



# DTD114E

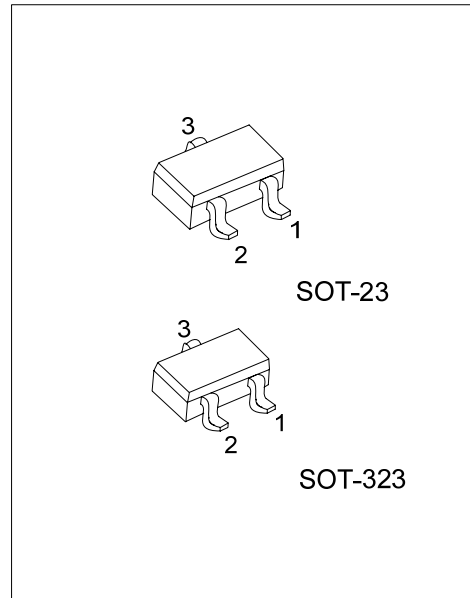
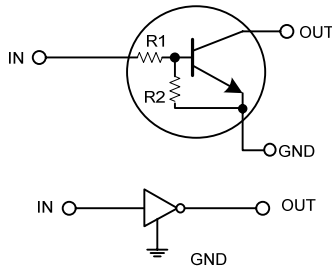
## NPN SILICON TRANSISTOR

### NPN DIGITAL TRANSISTOR (BUILT-IN BIAS RESISTORS)

#### FEATURES

- \* Built-in bias resistors that implies easy ON/OFF applications.
- \* The bias resistors are thin-film resistors with complete isolation to allow negative input.

#### EQUIVALENT CIRCUIT



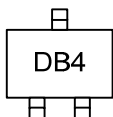
\*Pb-free plating product number:DTD114EL

#### ORDERING INFORMATION

Order Number		Package	Pin Assignment			Packing
Normal	Lead Free Plating		1	2	3	
DTD114E-AE3-R	DTD114EL-AE3-R	SOT-23	G	I	O	Tape Reel
DTD114E-AL3-R	DTD114EL-AL3-R	SOT-323	G	I	O	Tape Reel

<p>DTD114EL-AE3-R</p>	<p>(1) R: Tape Reel</p> <p>(2) AE3: SOT-23, AL3: SOT-323</p> <p>(3) L: Lead Free Plating, Blank: Pb/Sn</p>
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#### MARKING



■ ABSOLUTE MAXIMUM RATINGS (Ta=25°C)

PARAMETER	SYMBOL	RATING	UNIT
Supply Voltage	V <sub>CC</sub>	50	V
Input Voltage	V <sub>IN</sub>	-10~+40	V
Output Current	I <sub>OUT</sub>	500	mA
Power Dissipation	P <sub>D</sub>	200	mW
Junction Temperature	T <sub>J</sub>	150	°C
Storage Temperature	T <sub>STG</sub>	-55 ~ +150	°C

Note Absolute maximum ratings are those values beyond which the device could be permanently damaged.

Absolute maximum ratings are stress ratings only and functional device operation is not implied.

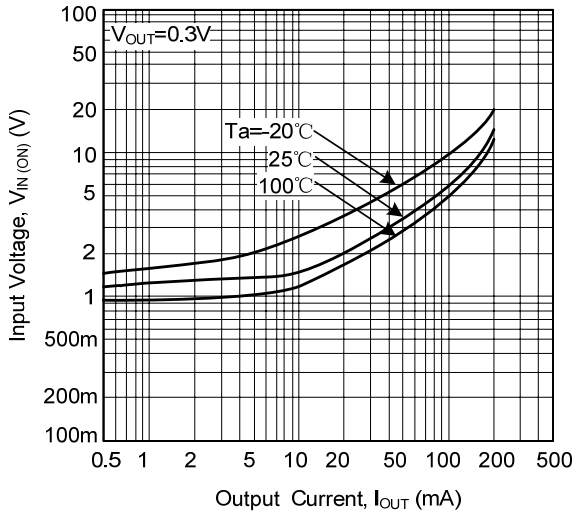
■ ELECTRICAL SPECIFICATIONS (Ta=25°C, unless others specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Input Voltage	V <sub>IN(OFF)</sub>	V <sub>CC</sub> =5V, I <sub>OUT</sub> =100μA			0.5	V
	V <sub>IN(ON)</sub>	V <sub>OUT</sub> =0.3V, I <sub>OUT</sub> =10mA	3			
Output Voltage	V <sub>OUT(ON)</sub>	I <sub>OUT</sub> /I <sub>IN</sub> =50mA/2.5mA		0.1	0.3	V
Input Current	I <sub>IN</sub>	V <sub>IN</sub> =5V			0.88	mA
Output Current	I <sub>OUT(OFF)</sub>	V <sub>CC</sub> =50V, V <sub>IN</sub> =0V			0.5	μA
DC Current Gain	h <sub>FE</sub>	V <sub>OUT</sub> =5V, I <sub>OUT</sub> =50mA	56			
Input Resistance	R <sub>1</sub>		7	10	13	kΩ
Resistance Ratio	R <sub>2</sub> /R <sub>1</sub>		0.8	1	1.2	
Transition Frequency	f <sub>T</sub>	V <sub>CE</sub> =10V, I <sub>E</sub> =-50mA, f=100MHz		200		MHz

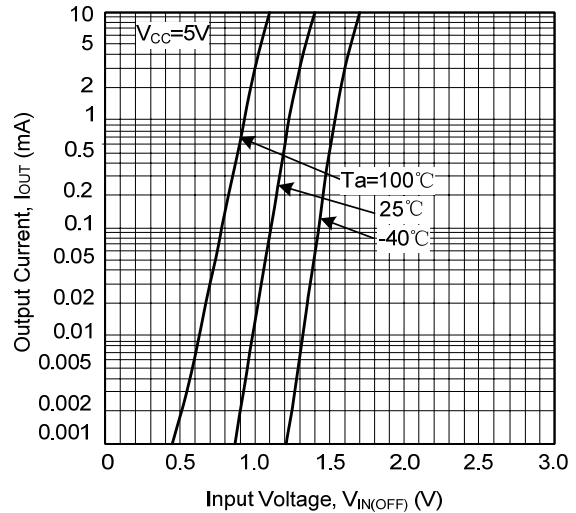
\*Transition frequency of the device

## TYPICAL CHARACTERISTICS

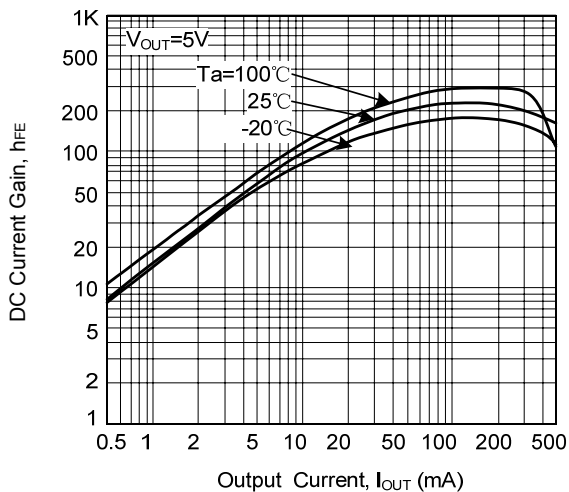
Input Voltage vs. Output Current  
(ON Characteristics)



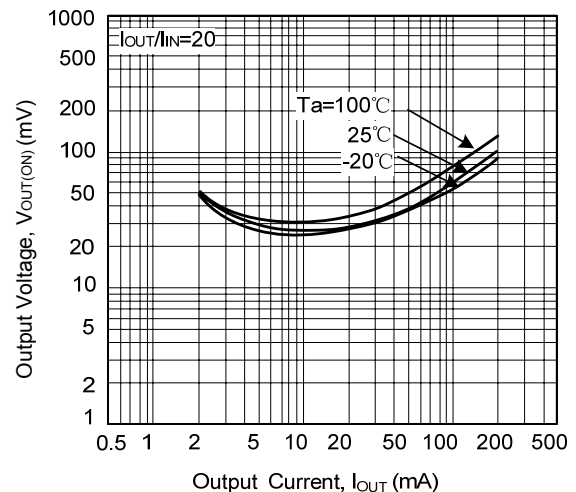
Output Current vs. Input Voltage  
(OFF Characteristics)



DC Current Gain vs. Output Current



Output Voltage vs. Output Current



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