



# 8050S

## NPN SILICON TRANSISTOR

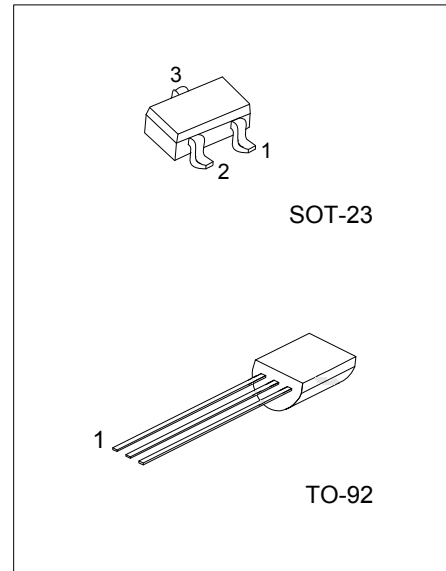
### LOW VOLTAGE HIGH CURRENT SMALL SIGNAL NPN TRANSISTOR

#### 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**

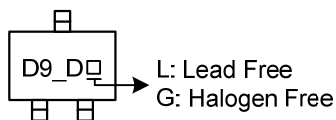


#### ORDERING INFORMATION

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
8050SL-x-T92-R	8050SG-x-T92-R	TO-92	E	C	B	Tape Reel

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



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

PARAMETER		SYMBOL	RATINGS	UNIT
Collector-Base Voltage		$V_{CBO}$	30	V
Collector-Emitter Voltage		$V_{CEO}$	20	V
Emitter-Base Voltage		$V_{EBO}$	5	V
Collector Current		$I_C$	700	mA
Collector Dissipation( $T_A=25^{\circ}\text{C}$ )	SOT-23	$P_C$	350	mW
	TO-92		1	W
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.

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

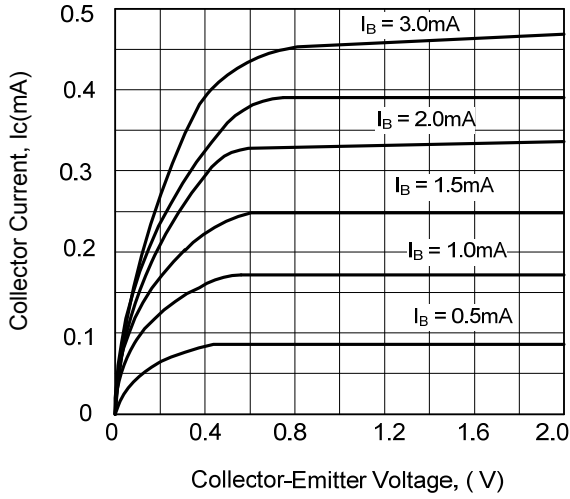
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Collector-Base Breakdown Voltage	$BV_{CBO}$	$I_C = 100\mu\text{A}, I_E = 0$	30			V
Collector-Emitter Breakdown Voltage	$BV_{CEO}$	$I_C = 1\text{mA}, I_B = 0$	20			V
Emitter-Base Breakdown Voltage	$BV_{EBO}$	$I_E = 100\mu\text{A}, I_C = 0$	5			V
Collector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

■ **CLASSIFICATION OF  $h_{FE2}$**

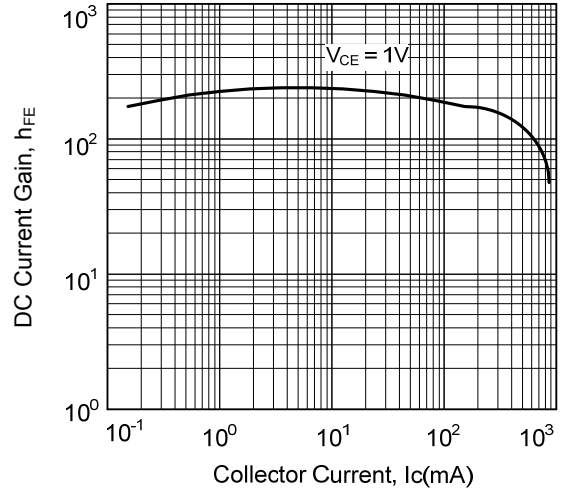
RANK	C	D	E
RANGE	120-200	160-300	280-400

■ TYPICAL CHARACTERISTICS

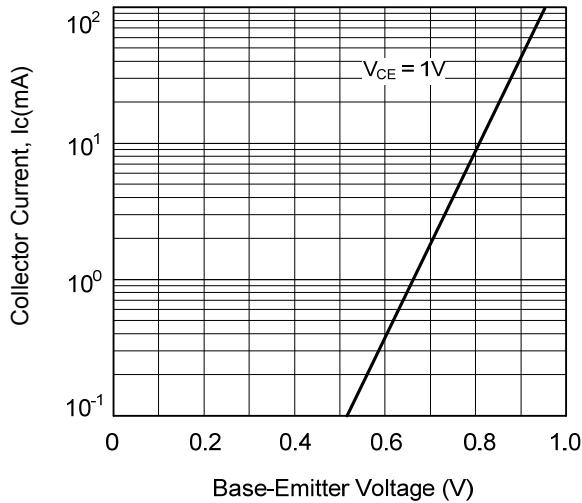
Static Characteristics



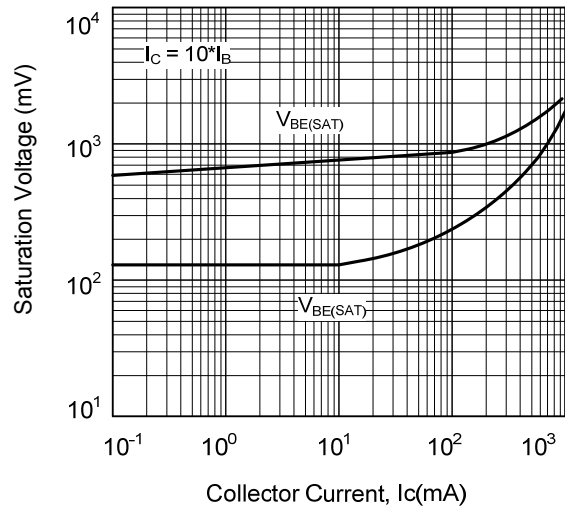
DC Current Gain



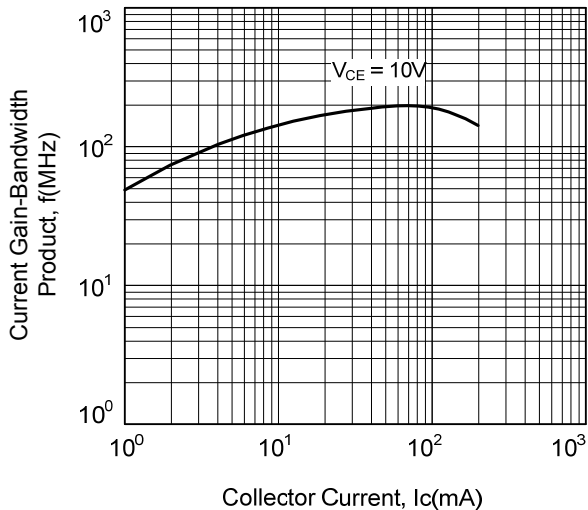
Base-Emitter on Voltage



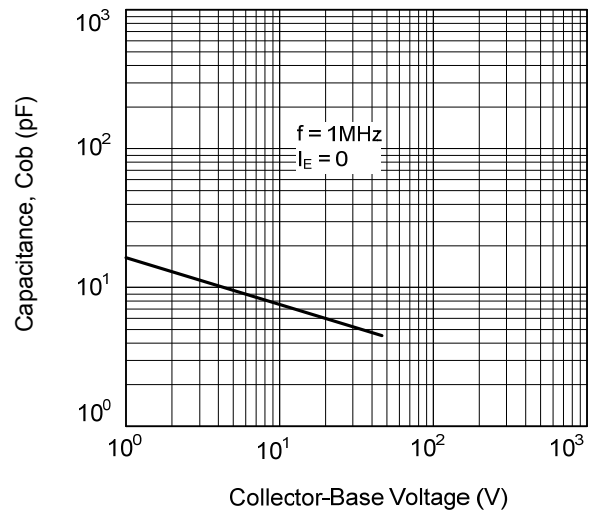
Saturation Voltage



Current Gain-Bandwidth Product



Collector Output Capacitance



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