



SSCN123EGS8

NPN Type Digital Transistor (built-in resistors)

➤ Features

VCC	VIN	IO	R1	R2/R1 Typ.
50V	-10~+12V	100mA	2.2kΩ	1.0

➤ Description

Built-in bias resistors enable the configuration of an inverter circuit without connecting external input resistors (see equivalent circuit).

The bias resistors consist of thin-film resistors with complete isolation to allow negative biasing of the input. They also have the advantage of almost completely eliminating parasitic effects. Only the on/off conditions need to be set for operation, making the device design easy.

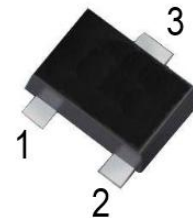
➤ Applications

- Amplifying signal
- Electronic switch
- Oscillating circuit
- Variable resistance

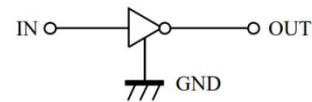
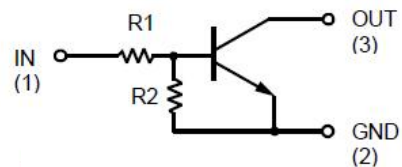
➤ Ordering Information

Device	Package	Shipping
SSCN123EGS8	SOT-523	3000/Reel

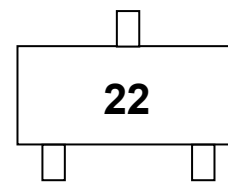
➤ Pin configuration



SOT-523



Circuit Diagram



Marking (Top View)



➤ **Absolute Maximum Ratings**($T_A=25^{\circ}\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Supply Voltage	V_{CC}	50	V
Input Voltage	V_{IN}	-10 to +12	V
Output current	I_o	100	mA
Power Dissipation	P_D	150	mW
Junction Temperature	T_J	-55 to 150	$^{\circ}\text{C}$
Storage Temperature	T_{STG}	-55 to 150	$^{\circ}\text{C}$

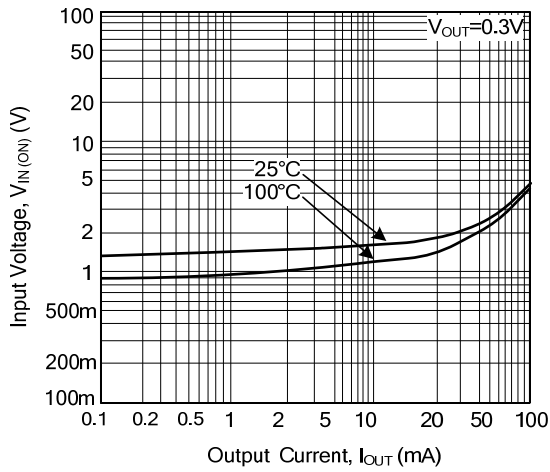
➤ **Electrical Characteristics** ($T_A=25^{\circ}\text{C}$ unless otherwise noted)

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Input Voltage	$V_{I(off)}$	$V_{CC} = 5V, I_o = 0.1mA$	0.5			V
	$V_{I(on)}$	$V_{CC} = 0.3V, I_o = 20mA$			3	V
Output Voltage	$V_{O(on)}$	$I_o/I_i = 10mA/0.5mA$			0.3	V
Input Current	I_i	$V_i = 5V$			3.8	mA
Output Current	$I_{O(off)}$	$V_{CC} = 50V, V_i = 0V$			0.5	μA
DC Current Gain	G_1	$V_o = 5V, I_o = 20mA$	20			
Input Resistance	R_1		1.54	2.2	2.86	$\text{K}\Omega$
Resistance Ration	R_2/R_1		0.8	1.0	1.2	
Transition Frequency	f_T	$V_o = 10V, I_o = 5mA, f = 100\text{MHz}$		250		MHz

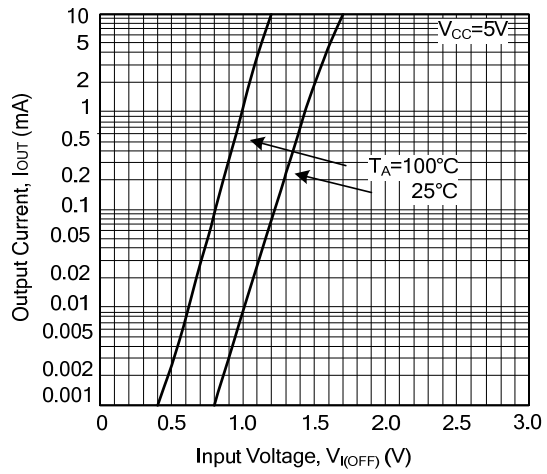


➤ Typical Performance Characteristics ($T_A=25^\circ\text{C}$ unless otherwise noted)

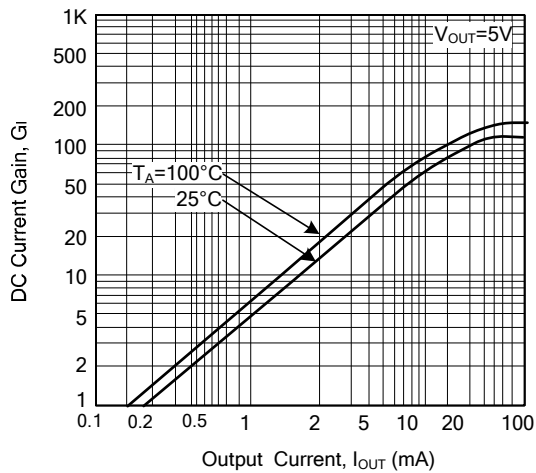
Input Voltage vs. Output Current
(ON Characteristics)



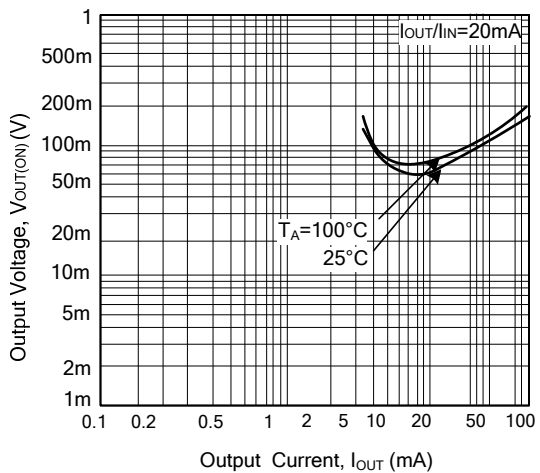
Output Current vs. Input Voltage
(OFF Characteristics)



DC Current Gain vs. Output Current

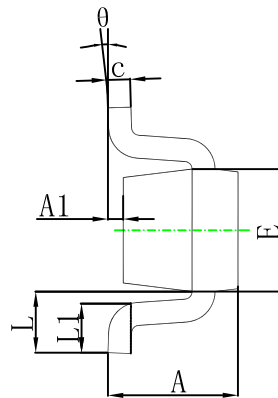
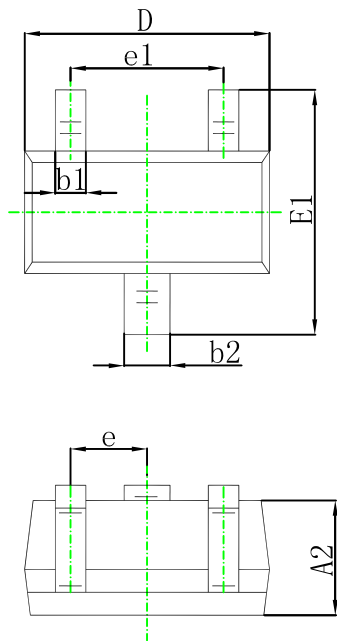


Output Voltage vs. Output Current



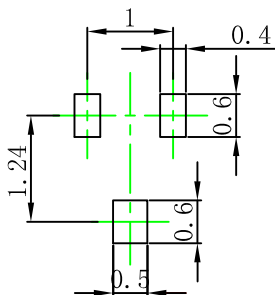


➤ Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.700	0.900	0.028	0.035
A1	0.000	0.100	0.000	0.004
A2	0.700	0.800	0.028	0.031
b1	0.150	0.250	0.006	0.010
b2	0.250	0.350	0.010	0.014
c	0.100	0.200	0.004	0.008
D	1.500	1.700	0.059	0.067
E	0.700	0.900	0.028	0.035
E1	1.450	1.750	0.057	0.069
e	0.500 TYP.		0.020 TYP.	
e1	0.900	1.100	0.035	0.043
L	0.400 REF.		0.016 REF.	
L1	0.260	0.460	0.010	0.018
θ	0°	8°	0°	8°

SOT-523 Suggested Pad Layout



- Note:
1. Controlling dimension: in millimeters.
 2. General tolerance: $\pm 0.05\text{mm}$.
 3. The pad layout is for reference purposes only.



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