



MMBT5551

NPN SILICON TRANSISTOR

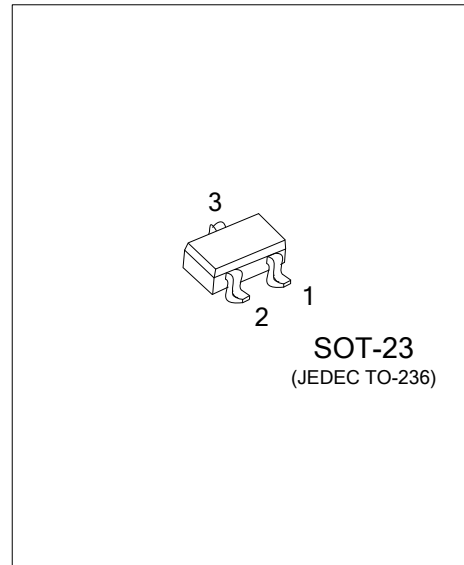
HIGH VOLTAGE SWITCHING TRANSISTOR

DESCRIPTION

The UTC **MMBT5551** is a high voltage fast-switching NPN power transistor. It is characterized with high breakdown voltage, high current gain and high switching speed.

FEATURES

- * High Collector-Emitter Voltage: $V_{CE0}=160V$
- * High current gain



ORDERING INFORMATION

Ordering Number	Package	Pin Assignment			Packing
		1	2	3	
MMBT5551G-x-AE3-R	SOT-23	E	B	C	Tape Reel

Note: Pin Assignment: E: Emitter B: Base C: Collector

<p>MMBT5551G-x-AE3-R</p>	<p>(1) R: Tape Reel (2) AE3: SOT-23 (3) x: refer to Classification of h_{FE} (4) G: Halogen Free and Lead Free</p>
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MARKING



MMBT5551

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

PARAMETER	SYMBOL	RATINGS	UNIT
Collector -Base Voltage	V_{CBO}	180	V
Collector -Emitter Voltage	V_{CEO}	160	V
Emitter -Base Voltage	V_{EBO}	6	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}	-40 ~ +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.

■ THERMAL DATA

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	θ_{JA}	357	$^\circ\text{C/W}$
Junction to Case	θ_{JC}	104	$^\circ\text{C/W}$

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

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Collector-Base Breakdown Voltage	V_{CBO}	$I_C=100\mu\text{A}, I_E=0$	180			V
Collector-Emitter Breakdown Voltage	V_{CEO}	$I_C=1\text{mA}, I_B=0$	160			V
Emitter-Base Breakdown Voltage	V_{EBO}	$I_E=10\mu\text{A}, I_C=0$	6			V
Collector Cut-off Current	I_{CBO}	$V_{CB}=120\text{V}, I_E=0$			50	nA
Emitter Cut-off Current	I_{EBO}	$V_{BE}=4\text{V}, I_C=0$			50	nA
DC Current Gain(note)	h_{FE}	$V_{CE}=5\text{V}, I_C=1\text{mA}$	80			
		$V_{CE}=5\text{V}, I_C=10\text{mA}$	80	160	400	
		$V_{CE}=5\text{V}, I_C=50\text{mA}$	80			
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$	$I_C=10\text{mA}, I_B=1\text{mA}$			0.15	V
		$I_C=50\text{mA}, I_B=5\text{mA}$			0.2	V
Base-Emitter Saturation Voltage	$V_{BE(SAT)}$	$I_C=10\text{mA}, I_B=1\text{mA}$			1	V
		$I_C=50\text{mA}, I_B=5\text{mA}$			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: $PW < 300\mu\text{s}$, 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

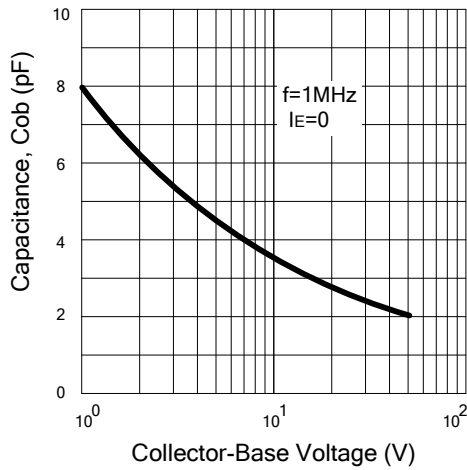


Fig.2 DC Current Gain

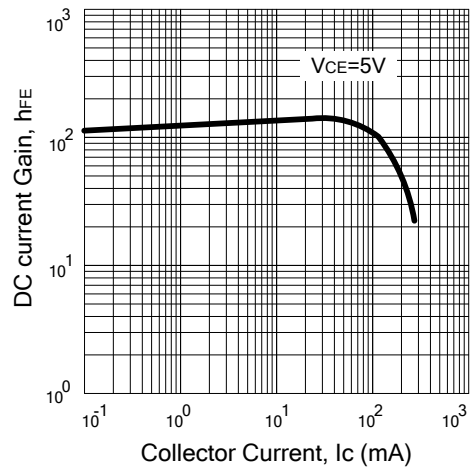


Fig.3 Base-Emitter on Voltage

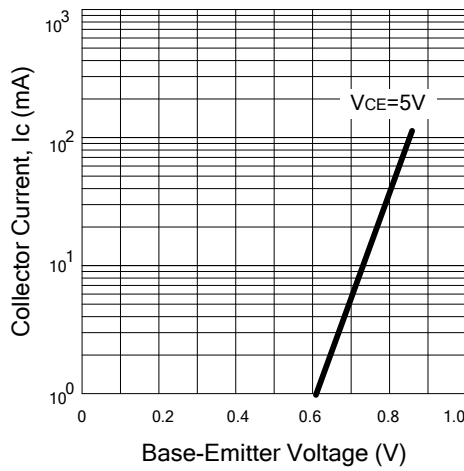


Fig.4 Saturation Voltage

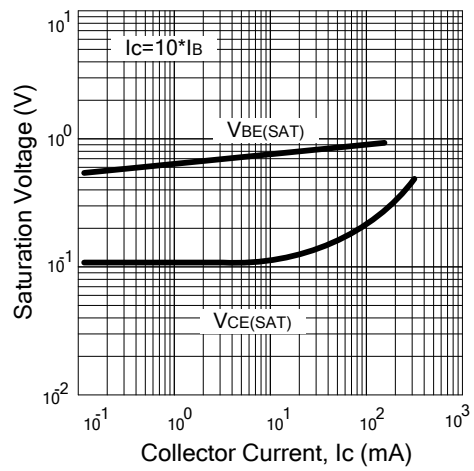
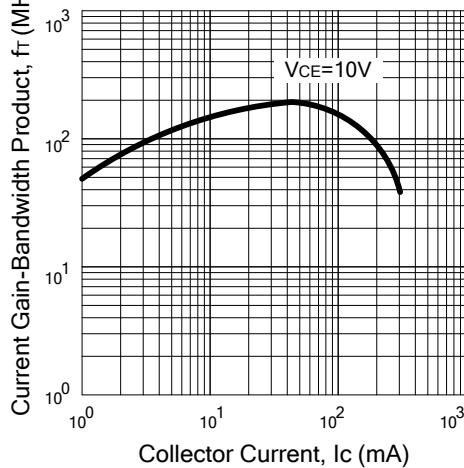
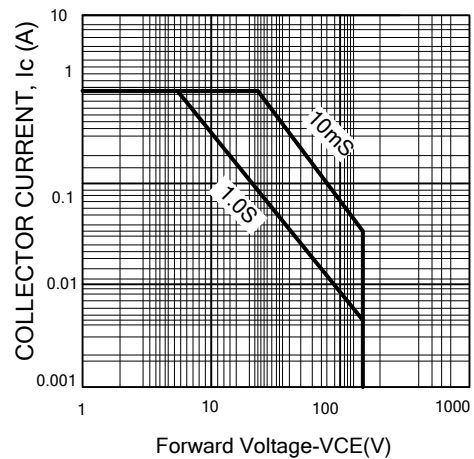


Fig.5 Current Gain-Bandwidth Product



SAFE OPERATING AREA



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