

## / Descriptions

SOT-23                      NPN                      Silicon NPN Digital transistor in a SOT-23 Plastic Package.

## / Features

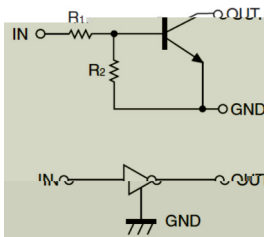
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Built-in bias resistors enable the configuration of an inverter circuit without connecting external input resistors(see equivalent circuit); The bias resistors consist of thin-film resistors with complete isolation to allow negative biasing of the input; They also have the advantage of almost completely eliminating parasitic effects; Only the on/off conditions need to be set for operation, making device design easy, HF product.

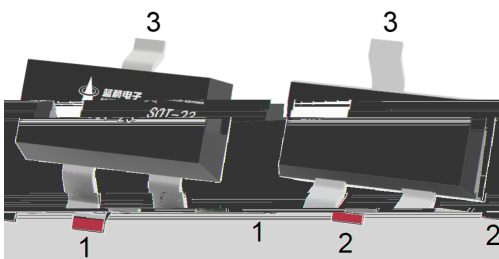
## / Applications

Switching, inverter circuit, interface circuit and driver circuit applications.

## / Equivalent Circuit



## / Pinning



PIN 1 IN    PIN 2 GND    PIN 3 OUT

## / hFE Classifications & Marking

Marking	HE21
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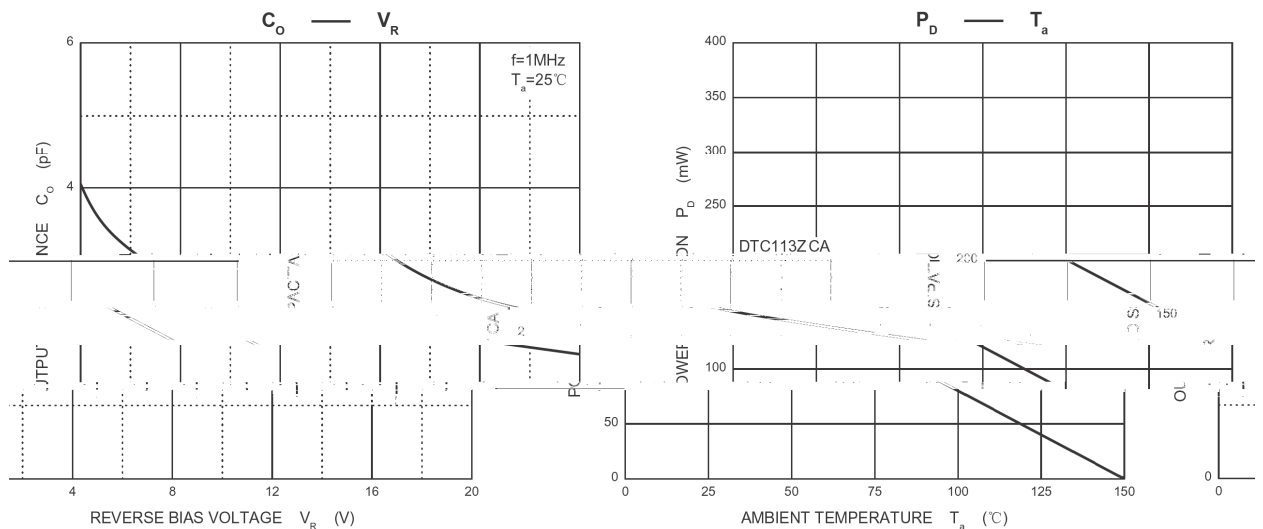
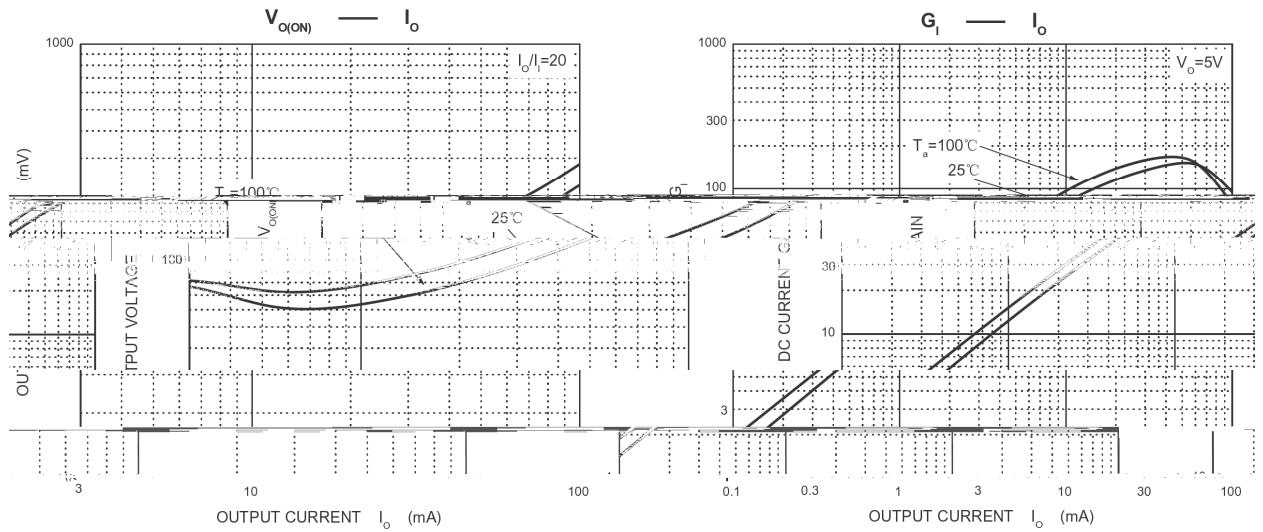
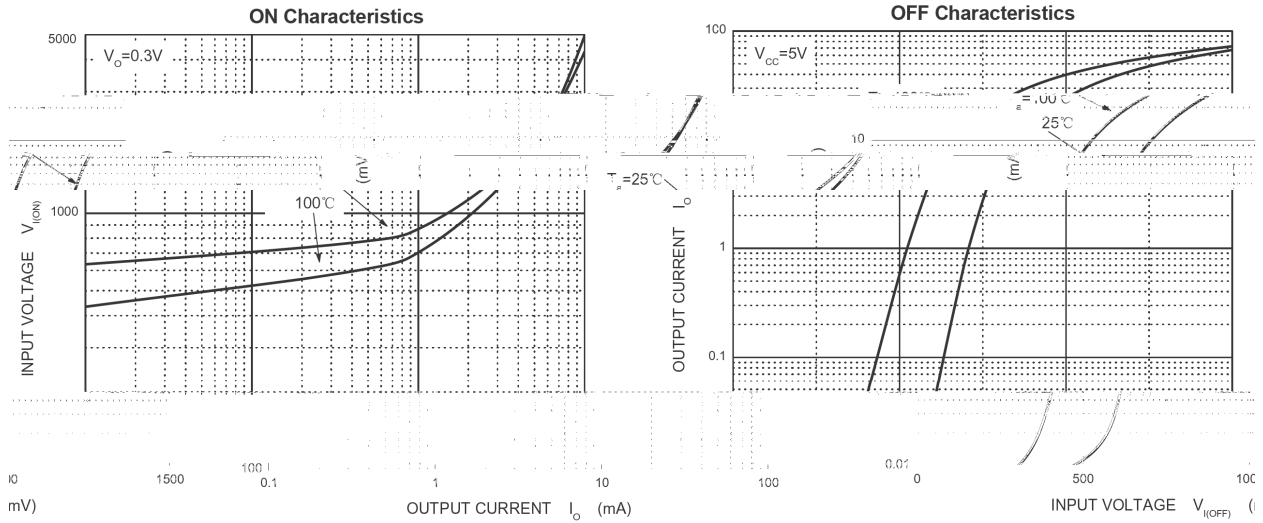
**/ Absolute Maximum Ratings(Ta=25 )**

Parameter	Symbol	Rating	Unit
Supply Voltage	V <sub>CC</sub>	50	V
Input Voltage	V <sub>IN</sub>	-5~10	V
Output Current	I <sub>O</sub>	100	mA
Power Dissipation	P <sub>D</sub>	200	mW
Junction Temperature	T <sub>j</sub>	150	
Storage Temperature Range	T <sub>stg</sub>	-55 150	

**/ Electrical Characteristics(Ta=25 )**

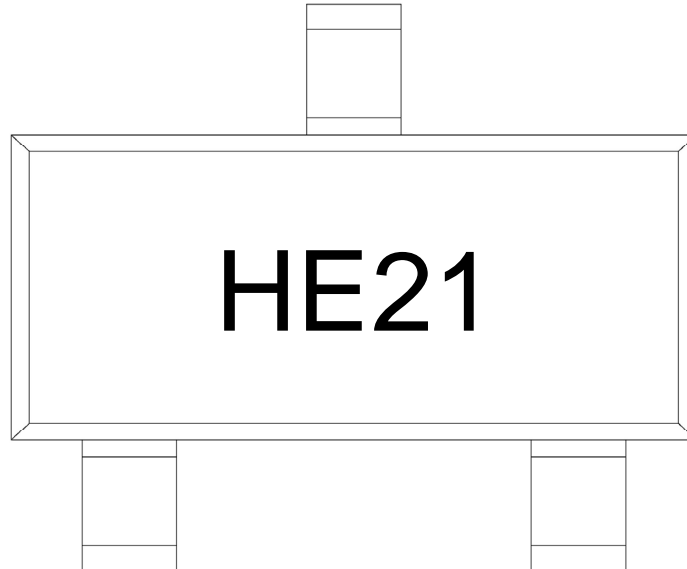
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Input Voltage	V <sub>I(off)</sub>	V <sub>CC</sub> =5.0V I <sub>O</sub> =100 A	0.3			V
Input Voltage	V <sub>I(on)</sub>	V <sub>O</sub> =0.3V I <sub>O</sub> =10mA			3	V
Output Voltage	V <sub>O(on)</sub>	I <sub>O</sub> =10mA I <sub>I</sub> =0.5mA			0.3	V
Input Current	I <sub>I</sub>	V <sub>I</sub> =5.0V			7.2	mA
Output Cut-off Current	I <sub>O(off)</sub>	V <sub>CC</sub> =50V V <sub>I</sub> =0V			0.5	A
DC Current Gain	G <sub>I</sub>	V <sub>O</sub> =5.0V I <sub>O</sub> =5.0mA	33			
Resistance1	R <sub>1</sub>		0.7	1	1.3	K
Resistance Ratio	R <sub>2</sub> /R <sub>1</sub>		8	10	12	
Transition Frequency	f <sub>T</sub>	V <sub>O</sub> =10V f=100MHz I <sub>O</sub> =5.0mA		250		MHz

/ Electrical Characteristic Curve



**DTC113ZKA**  
Rev.A May.-2024

/ Marking Instructions



H

E21

Note:

H            Company Code

E21         Product Type Code

( ) / Temperature Profile for IR Reflow Soldering(Pb-Free)


Note:

- |   |           |             |   |
|---|-----------|-------------|---|
| 1 | 150 ~ 180 | 60 ~ 90sec; | 1.Preheating:150~180 , Time:60~90sec.   |
| 2 | 245±5     | 5±0.5sec;   | 2.Peak Temp.:245±5 , Duration:5±0.5sec. |
| 3 | 2 ~ 10    | /sec.       | 3. Cooling Speed: 2~10 /sec.            |

/ Resistance to Soldering Heat Test Conditions

260±5	10±1 sec.	Temp.:260±5	Time:10±1 sec
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/ Packaging SPEC.

/ REEL