



# MMBT945

## NPN SILICON TRANSISTOR

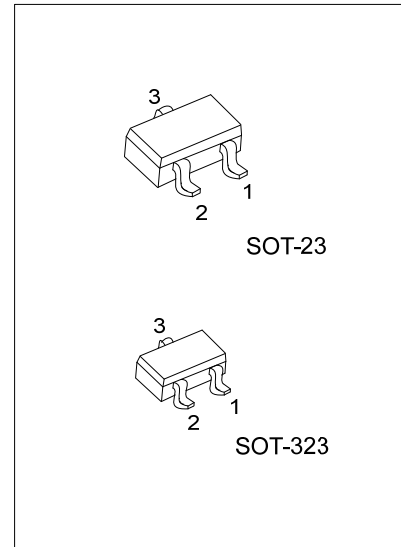
AUDIO FREQUENCY  
AMPLIFIER HIGH FREQUENCY  
OSC NPN TRANSISTOR

### DESCRIPTION

The UTC **MMBT945** is an audio frequency amplifier high frequency OSC NPN transistor.

### FEATURES

- \* Collector-Emitter voltage:  
BV<sub>CBO</sub>=50V
- \* Collector current up to 150mA
- \* High h<sub>FE</sub> linearity
- \* Complimentary to UTC MMBT733



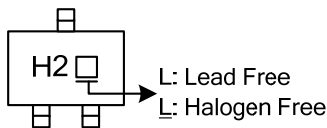
Lead-free: MMBT945L  
Halogen-free: MMBT945G

### ORDERING INFORMATION

Ordering Number			Package	Pin Assignment			Packing
Normal	Lead Free Plating	Halogen Free		1	2	3	
MMBT945-x-AE3-R	MMBT945L-x-AE3-R	MMBT945G-x-AE3-R	SOT-23	E	B	C	Tape Reel
MMBT945-x-AL3-R	MMBT945L-x-AL3-R	MMBT945G-x-AL3-R	SOT-323	E	B	C	Tape Reel

<p>MMBT945L-x-AE3-R</p> <p>(1)Packing Type (2)Package Type (3)Rank (4)Lead Plating</p>	<p>(1) R: Tape Reel (2) AE3: SOT-23, AL3: SOT-323 (3) x: refer to Classification of h<sub>FE</sub> (4) G: Halogen Free, L: Lead Free, Blank: Pb/Sn</p>
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### MARKING



# MMBT945

## NPN SILICON TRANSISTOR

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

PARAMETER	SYMBOL	RATING	UNIT
Collector-Base Voltage	$V_{CBO}$	60	V
Collector-Emitter Voltage	$V_{CEO}$	50	V
Emitter-Base Voltage	$V_{EBO}$	5	V
Collector Dissipation( $T_a=25^\circ\text{C}$ )	$P_C$	200	mW
Collector Current	$I_C$	150	mA
Base Current	$I_B$	50	mA
Junction Temperature	$T_J$	125	$^\circ\text{C}$
Storage Temperature	$T_{STG}$	-55 ~ +125	$^\circ\text{C}$

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)

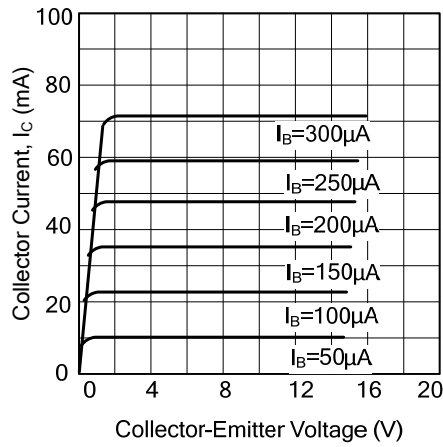
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Collector-Base Breakdown Voltage	$BV_{CBO}$	$I_C=100\mu\text{A}$ , $I_E=0$	60			V
Collector-Emitter Breakdown Voltage	$BV_{CEO}$	$I_C=10\text{mA}$ , $I_B=0$	50			V
Collector Cut-Off Current	$I_{CBO}$	$V_{CB}=40\text{V}$ , $I_E=0$			100	nA
Emitter Cut-Off Current	$I_{EBO}$	$V_{EB}=3\text{V}$ , $I_C=0$			100	nA
DC Current Gain	$h_{FE}$	$V_{CE}=6\text{V}$ , $I_C=1\text{mA}$	90		600	
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$	$I_C=100\text{mA}$ , $I_B=10\text{mA}$		0.1	0.3	V
Current Gain Bandwidth Product	$f_T$	$V_{CE}=10\text{V}$ , $I_C=50\text{mA}$	100	190		MHz
Output Capacitance	$C_{ob}$	$V_{CB}=10\text{V}$ , $I_E=0$ , $f=1\text{MHz}$		2.0	3.0	pF
Noise Figure	NF	$I_C=0.1\text{mA}$ , $V_{CE}=6\text{V}$ $R_G=10\text{k}\Omega$ , $f=100\text{Hz}$		4.0	6.0	dB

■ CLASSIFICATION OF  $h_{FE}$

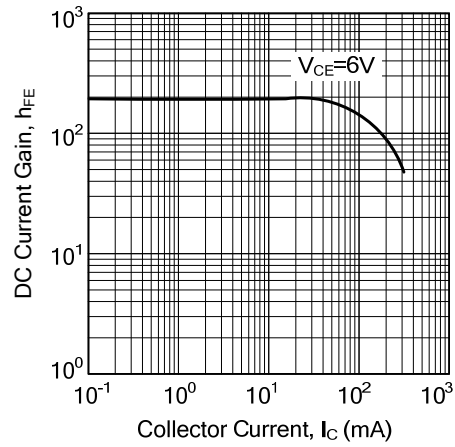
RANK	R	Q	P	K
RANGE	90-180	135-270	200-400	300-600

## TYPICAL CHARACTERISTICS

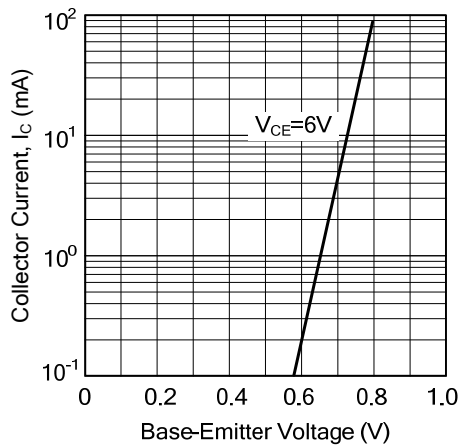
Static Characteristics



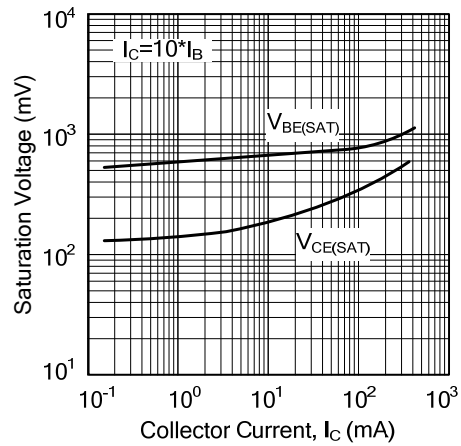
DC Current Gain



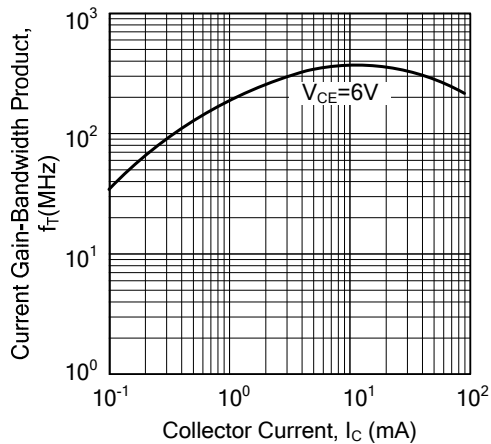
Base-Emitter on Voltage



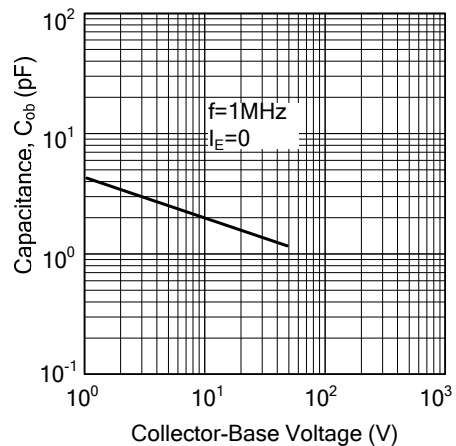
Saturation Voltage



Current Gain-Bandwidth Product



Collector Output Capacitance



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