



DTD114E

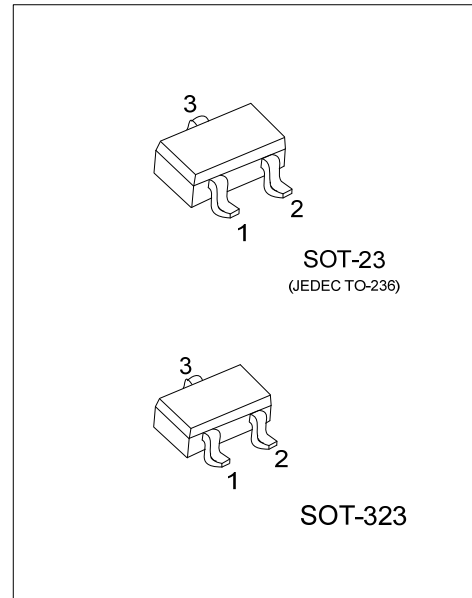
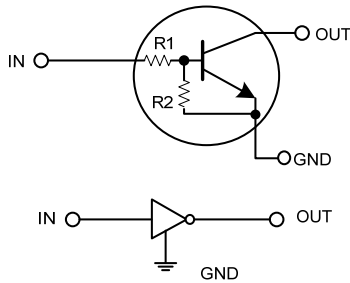
NPN SILICON TRANSISTOR

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



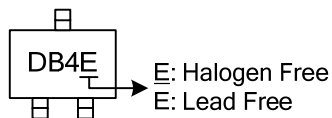
ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
DTD114EL-AE3-R	DTD114EG-AE3-R	SOT-23	I	G	O	Tape Reel
DTD114EL-AL3-R	DTD114EG-AL3-R	SOT-323	I	G	O	Tape Reel

Note: Pin Assignment: I: IN G: GND O: OUT

<p>DTD114EG-AE3-R</p> <p>(1) Packing Type</p> <p>(2) Package Type</p> <p>(3) Green Package</p>	<p>(1) R: Tape Reel</p> <p>(2) AE3: SOT-23, AL3: SOT-323</p> <p>(3) G: Halogen Free and Lead Free, L: Lead Free</p>
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MARKING



■ ABSOLUTE MAXIMUM RATINGS ($T_A=25^{\circ}\text{C}$, unless others specified)

PARAMETER	SYMBOL	RATING	UNIT
Supply Voltage	V_{CC}	50	V
Input Voltage	V_{IN}	-10~+40	V
Output Current	I_{OUT}	500	mA
Power Dissipation	P_D	200	mW
Junction Temperature	T_J	+150	$^{\circ}\text{C}$
Storage Temperature	T_{STG}	-40 ~ +150	$^{\circ}\text{C}$

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.

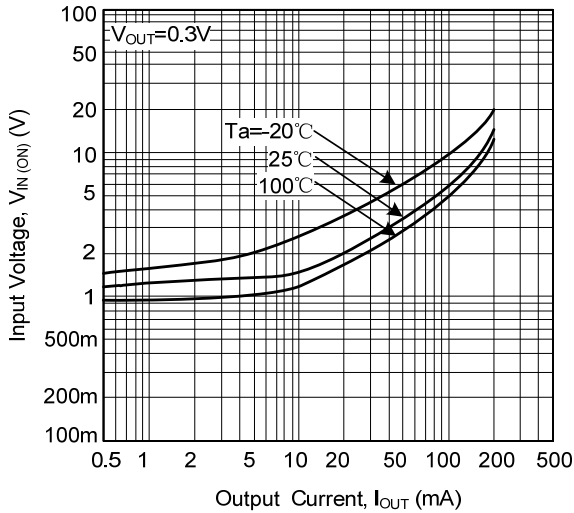
■ ELECTRICAL SPECIFICATIONS ($T_A=25^{\circ}\text{C}$, unless others specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Input Voltage	$V_{IN(OFF)}$	$V_{CC}=5\text{V}, I_{OUT}=100\mu\text{A}$			0.5	V
	$V_{IN(ON)}$	$V_{OUT}=0.3\text{V}, I_{OUT}=10\text{mA}$	3			
Output Voltage	$V_{OUT(ON)}$	$I_{OUT}/I_{IN}=50\text{mA}/2.5\text{mA}$		0.1	0.3	V
Input Current	I_{IN}	$V_{IN}=5\text{V}$			0.88	mA
Output Current	$I_{OUT(OFF)}$	$V_{CC}=50\text{V}, V_{IN}=0\text{V}$			0.5	μA
DC Current Gain	h_{FE}	$V_{OUT}=5\text{V}, I_{OUT}=50\text{mA}$	56			
Input Resistance	R_1		7	10	13	k Ω
Resistance Ratio	R_2/R_1		0.8	1	1.2	
Transition Frequency	f_T	$V_{CE}=10\text{V}, I_E=-50\text{mA}, f=100\text{MHz}$		200		MHz

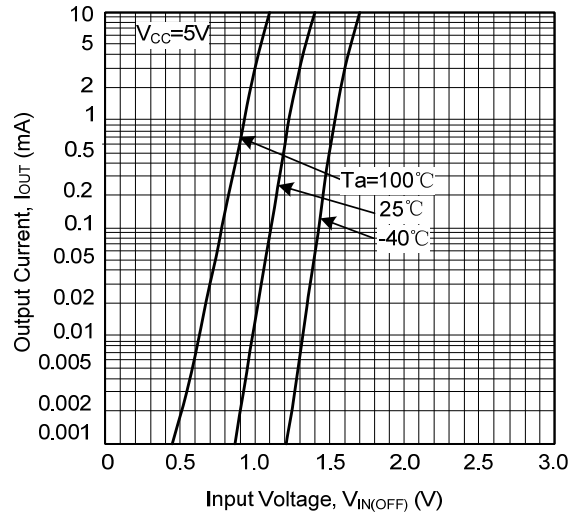
Note: Transition frequency of the device.

TYPICAL CHARACTERISTICS

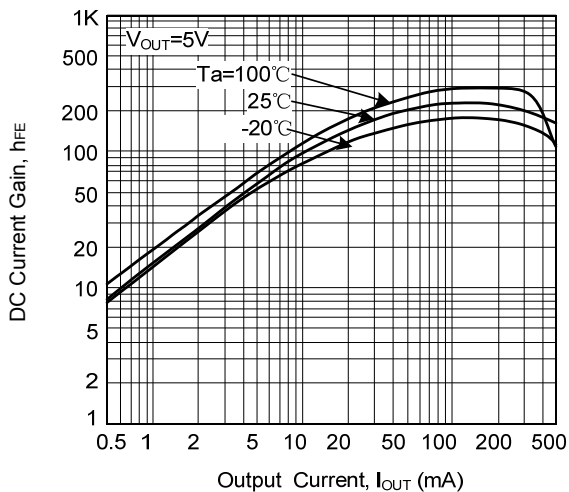
Input Voltage vs. Output Current
(ON Characteristics)



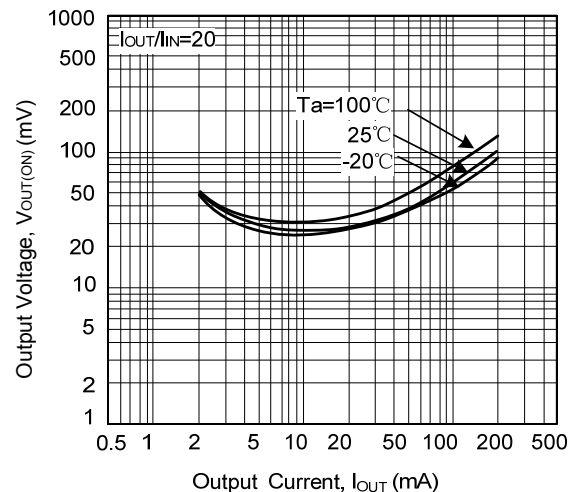
Output Current vs. Input Voltage
(OFF Characteristics)



DC Current Gain vs. Output Current



Output Voltage vs. Output Current



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