Description

The SS8050W is an NPN transistor in a SOT-323 plastic package, designed as a complementary component to the SS8550W. It features low power dissipation and high current capability, making it suitable for general-purpose amplification and switching applications in compact electronic circuits. The device is marked with "Y1" and offers reliable performance across a wide temperature range.

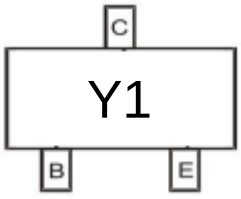
Features

- Complementary to SS8550W for versatile circuit design.
- Low thermal resistance (500C/W) for efficient heat dissipation.
- High collector current capability (1.5A) for robust switching and amplification
- Wide operating temperature range(-55C to +150C) for harsh environments.
- SOT-323 package for small form-factor, surface-mount applications.

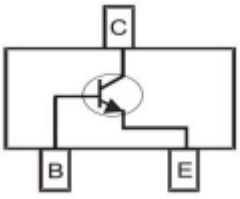
Applications

- General-purpose amplification in audio and signal processing circuits.
- Switching applications in power management and control systems.
- DC-to-DC converters and voltage regulators.
- Portable electronics and battery-powered devices requiring low power consumption.

Marking Diagram



Circuit Diagram



Ordering Information

DEVICE	PACKAGE
SS8050W	3000/Tape & Reel

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Absolute Maximum Ratings (T_A=25℃ unless otherwise specified)

Symbol	Parameter	Value	Unit
V_{CBO}	Collector-Base Voltage	40	V
V_{CEO}	Collector-Emitter Voltage	25	V
V_{EBO}	Emitter-Base Voltage	5	V
I_C	Collector Current	1.5	A
P_C	Collector Power Dissipation	250	mW
$R_{\Theta JA}$	Thermal Resistance From Junction To Ambient	500	℃/W
T_J,T_{stg}	Operation Junction and Storage Temperature Range	-55～+150	℃

Electrical Characteristics (T_A=25℃ unless otherwise specified)

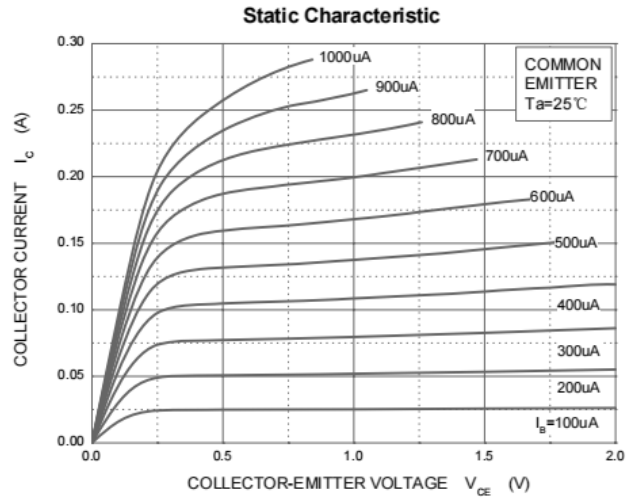
Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Collector-base breakdown voltage	$V_{(BR)CBO}$	I_C= 100μA, I_E=0	40			V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	I_C= 0.1mA, I_B=0	25			V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	I_E=100μA, I_C=0	5			V
Collector cut-off current	I_{CBO}	V_{CB}=40V, I_E=0			0.1	μA
Collector cut-off current	I_{CEO}	V_{CE}=20V, I_E=0			0.1	μA
Emitter cut-off current	I_{EBO}	V_{EB}= 5V, I_C=0			0.1	μA
DC current gain	$h_{FE(1)}$	V_{CE}=1V, I_C= 100mA	120		400	
	$h_{FE(2)}$	V_{CE}=1V, I_C= 800mA	40			
Collector-emitter saturation voltage	$V_{CE(sat)}$	I_C=800mA, I_B= 80mA			0.5	V
Base-emitter saturation voltage	$V_{BE(sat)}$	I_C=800mA, I_B= 80mA			1.2	V
Transition frequency	f_T	V_{CE}=10V, I_C= 50mA, f=30MHz	100			MHz
Collector output capacitance	C_{ob}	V_{CB}=10V,I_E=0,f=1MHz			15	pF

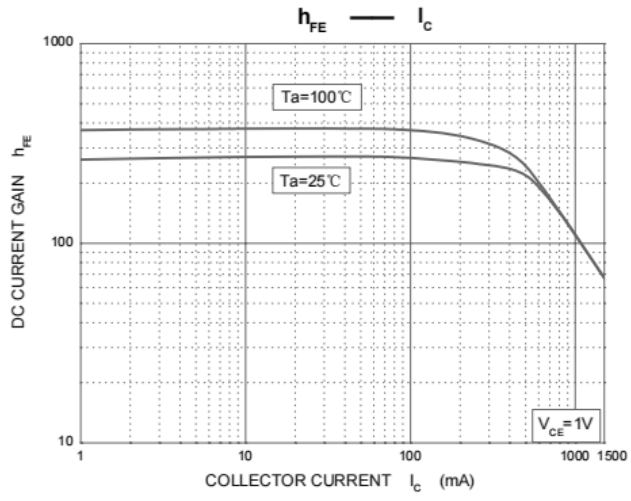
CLASSIFICATION OF h_{FE}

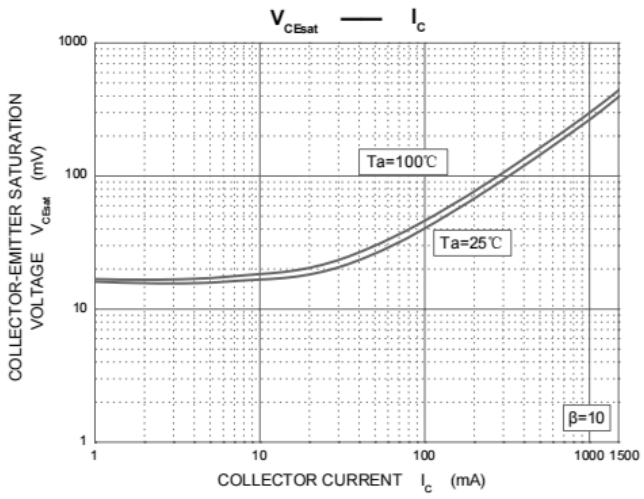
Rank	L	H	J
Range	120-200	200-350	300-400

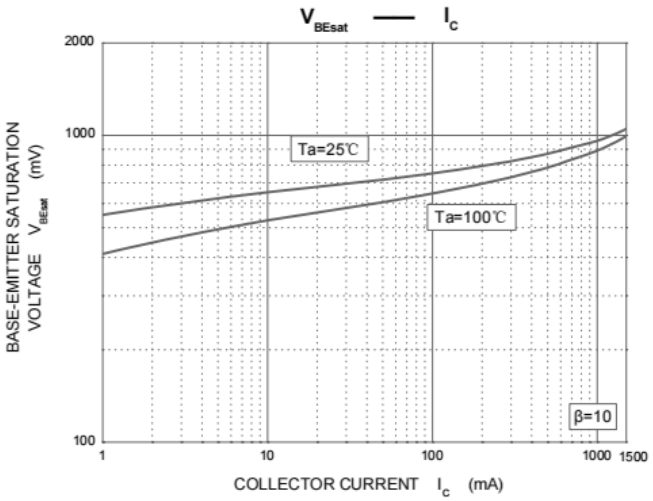
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Typical Performance Curves

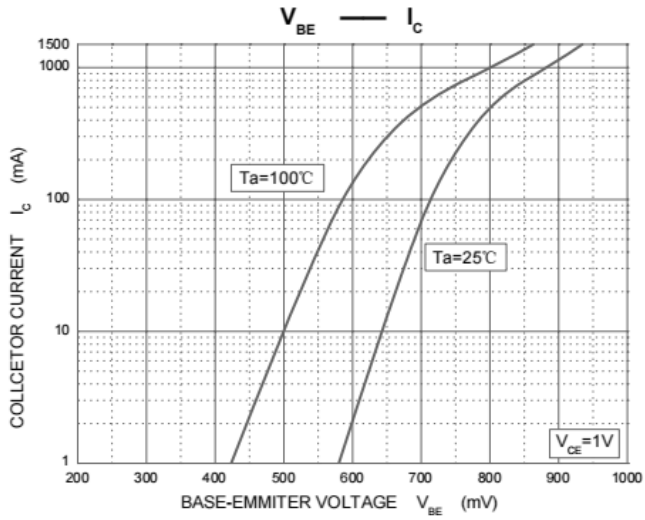


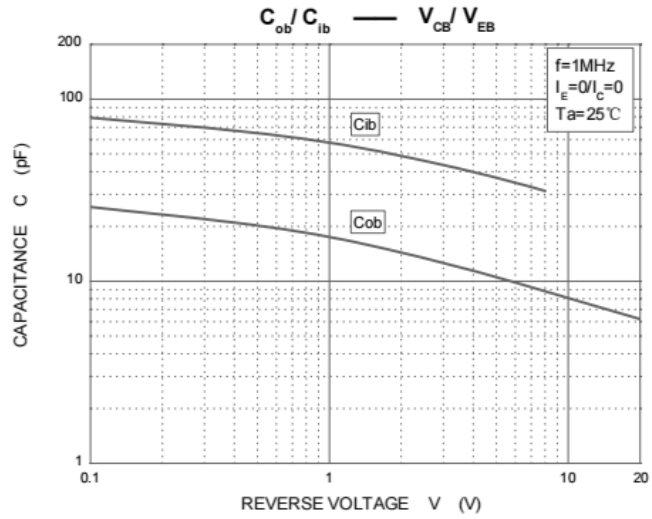


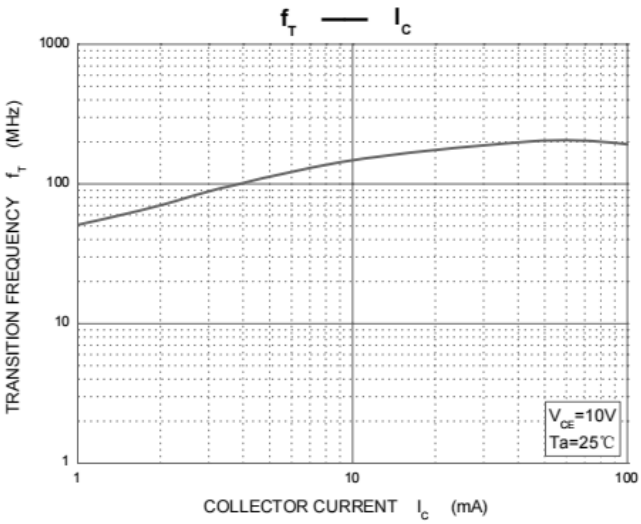


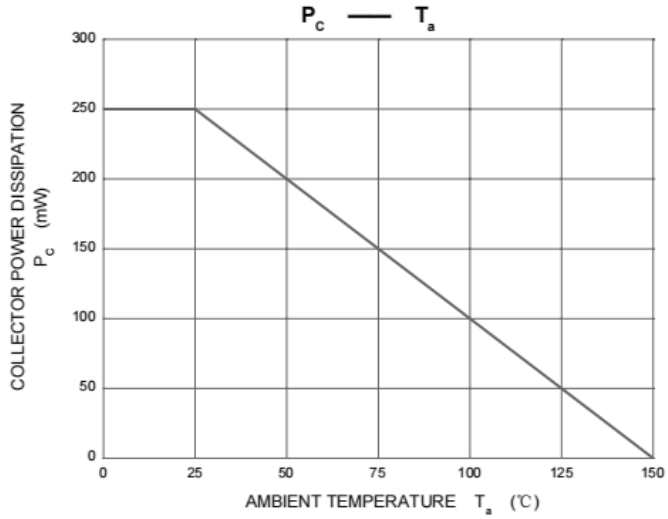


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V_{BE} —— I_C
COLLCETOR CURRENT I_C (mA)
1500
1000
100
10
1
Ta=100℃
Ta=25℃
V_{CE}=1V
200 300 400 500 600 700 800 900 1000
BASE-EMMITER VOLTAGE V_{BE} (mV)

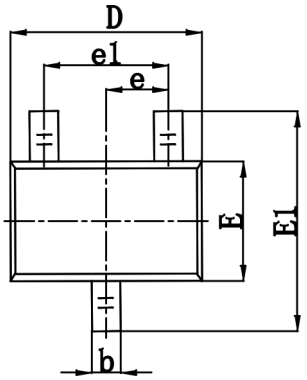

C_{ob} / C_{ib} —— V_{CB} / V_{EB}
CAPACITANCE C (pF)
200
100
10
1
f=1MHz
I_E=0/I_C=0
Ta=25℃
Cib
Cob
0.1 1 10 20
REVERSE VOLTAGE V (V)

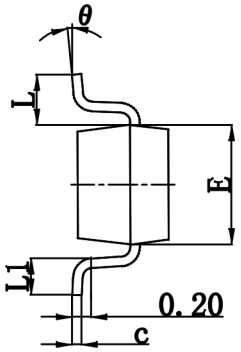

f_T —— I_C
TRANSITION FREQUENCY f_T (MHz)
1000
100
10
1
V_{CE}=10V
Ta=25℃
1 10 100
COLLECTOR CURRENT I_C (mA)

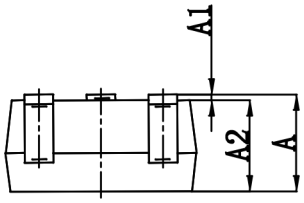

P_C —— T_a
COLLECTOR POWER DISSIPATION P_C (mW)
300
250
200
150
100
50
0
0 25 50 75 100 125 150
AMBIENT TEMPERATURE T_a (℃)

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SOT-323 Package Outline Dimensions

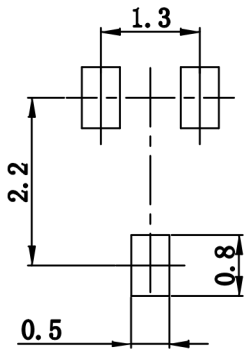






Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.100	0.035	0.043
A1	0.000	0.100	0.000	0.004
A2	0.900	1.000	0.035	0.039
b	0.200	0.400	0.008	0.016
c	0.080	0.150	0.003	0.006
D	2.000	2.200	0.079	0.087
E	1.150	1.350	0.045	0.053
E1	2.150	2.450	0.085	0.096
e	0.650 TYP		0.026 TYP	
e1	1.200	1.400	0.047	0.055
L	0.525 REF		0.021 REF	
L1	0.260	0.460	0.010	0.018
θ	0°	8°	0°	8°

SOT-323 Suggested Pad Layout



Note:
1.Controlling dimension:in millimeters.
2.General tolerance:±0.05mm.
3.The pad layout is for reference purposes only.

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