



# UNISONIC TECHNOLOGIES CO., LTD

## 8050S

## NPN SILICON TRANSISTOR

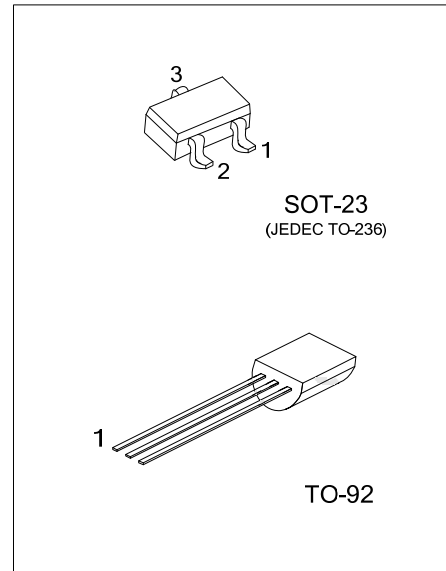
LOW VOLTAGE HIGH  
CURRENT SMALL SIGNAL  
NPN TRANSISTOR

### DESCRIPTION

The UTC **8050S** is a low voltage high current small signal NPN transistor, designed for Class B push-pull audio amplifier and general purpose applications.

### FEATURES

- \*Collector current up to 700mA
- \*Collector-Emitter voltage up to 20V
- \*Complementary to UTC **8550S**



### ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen-Free		1	2	3	
8050SL-x-AE3-R	8050SG-x-AE3-R	SOT-23	E	B	C	Tape Reel
8050SL-x-T92-B	8050SG-x-T92-B	TO-92	E	C	B	Tape Box
8050SL-x-T92-K	8050SG-x-T92-K	TO-92	E	C	B	Bulk

<p>8050SL-x-AE3-R</p> <p>(1)Packing Type (2)Package Type (3)Rank (4)Lead Free</p>	<p>(1) B: Tape Box, K: Bulk, R: Tape Reel (2) AE3: SOT-23, T92: TO-92 (3) x: refer to Classification of <math>h_{FE2}</math> (4) L: Lead Free, G: Halogen Free</p>
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### MARKING INFORMATION

PACKAGE	MARKING
SOT-23	<p>L: Lead Free G: Halogen Free</p>
TO-92	<p>UTC 8050S 1</p> <p>L: Lead Free G: Halogen Free Data Code</p>

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

PARAMETER		SYMBOL	RATINGS	UNIT
Collector-Base Voltage		$V_{\text{CBO}}$	30	V
Collector-Emitter Voltage		$V_{\text{CEO}}$	20	V
Emitter-Base Voltage		$V_{\text{EBO}}$	5	V
Collector Current		$I_{\text{C}}$	700	mA
Collector Dissipation( $T_A=25^{\circ}\text{C}$ )	SOT-23	$P_{\text{C}}$	350	mW
	TO-92		1	W
Junction Temperature		$T_{\text{J}}$	+150	$^{\circ}\text{C}$
Storage Temperature		$T_{\text{STG}}$	-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.

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

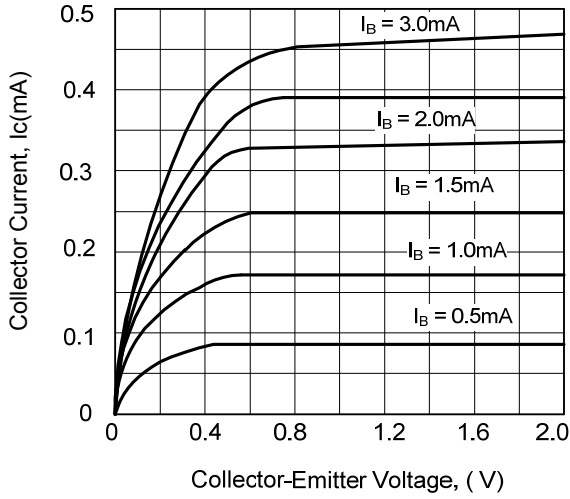
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Collector-Base Breakdown Voltage	$BV_{\text{CBO}}$	$I_{\text{C}} = 100\mu\text{A}, I_{\text{E}} = 0$	30			V
Collector-Emitter Breakdown Voltage	$BV_{\text{CEO}}$	$I_{\text{C}} = 1\text{mA}, I_{\text{B}} = 0$	20			V
Emitter-Base Breakdown Voltage	$BV_{\text{EBO}}$	$I_{\text{E}} = 100\mu\text{A}, I_{\text{C}} = 0$	5			V
Collector Cut-Off Current	$I_{\text{CBO}}$	$V_{\text{CB}} = 30\text{V}, I_{\text{E}} = 0$			1	$\mu\text{A}$
Emitter Cut-Off Current	$I_{\text{EBO}}$	$V_{\text{EB}} = 5\text{V}, I_{\text{C}} = 0$			100	nA
DC Current Gain (note)	$h_{\text{FE1}}$	$V_{\text{CE}} = 1\text{V}, I_{\text{C}} = 1\text{mA}$	100			
	$h_{\text{FE2}}$	$V_{\text{CE}} = 1\text{V}, I_{\text{C}} = 150\text{mA}$	120		400	
	$h_{\text{FE3}}$	$V_{\text{CE}} = 1\text{V}, I_{\text{C}} = 500\text{mA}$	40			
Collector-Emitter Saturation Voltage	$V_{\text{CE(SAT)}}$	$I_{\text{C}} = 500\text{mA}, I_{\text{B}} = 50\text{mA}$			0.5	V
Base-Emitter Saturation Voltage	$V_{\text{BE(SAT)}}$	$I_{\text{C}} = 500\text{mA}, I_{\text{B}} = 50\text{mA}$			1.2	V
Base-Emitter Saturation Voltage	$V_{\text{BE(SAT)}}$	$V_{\text{CE}} = 1\text{V}, I_{\text{C}} = 10\text{mA}$			1.0	V
Current Gain Bandwidth Product	$f_{\text{T}}$	$V_{\text{CE}} = 10\text{V}, I_{\text{C}} = 50\text{mA}$	100			MHz
Output Capacitance	Cob	$V_{\text{CB}} = 10\text{V}, I_{\text{E}} = 0, f = 1\text{MHz}$		9.0		pF

■ CLASSIFICATION OF  $h_{\text{FE2}}$

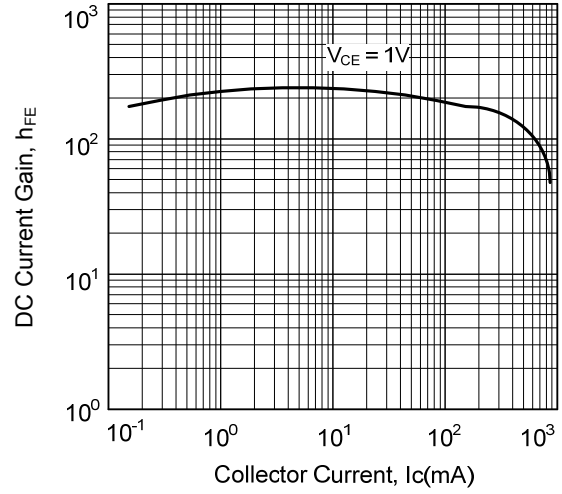
RANK	C	D	E
RANGE	120-200	160-300	280-400

■ TYPICAL CHARACTERISTICS

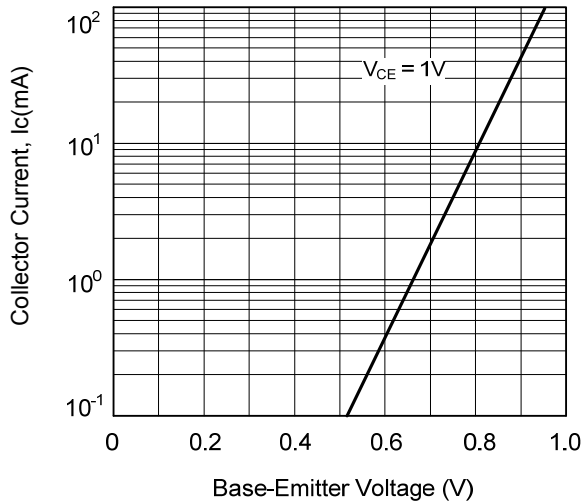
Static Characteristics



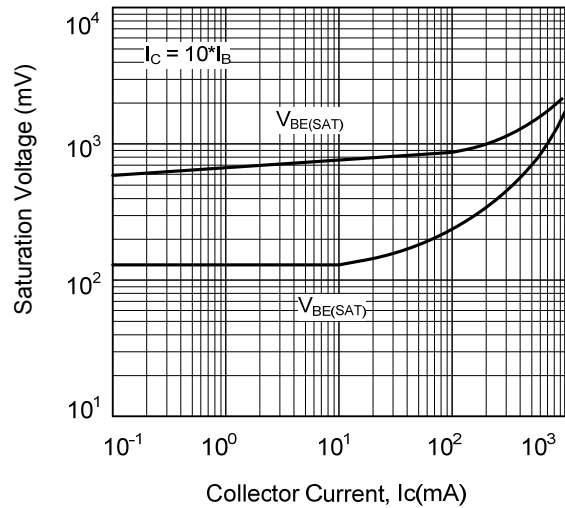
DC Current Gain



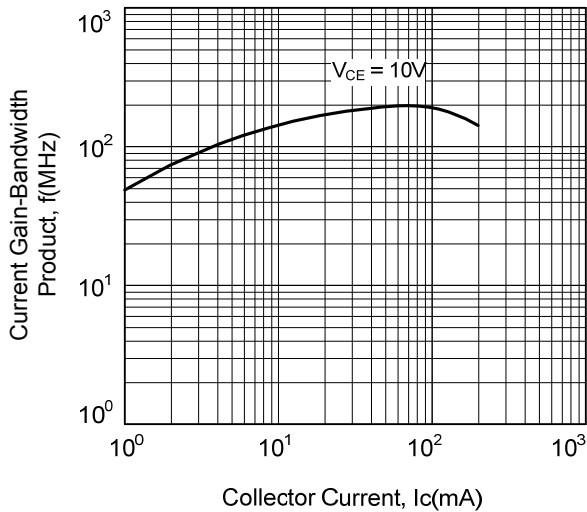
Base-Emitter on Voltage



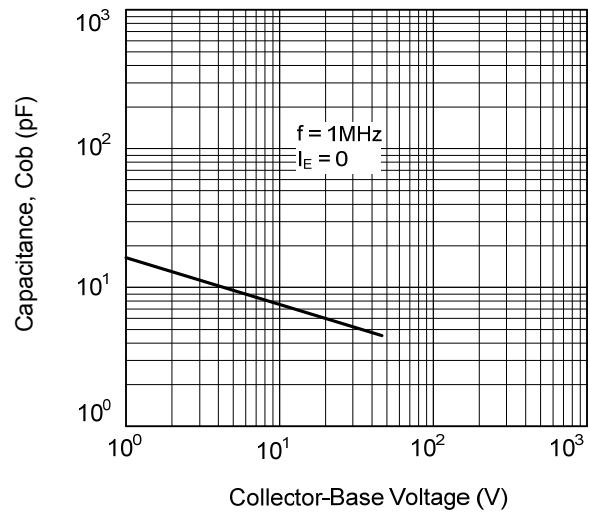
Saturation Voltage



Current Gain-Bandwidth Product



Collector Output Capacitance



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