

**SEC113ZU**

**100mA / 50V Digital transistors**

Revision:A

**Features**

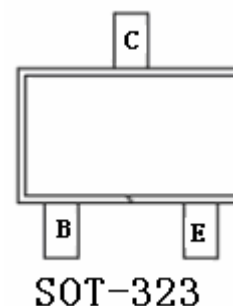
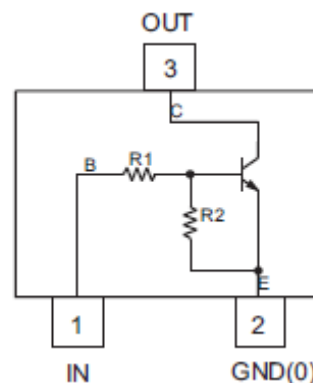
- Built-in bias resistors enable the configuration of an inverter circuit without connecting external input resistors (see equivalent circuit).
- Each bias resistor is a thin-film resistor. Since they are completely insulated, the input can be negatively biased. The insulation also eliminates most of the parasitic effects.
- Only the on / off conditions need to be set for operation, making the device design easy.

**Applications**

- Inverter, Interface, Driver

**Construction**

- NPN epitaxial planar silicon transistor (Resistor built-in type)



**Absolute maximum ratings (Ta=25°C)**

Parameter	Symbol	Limits	Unit
Supply voltage	$V_{CC}$	50	V
Input voltage	$V_{IN}$	-5 to +10	V
Output current	$I_O$	100	mA
	$I_{C(MAX)}$	100	
Power dissipation	$P_D$	200	mW
Junction temperature	$T_J$	150	°C
Storage temperature	$T_{stg}$	-55 to +150	°C

**THERMAL CHARACTERISTICS**

Thermal Resistance, Junction-to-Ambient (Note 2)	$R_{\theta JA}$	625	°C/W
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**Electrical characteristics (Ta=25°C)**

Parameter	Symbol	Conditions	Min..	Typ.	Max.	Unit
Input voltage	$V_{I(off)}$	$V_{CC}=5V, I_O=100\mu A$	0.3	-	-	
	$V_{I(on)}$	$V_O=0.3V, I_O=20mA$	-	-	3	V

Output voltage	$V_{O(on)}$	$I_O/I_I=10mA/0.5mA$	-	0.1	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	$G_I$	$V_O=5V, I_O=5mA$	33	-	-	-
Input resistance	$R_1$		0.7	1	1.3	K $\Omega$
Resistance ratio	$R_2/R_1$	-	8	10	12	-
Transition frequency	$f_T$	$V_{CE}=10V, I_E=-5mA,$ $f=100MHz$	-	250	-	MHz

\*Characteristics of built-in transistor

**TYPICAL CURVES**

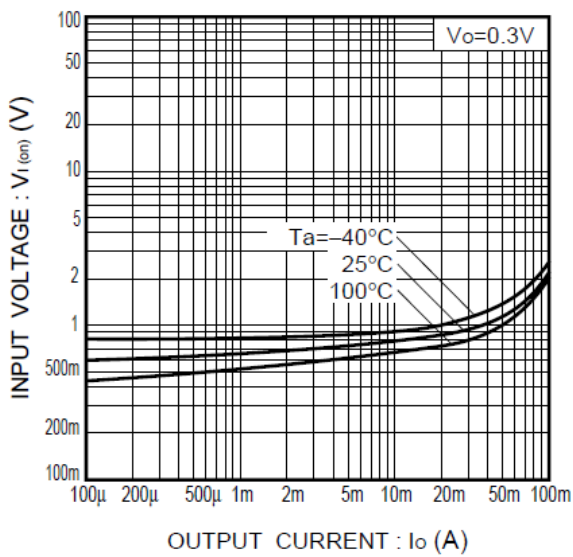


Fig.1 Input voltage vs. output current (ON characteristics)

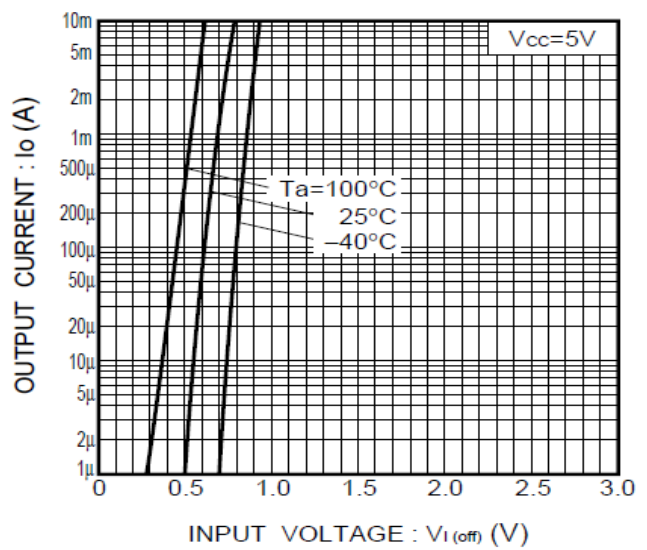


Fig.2 Output current vs. input voltage (OFF characteristics)

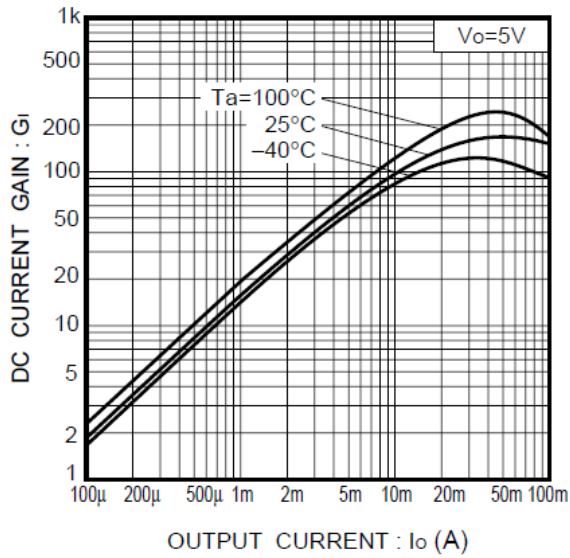


Fig.3 DC current gain vs. output current

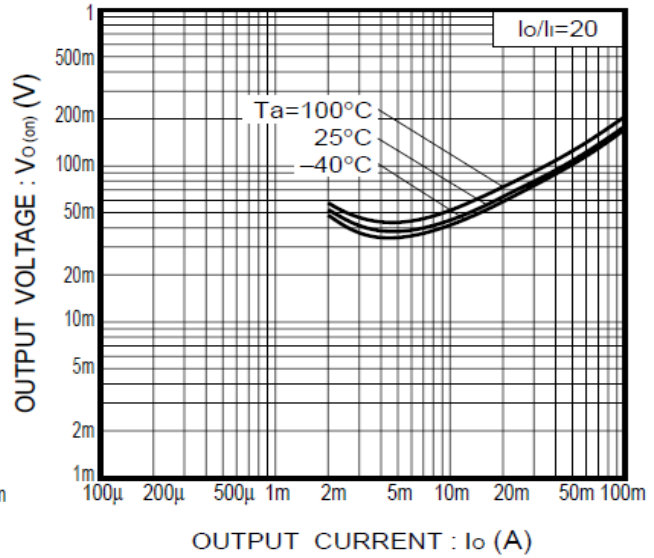
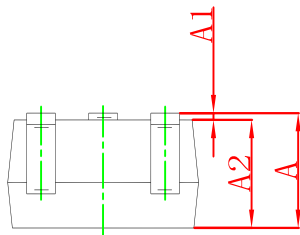
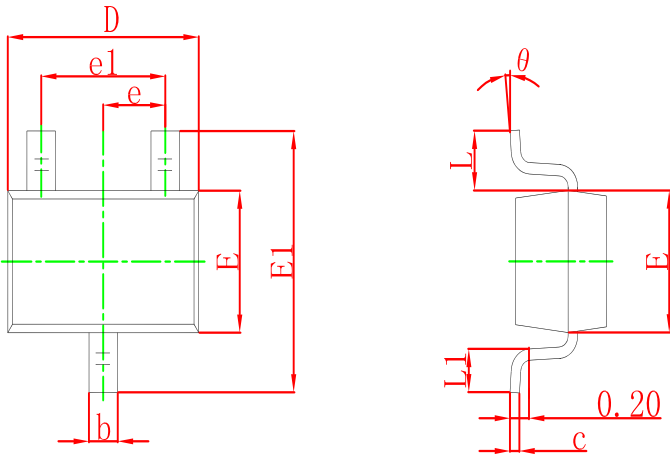


Fig.4 Output voltage vs. output current

SOT-323 Suggested Pad Layout



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°

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