



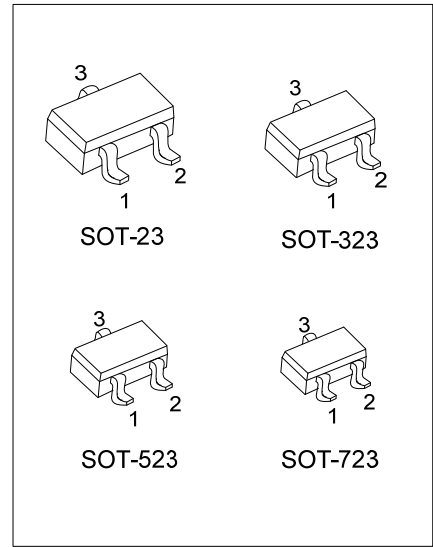
## MMBTH10

## NPN SILICON TRANSISTOR

### RF TRANSISTOR

#### DESCRIPTION

The UTC **MMBTH10** is designed for using as VHF and UHF oscillators and VHF Mixer in a tuner of a TV receiver.



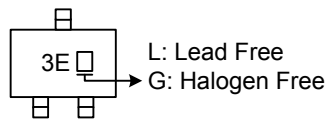
#### ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
MMBTH10L-x-AE3-R	MMBTH10G-x-AE3-R	SOT-23	B	E	C	Tape Reel
MMBTH10L-x-AL3-R	MMBTH10G-x-AL3-R	SOT-323	B	E	C	Tape Reel
MMBTH10L-x-AN3-R	MMBTH10G-x-AN3-R	SOT-523	B	E	C	Tape Reel
MMBTH10L-x-AQ3-R	MMBTH10G-x-AQ3-R	SOT-723	B	E	C	Tape Reel

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

<p>MMBTH10G-x-AE3-R</p> <p>(1) Packing Type (2) Package Type (3) Rank (4) Green Package</p>	<p>(1) R: Tape Reel (2) AE3: SOT-23, AL3: SOT-323, AN3: SOT-523 AQ3: SOT-723 (3) x: refer to Classification of <math>h_{FE}</math> (4) G: Halogen Free and Lead Free, L: Lead Free</p>
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#### MARKING



# MMBTH10

## NPN SILICON TRANSISTOR

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

PARAMETER	SYMBOL	RATINGS	UNIT
Collector-Base Voltage	$V_{CB0}$	30	V
Collector-Emitter Voltage	$V_{CEO}$	25	V
Emitter-Base Voltage	$V_{EBO}$	3	V
Power Dissipation	SOT-23	225	mW
	SOT-323/SOT-523	200	mW
	SOT-723	150	mW
Collector current	$I_C$	50	mA
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.

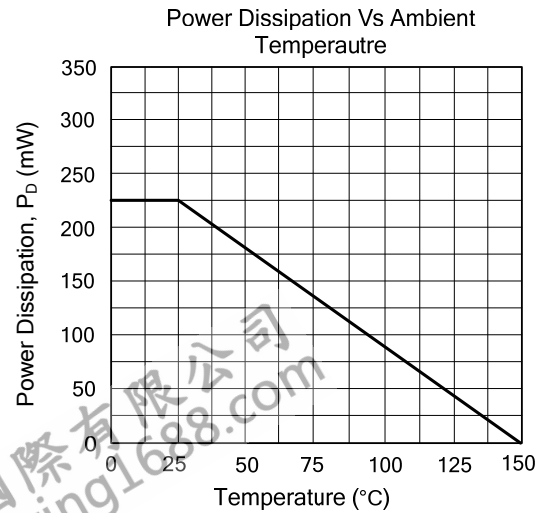
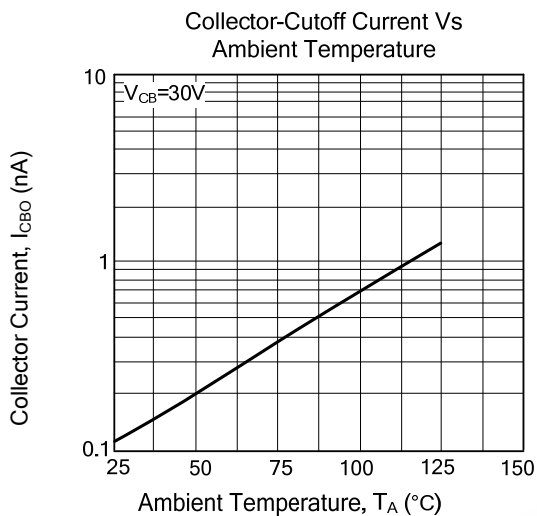
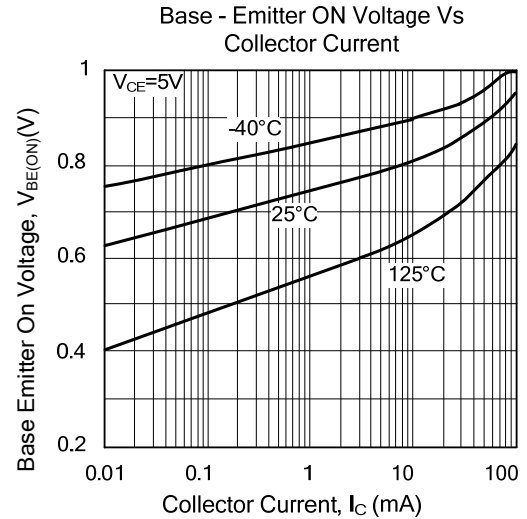
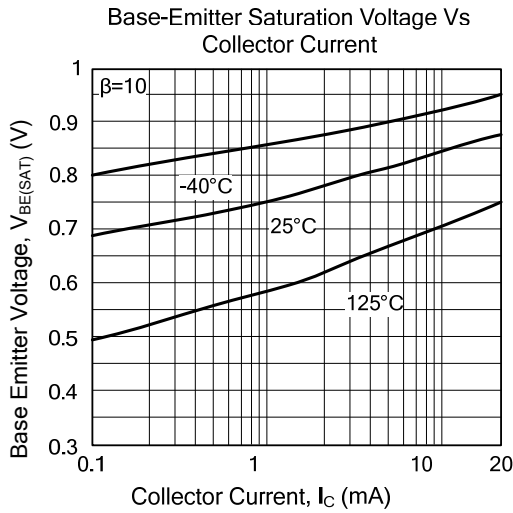
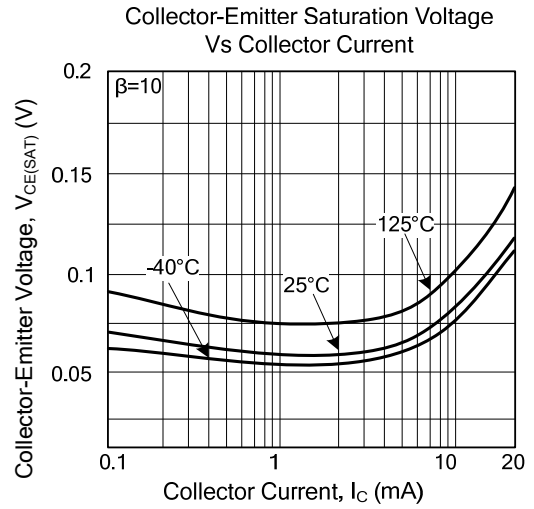
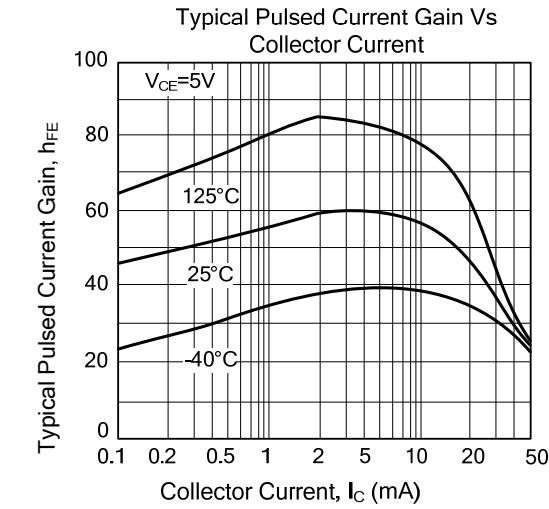
### ■ ELECTRICAL CHARACTERISTICS ( $T_A=25^{\circ}\text{C}$ unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Collector-Base Breakdown Voltage	$BV_{CB0}$	$I_C=100\mu\text{A}$	30			V
Collector-Emitter Breakdown Voltage	$BV_{CEO}$	$I_C=1\text{mA}$	25			V
Emitter-Base Breakdown Voltage	$BV_{EBO}$	$I_E=10\mu\text{A}$	3			V
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$	$I_C=4\text{mA}, I_B=400\mu\text{A}$			500	mV
Base-Emitter on Voltage	$V_{BE(ON)}$	$V_{CE}=10\text{V}, I_C=4\text{mA}$			950	mV
Collector Cut-off Current	$I_{CBO}$	$V_{CB}=25\text{V}$			100	nA
Emitter Cut-off Current	$I_{EBO}$	$V_{EB}=2\text{V}$			100	nA
DC Current Gain	$h_{FE}$	$V_{CE}=10\text{V}, I_C=4\text{mA}$	60			
Output Capacitance	$C_{ob}$	$V_{CB}=10\text{V}, f=1\text{MHZ}$			0.7	pF
Current Gain Bandwidth Product	$f_T$	$V_{CE}=10\text{V}, I_C=4\text{mA}, f=100\text{MHZ}$	650			MHz

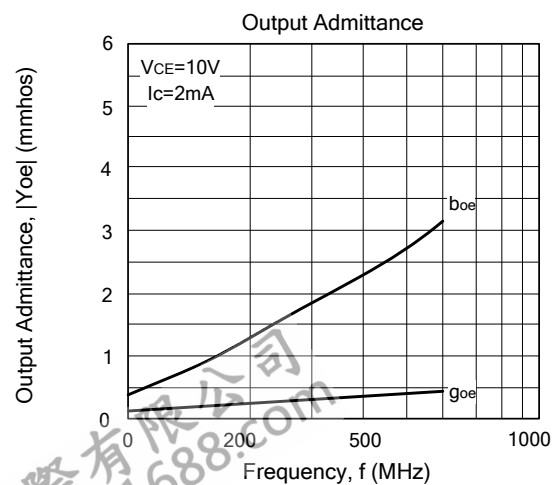
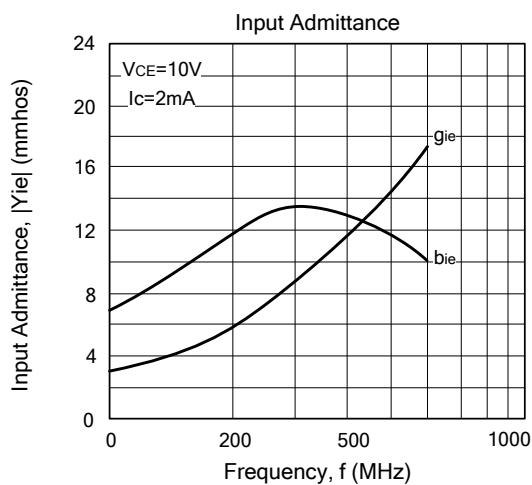
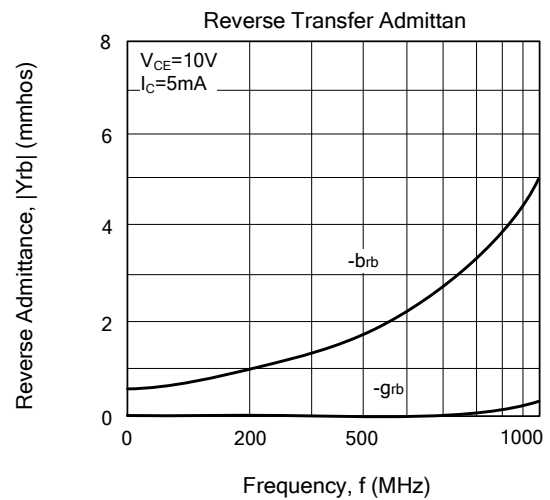
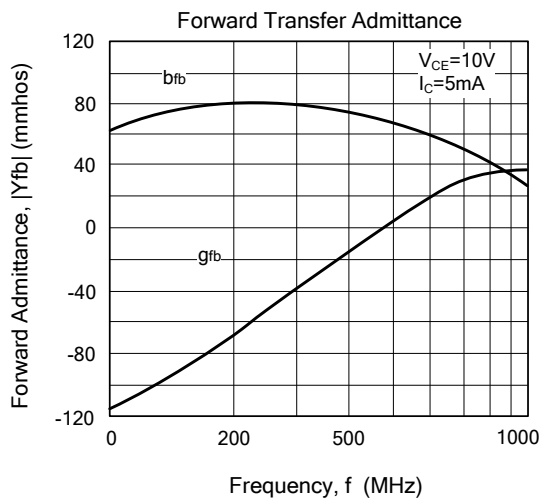
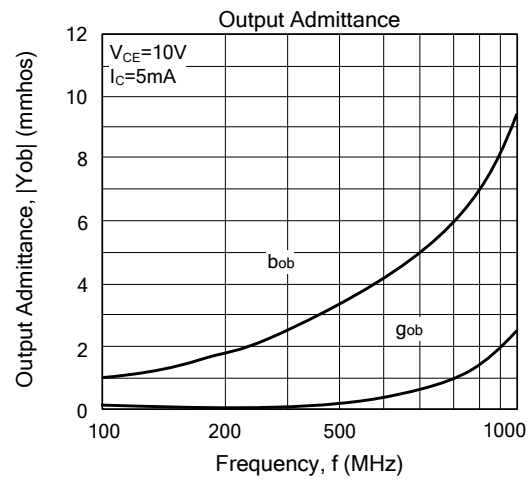
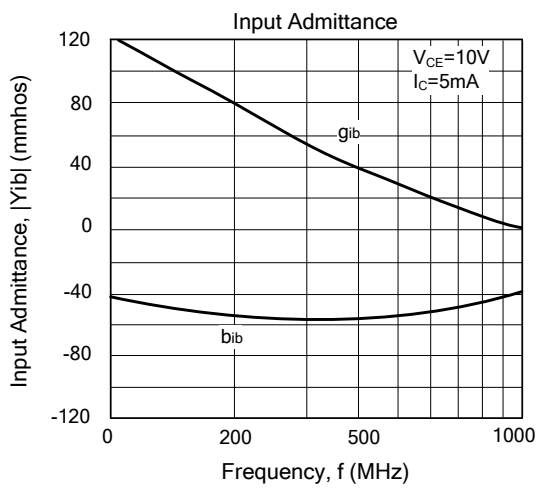
### ■ CLASSIFICATION OF $h_{FE}$

RANK	A	B	C
RANGE	60-100	90-130	120-200

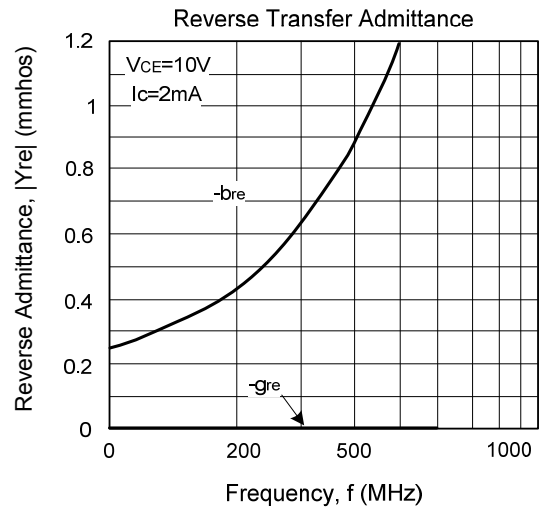
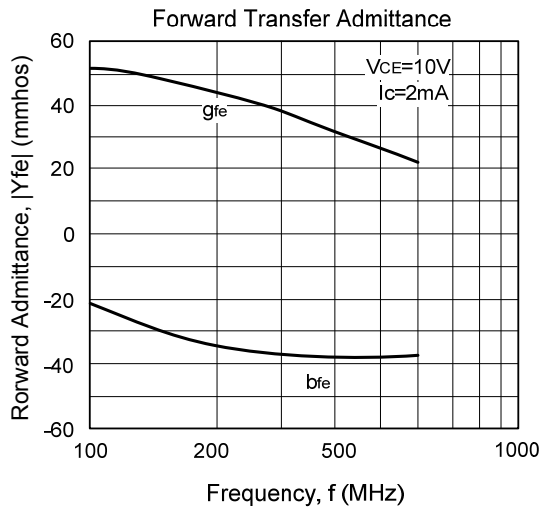
## TYPICAL CHARACTERISTICS



■ TYPICAL CHARACTERISTICS (Cont.)



■ TYPICAL CHARACTERISTICS (Cont.)



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