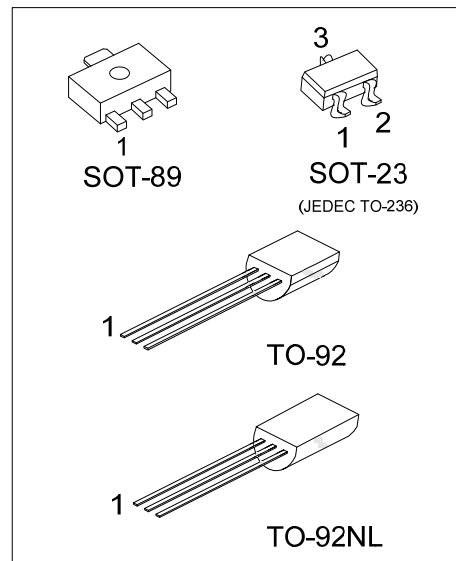




# HE8050

## NPN SILICON TRANSISTOR

LOW VOLTAGE HIGH  
CURRENT SMALL SIGNAL  
NPN TRANSISTOR



### DESCRIPTION

The UTC **HE8050** is a low voltage high current small signal NPN transistor, designed for Class B push-pull 2W audio amplifier for portable radio and general purpose applications.

### FEATURES

- \*Collector current up to 1.5A
- \*Collector-Emitter voltage up to 25V
- \*Complimentary to UTC HE8550

### ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
HE8050L-x-AB3-R	HE8050G-x-AB3-R	SOT-89	B	C	E	Tape Reel
HE8050L-x-AE3-R	HE8050G-x-AE3-R	SOT-23	B	E	C	Tape Reel
HE8050L-x-T92-B	HE8050G-x-T92-B	TO-92	E	C	B	Tape Box
HE8050L-x-T92-K	HE8050G-x-T92-K	TO-92	E	C	B	Bulk
HE8050L-x-T9N-B	HE8050G-x-T9N-B	TO-92NL	E	C	B	Tape Box
HE8050L-x-T9N-K	HE8050G-x-T9N-K	TO-92NL	E	C	B	Bulk

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

<p>HE8050G-x-AB3-R</p>	<p>(1) R: Tape Reel, B: Tape Box, K: Bulk                  (2) AB3: SOT-89, AE3: SOT-23, T92: TO-92, T9N: TO-92NL                  (3) x: refer to Classification of <math>h_{FE2}</math>                  (4) G: Halogen Free and Lead Free, L: Lead Free</p>
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### MARKING

SOT-89	SOT-23
TO-92	TO-92NL

# HE8050

## NPN SILICON TRANSISTOR

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

PARAMETER		SYMBOL	RATINGS	UNIT
Collector-Base Voltage		$V_{CBO}$	40	V
Collector-Emitter Voltage		$V_{CEO}$	25	V
Emitter-Base Voltage		$V_{EBO}$	6	V
Collector Dissipation	SOT-23	$P_C$	350	mW
	SOT-89		500	mW
	TO-92		1	W
	TO-92NL			
Collector Current		$I_C$	1.5	A
Junction Temperature		$T_J$	+150	$^\circ\text{C}$
Storage Temperature		$T_{STG}$	-65 ~ +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 CHARACTERISTICS

PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Case	SOT-23	$\theta_{JC}$	110	$^\circ\text{C/W}$
	SOT-89		40	
	TO-92		80	
	TO-92NL		78	

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

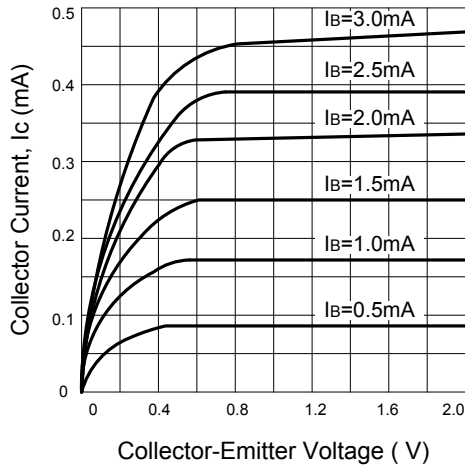
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Collector-Base Breakdown Voltage	$BV_{CBO}$	$I_C=100\mu\text{A}, I_E=0$	40			V
Collector-Emitter Breakdown Voltage	$BV_{CEO}$	$I_C=2\text{mA}, I_B=0$	25			V
Emitter-Base Breakdown Voltage	$BV_{EBO}$	$I_E=100\mu\text{A}, I_C=0$	6			V
Collector Cut-Off Current	$I_{CBO}$	$V_{CB}=35\text{V}, I_E=0$			100	nA
Emitter Cut-Off Current	$I_{EBO}$	$V_{EB}=6\text{V}, I_C=0$			100	nA
DC Current Gain	$h_{FE1}$	$V_{CE}=1\text{V}, I_C=5\text{mA}$	45	135		
	$h_{FE2}$	$V_{CE}=1\text{V}, I_C=100\text{mA}$	85	160	500	
	$h_{FE3}$	$V_{CE}=1\text{V}, I_C=800\text{mA}$	40	110		
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$	$I_C=800\text{mA}, I_B=80\text{mA}$			0.5	V
Base-Emitter Saturation Voltage	$V_{BE(SAT)}$	$I_C=800\text{mA}, I_B=80\text{mA}$			1.2	V
Base-Emitter Saturation Voltage	$V_{BE}$	$V_{CE}=1\text{V}, I_C=10\text{mA}$			1.0	V
Current Gain Bandwidth Product	$f_T$	$V_{CE}=10\text{V}, I_C=50\text{mA}$	100			MHz
Output Capacitance	$C_{ob}$	$V_{CB}=10\text{V}, I_E=0, f=1\text{MHz}$		9.0		pF

### ■ CLASSIFICATION of $h_{FE2}$

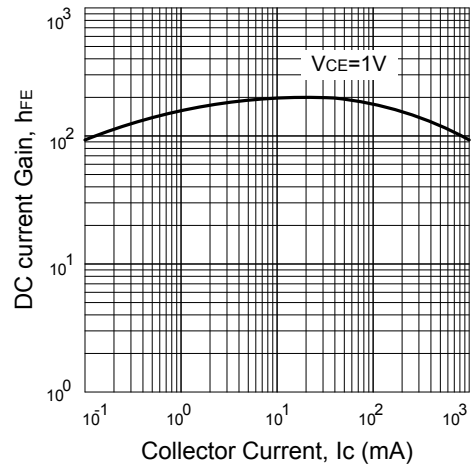
RANK	C	D	E
RANGE	120-200	160-300	250-500

## ■ TYPICAL CHARACTERISTICS

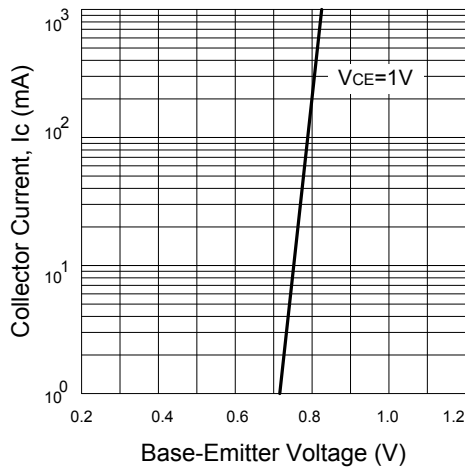
Static Characteristics



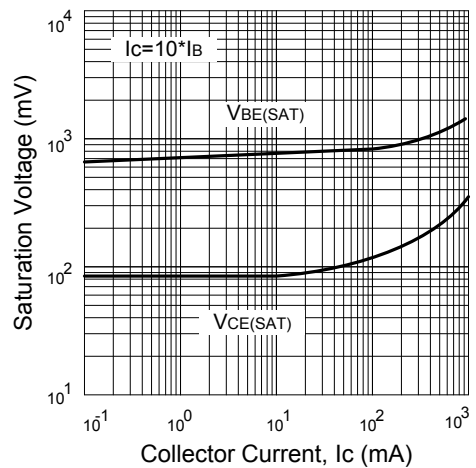
DC Current Gain



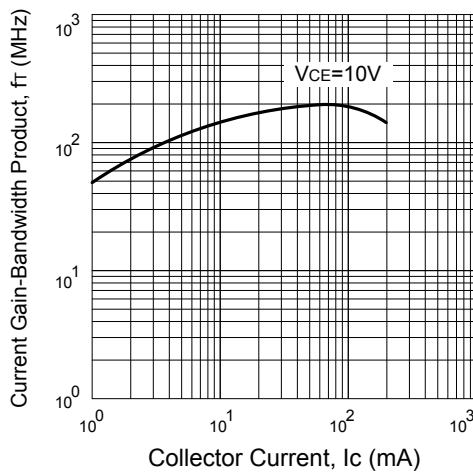
Base-Emitter on Voltage



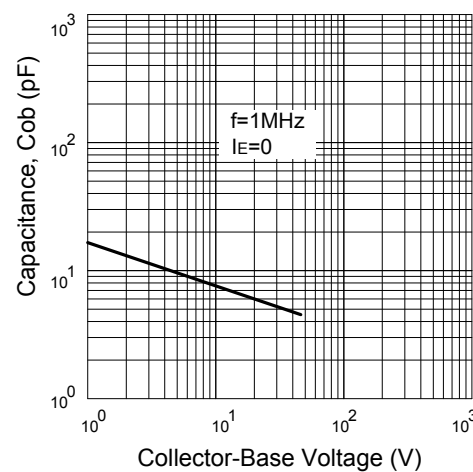
Saturation Voltage



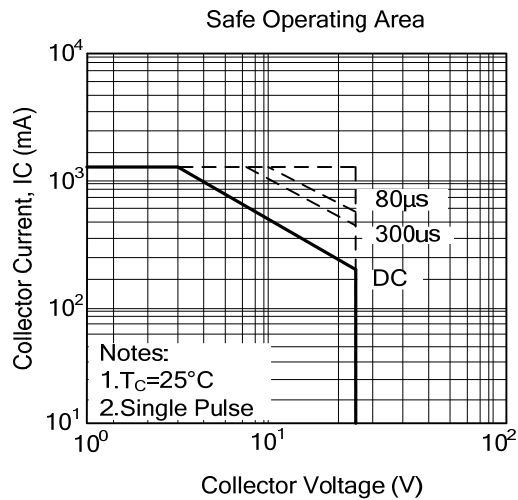
Current Gain-Bandwidth Product



Collector Output Capacitance



■ TYPICAL CHARACTERISTICS(Cont.)



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