170	150-240	200-400

■ TYPICAL CHARACTERISTICS

Fig.1 Collector Output Capacitance

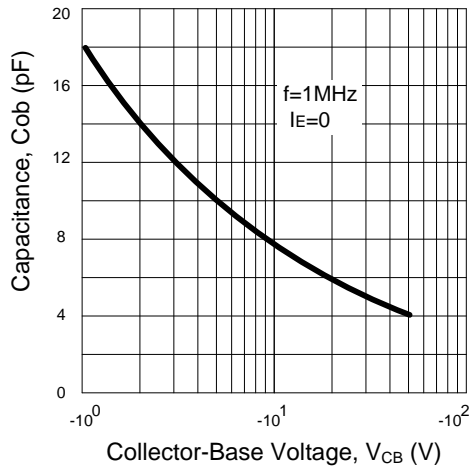


Fig.2 DC Current Gain

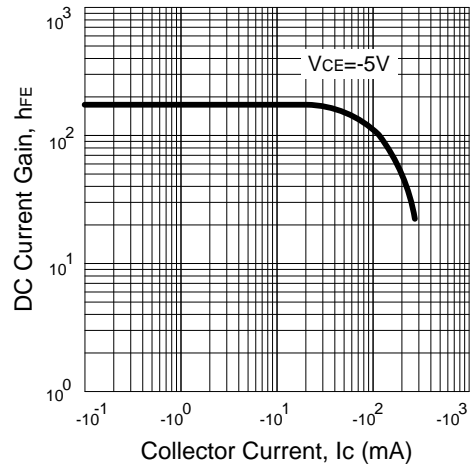


Fig.3 Base-Emitter on Voltage

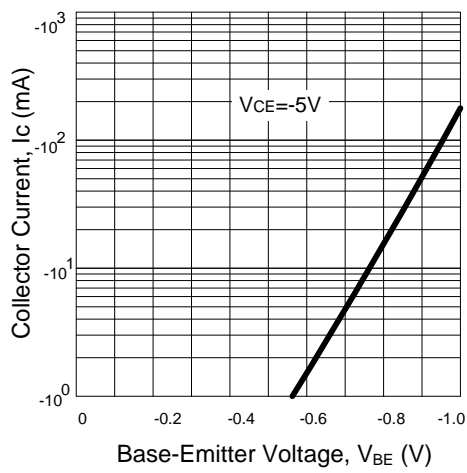


Fig.4 Saturation Voltage

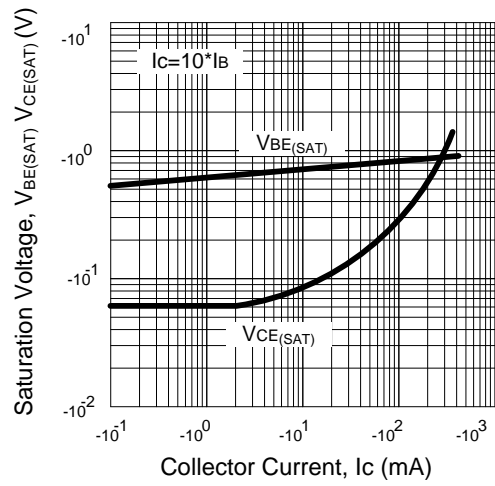
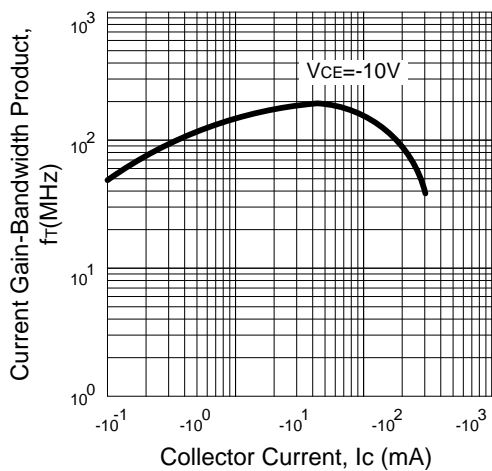


Fig.5 Current Gain-Bandwidth Product



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