



## SSCN113ZGS6

NPN Type Digital Transistor (built-in resistors)

### Features

| VCC | VIN     | IO    | R1  | R2/R1 Typ. |
|-----|---------|-------|-----|------------|
| 50V | -5~+10V | 100mA | 1KΩ | 10         |

### 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.

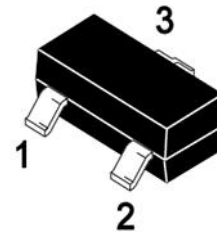
### Applications

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

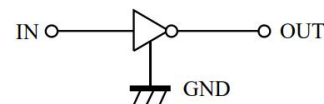
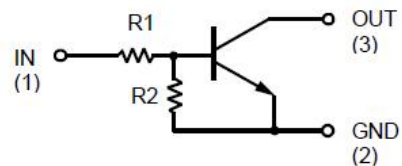
### Ordering Information

| Device      | Package | Shipping  |
|-------------|---------|-----------|
| SSCN113ZGS6 | SOT-23  | 3000/Reel |

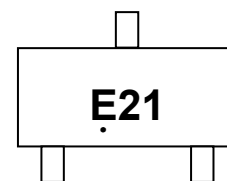
### Pin configuration



**SOT-23**



**Circuit Diagram**



**Marking (Top View)**



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

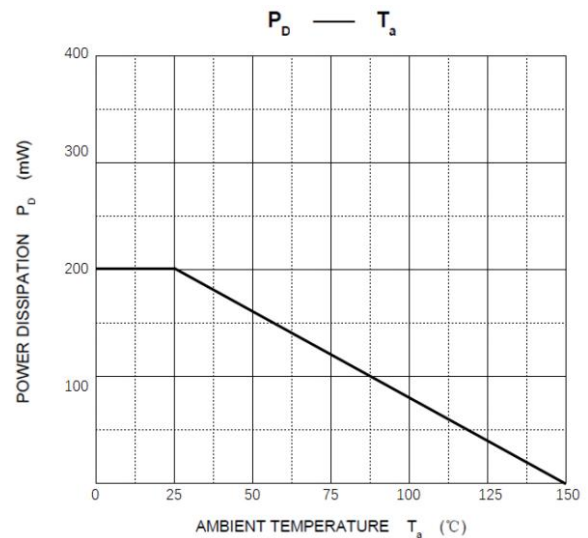
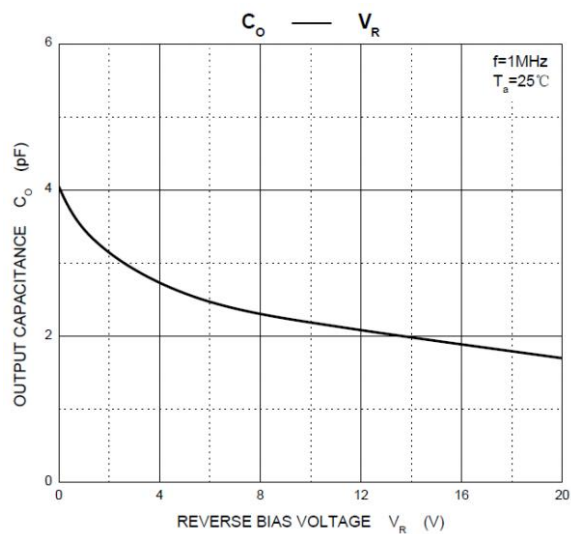
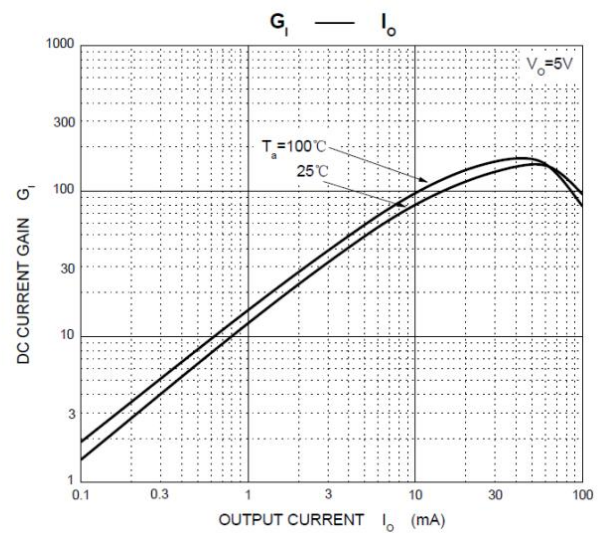
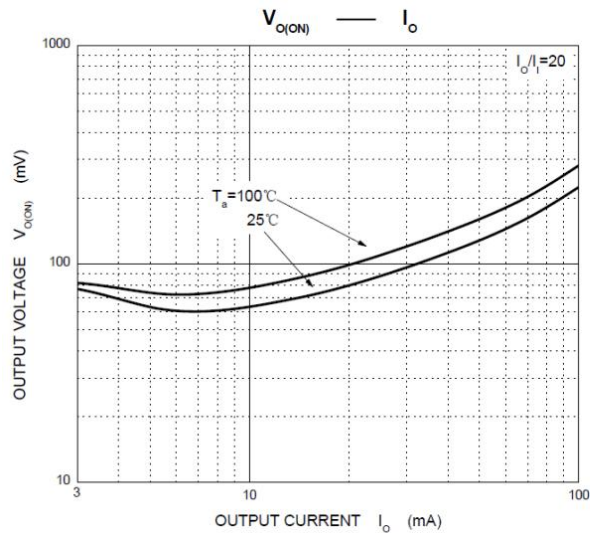
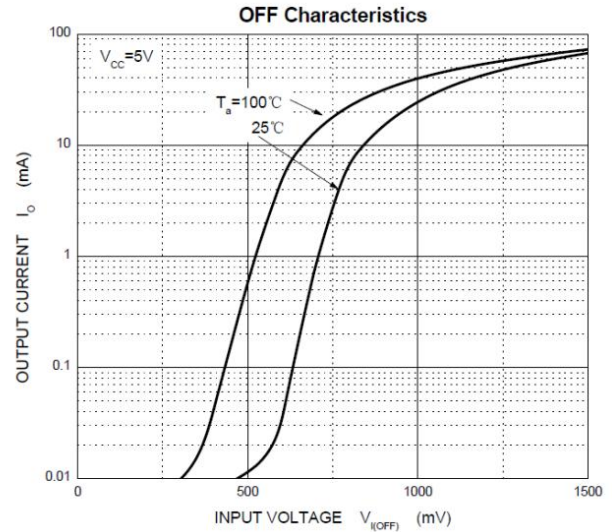
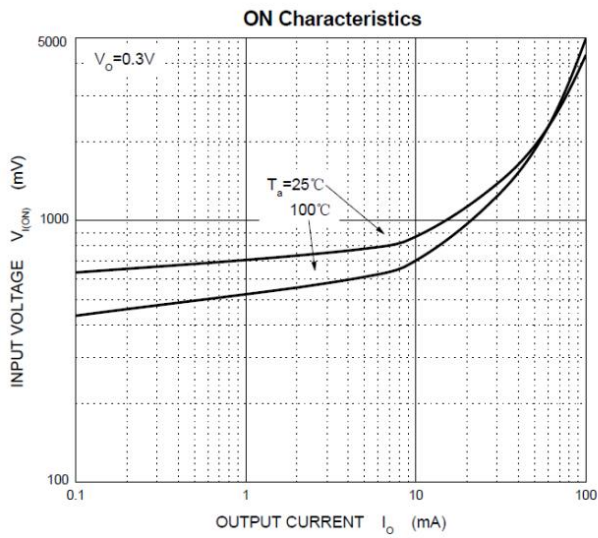
| Parameter            | Symbol    | Value      | Unit               |
|----------------------|-----------|------------|--------------------|
| Supply Voltage       | $V_{CC}$  | 50         | V                  |
| Input Voltage        | $V_{CN}$  | -5 to +10  | V                  |
| Output current       | $I_O$     | 100        | mA                 |
| Power Dissipation    | $P_D$     | 200        | 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        | $V_{I(off)}$ | $V_{CC} = 5V, I_O = 0.1mA$                  | 0.3  |      |      | 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        | $I_I$        | $V_I = 5V$                                  |      |      | 7.2  | mA        |
| Output Current       | $I_{O(off)}$ | $V_{CC} = 50V, V_I = 0V$                    |      |      | 0.5  | $\mu A$   |
| DC Current Gain      | $G_1$        | $V_O = 5V, I_O = 10mA$                      | 33   |      |      |           |
| Input Resistance     | $R_1$        |   | 0.7  | 1.0  | 1.3  | $k\Omega$ |
| Resistance Ration    | $R_2/R_1$    |   | 8    | 10   | 12   |           |
| Transition Frequency | $f_T$        | $V_{CE} = 10V, I_E = -5mA,$<br>$f = 100MHz$ |      | 250  |      | MHz       |



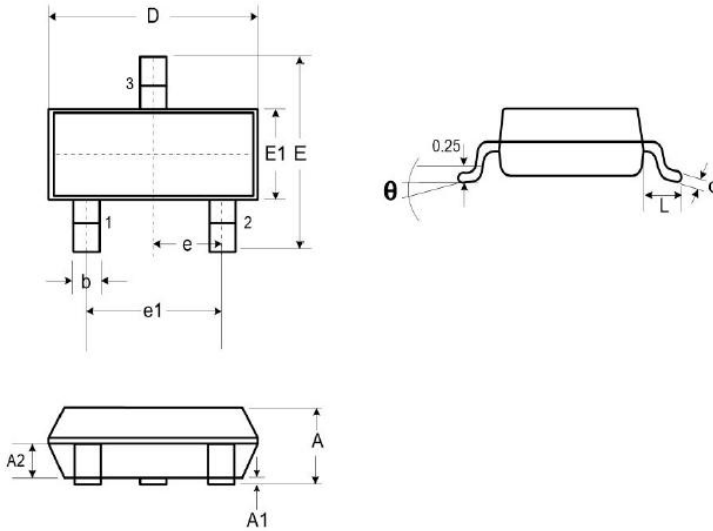
## ➤ Typical Performance Characteristics ( $T_A=25^\circ\text{C}$ unless otherwise noted)





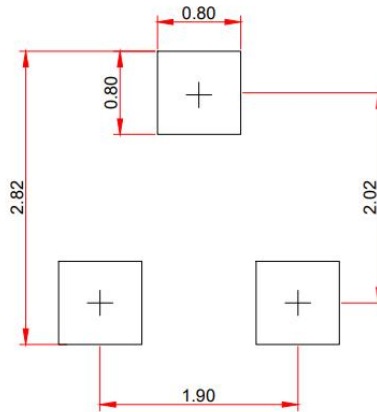
## ➤ Package Information Mechanical Data

### SOT-23



| DIM | Millimeters |      |      |
|-----|-------------|------|------|
|     | Min.        | Typ. | Max. |
| A   | 0.89        | -    | 1.12 |
| A1  | 0.01        | -    | 0.10 |
| A2  | 0.88        | 0.95 | 1.02 |
| b   | 0.30        | -    | 0.51 |
| c   | 0.08        | -    | 0.18 |
| D   | 2.80        | 2.90 | 3.04 |
| E   | 2.10        | 2.37 | 2.64 |
| E1  | 1.20        | 1.30 | 1.40 |
| e   | 0.95        |      |      |
| e1  | 1.90        |      |      |
| L   | 0.40        | 0.50 | 0.60 |
| L1  | 0.55        |      |      |
| N   | 3           |      |      |
| θ   | 0°          | -    | 8°   |

### Recommended Pad outline (Unit: mm)





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