

# NPN Epitaxial Silicon Transistor

## SS8050

### Features

- 2 W Output Amplifier of Portable Radios in Class B Push–Pull Operation
- Complementary to SS8550
- Collector Current:  $I_C = 1.5$  A
- These Devices are Pb–Free, Halogen Free/BFR Free and are RoHS Compliant

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

Parameter	Symbol	Value	Unit
Collector–Base Voltage	$V_{CBO}$	40	V
Collector–Emitter Voltage	$V_{CEO}$	25	V
Emitter–Base Voltage	$V_{EBO}$	6	V
Collector Current	$I_C$	1.5	A
Junction Temperature	$T_J$	150	$^\circ\text{C}$
Storage Temperature	$T_{STG}$	–65 to 150	$^\circ\text{C}$

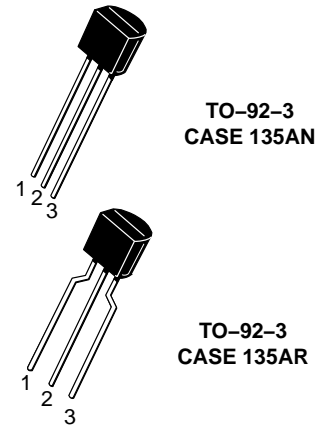
Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

### THERMAL CHARACTERISTICS (Note 1)

( $T_A = 25^\circ\text{C}$  unless otherwise noted)

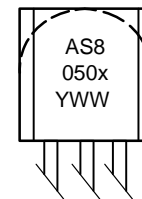
Parameter	Symbol	Value	Unit
Power Dissipation	$P_D$	1	W
Derate Above $25^\circ\text{C}$		8	mW/ $^\circ\text{C}$
Thermal Resistance, Junction–to–Ambient	$R_{\theta JA}$	125	$^\circ\text{C}/\text{W}$

1. PCB size: FR–4, 76 mm x 114 mm x 1.57 mm (3.0 inch x 4.5 inch x 0.062 inch) with minimum land pattern size.



1. Emitter
2. Base
3. Collector

### MARKING DIAGRAM



- S8050x = Specific Device Code  
 Line 1: A = Assembly Location  
 Line 2: x = B, C or D  
 Line 3: Y = Year  
 WW = Work Week

### ORDERING INFORMATION

See detailed ordering and shipping information on page 2 of this data sheet.

# SS8050

## ELECTRICAL CHARACTERISTICS (T<sub>C</sub> = 25°C unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV <sub>CBO</sub>	Collector–Base Breakdown Voltage	I <sub>C</sub> = 100 μA, I <sub>E</sub> = 0	40			V
BV <sub>CEO</sub>	Collector–Emitter Breakdown Voltage	I <sub>C</sub> = 2 mA, I <sub>B</sub> = 0	25			V
BV <sub>EBO</sub>	Emitter–Base Breakdown Voltage	I <sub>E</sub> = 100 μA, I <sub>C</sub> = 0	6			V
I <sub>CBO</sub>	Collector Cut–Off Current	V <sub>CB</sub> = 35 V, I <sub>E</sub> = 0			100	nA
I <sub>EBO</sub>	Emitter Cut–Off Current	V <sub>EB</sub> = 6 V, I <sub>C</sub> = 0			100	nA
h <sub>FE1</sub>	DC Current Gain	V <sub>CE</sub> = 1 V, I <sub>C</sub> = 5 mA	45			
h <sub>FE2</sub>		V <sub>CE</sub> = 1 V, I <sub>C</sub> = 100 mA	85		300	
h <sub>FE3</sub>		V <sub>CE</sub> = 1 V, I <sub>C</sub> = 800 mA	40			
V <sub>CE(sat)</sub>	Collector–Emitter Saturation Voltage	I <sub>C</sub> = 800 mA, I <sub>B</sub> = 80 mA			0.5	V
V <sub>BE(sat)</sub>	Base–Emitter Saturation Voltage	I <sub>C</sub> = 800 mA, I <sub>B</sub> = 80 mA			1.2	V
V <sub>BE(on)</sub>	Base–Emitter On Voltage	V <sub>CE</sub> = 1 V, I <sub>C</sub> = 10 mA			1	V
C <sub>ob</sub>	Output Capacitance	V <sub>CB</sub> = 10 V, I <sub>E</sub> = 0, f = 1 MHz		9.0		pF
f <sub>T</sub>	Current Gain Bandwidth Product	V <sub>CE</sub> = 10 V, I <sub>C</sub> = 50 mA	100			MHz

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

## h<sub>FE</sub> CLASSIFICATION

Classification	B	C	D
h <sub>FE2</sub>	85 ~ 160	120 ~ 200	160 ~ 300

## ORDERING INFORMATION

Part Number	Top Mark	Package	Shipping
SS8050BBU	S8050B	TO–92–3, case 135AN (Pb–Free)	10,000 Units/ Bulk Box
SS8050CBU	S8050C	TO–92–3, case 135AN (Pb–Free)	10,000 Units/ Bulk Box
SS8050CTA	S8050C	TO–92–3, case 135AR (Pb–Free)	2,000 Units/ Fan–Fold
SS8050DBU	S8050D	TO–92–3, case 135AN (Pb–Free)	10,000 Units/ Bulk Box
SS8050DTA	S8050D	TO–92–3, case 135AR (Pb–Free)	2,000 Units/ Fan–Fold

TYPICAL PERFORMANCE CHARACTERISTICS

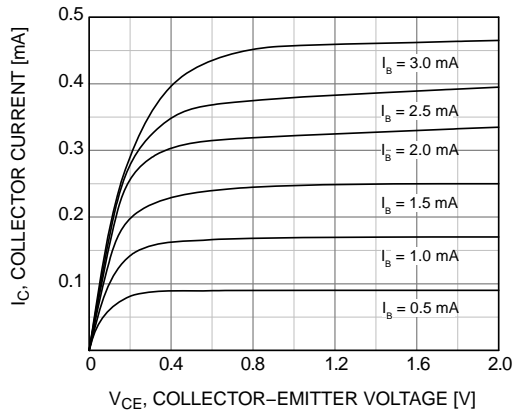


Figure 1. Static Characteristic

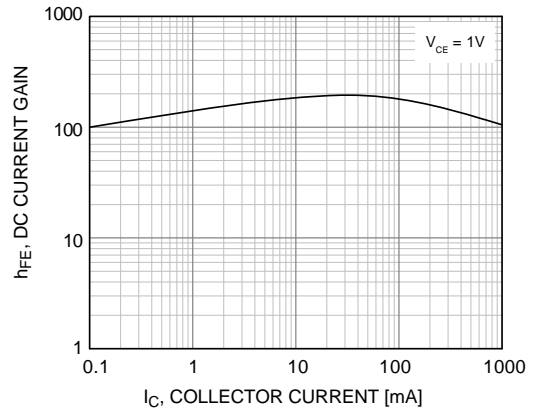


Figure 2. DC Current Gain

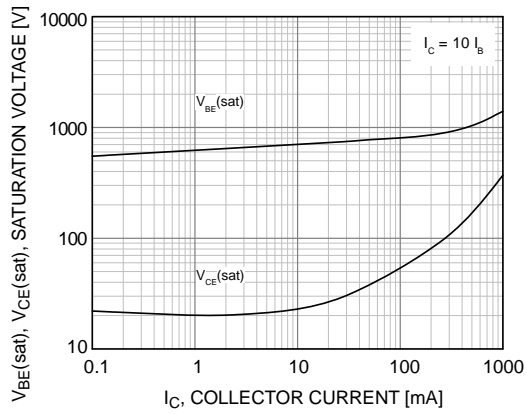


Figure 3. Base-Emitter Saturation Voltage and Collector-Emitter Saturation Voltage

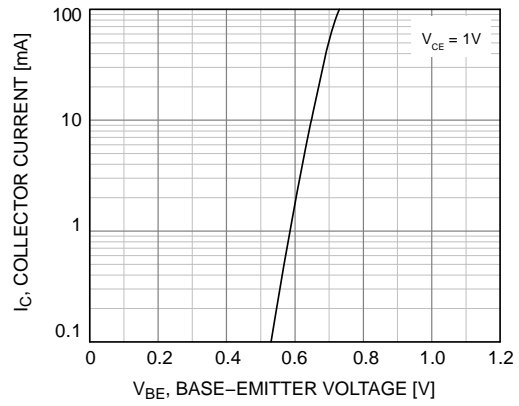


Figure 4. Base-Emitter On Voltage

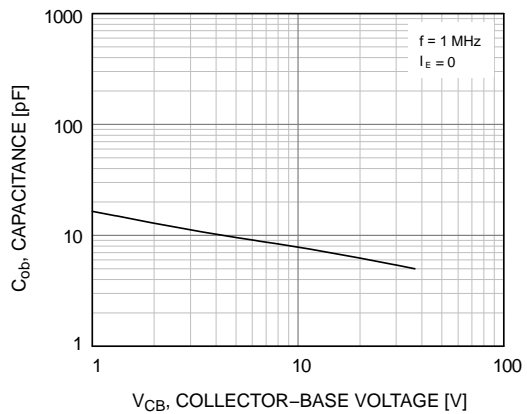


Figure 5. Collector Output Capacitance

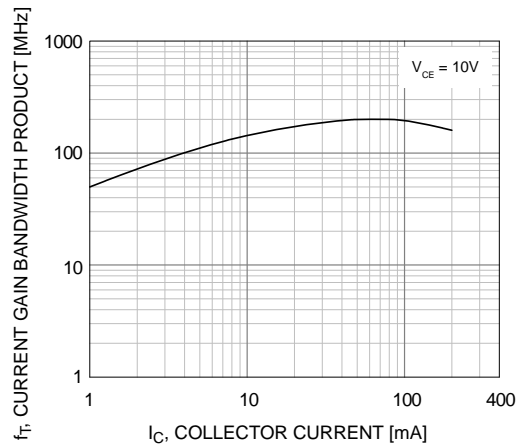
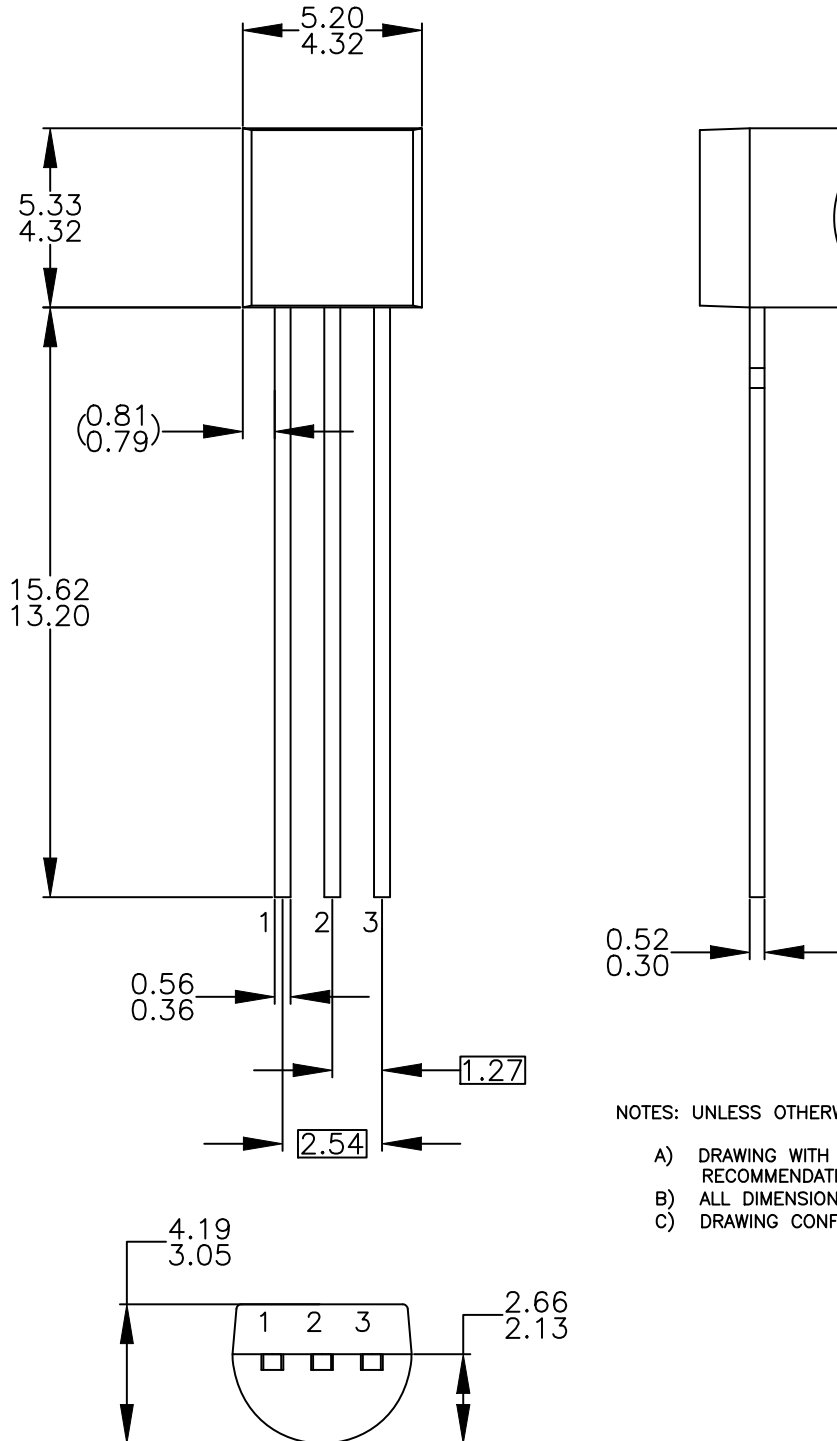


Figure 6. Current Gain Bandwidth Product

**MECHANICAL CASE OUTLINE**  
**PACKAGE DIMENSIONS**

TO-92 3 4.825x4.76  
CASE 135AN  
ISSUE O

DATE 31 JUL 2016



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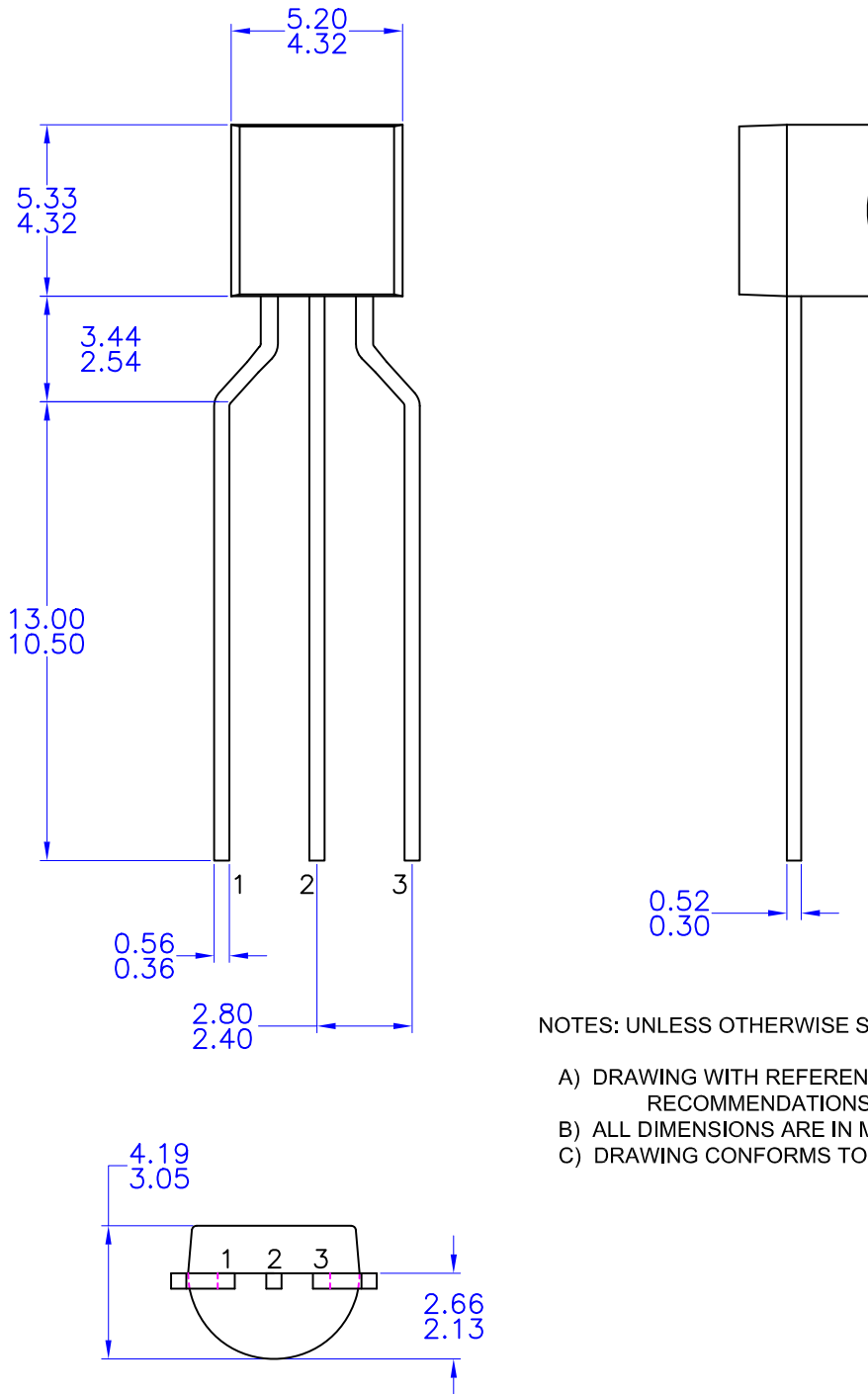
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**MECHANICAL CASE OUTLINE**  
**PACKAGE DIMENSIONS**

**TO-92 3 4.83x4.76 LEADFORMED**  
**CASE 135AR**  
**ISSUE O**

DATE 30 SEP 2016



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