



## DTD123Y

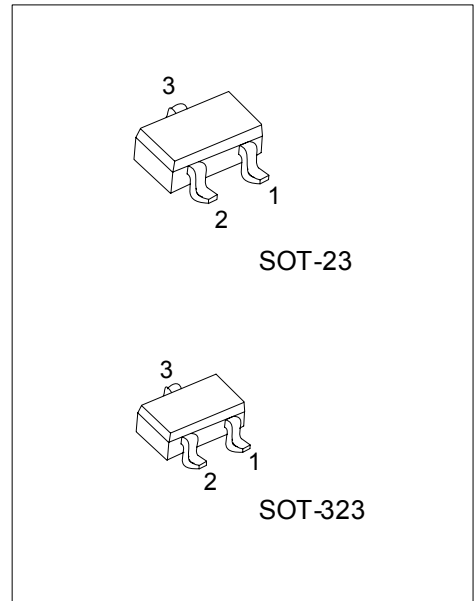
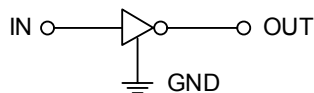
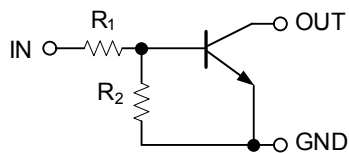
NPN EPITAXIAL SILICON TRANSISTOR

### DIGITAL TRANSISTORS (BUILT-IN 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: DTD123YL

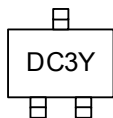
#### ORDERING INFORMATION

Order Number		Package	Pin Assignment			Packing
Normal	Lead Free Plating		1	2	3	
DTD123Y-AE3-6-R	DTD123YL-AE3-6-R	SOT-23	G	I	O	Tape Reel
DTD123Y-AL3-6-R	DTD123YL-AL3-6-R	SOT-323	G	I	O	Tape Reel

Note: G: GND I: Input O: Output

<p>DTD123YL-AE3-6-R</p>	<p>(1) R: Tape Reel (2) refer to Pin Assignment (3) AE3: SOT-23, AL3: SOT-323 (4) L: Lead Free Plating, Blank: Pb/Sn</p>
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#### MARKING



### ABSOLUTE MAXIMUM RATING (Ta=25°C)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply voltage	$V_{CC}$	50	V
Input voltage	$V_{IN}$	-5 ~ +12	V
Output current	$I_C$	500	mA
Power dissipation	$P_D$	200	mW
Junction Temperature	$T_J$	+150	°C
Storage Temperature	$T_{STG}$	-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 CHARACTERISTICS (Ta=25°C)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Input Voltage	$V_{IN(OFF)}$	$V_{CC}=5V, I_{OUT}=100\mu A$			0.3	V
	$V_{IN(ON)}$	$V_{OUT}=0.3V, I_{OUT}=20mA$	2			
Output Voltage	$V_{OUT(ON)}$	$I_O/I_I=50mA/2.5mA$		0.1	0.3	V
Input Current	$I_{IN}$	$V_{IN}=5V$			3.6	mA
Output Current	$I_{O(OFF)}$	$V_{CC}=50V, V_{IN}=0V$			0.5	$\mu A$
DC Current Gain	$G_I$	$V_{OUT}=5V, I_{OUT}=50mA$	56			
Input Resistance	$R_1$		1.54	2.2	2.86	K $\Omega$
Resistance Ratio	$R_2/R_1$		3.6	4.5	5.5	
Transition Frequency	$f_T$	$V_{CE}=10V, I_E=-50mA, f=100MHz$ *		200		MHz

\* Transition frequency of the device

## ■ TYPICAL CHARACTERISTICS

Fig.1 Input Voltage vs. Output Current (ON Characteristics)

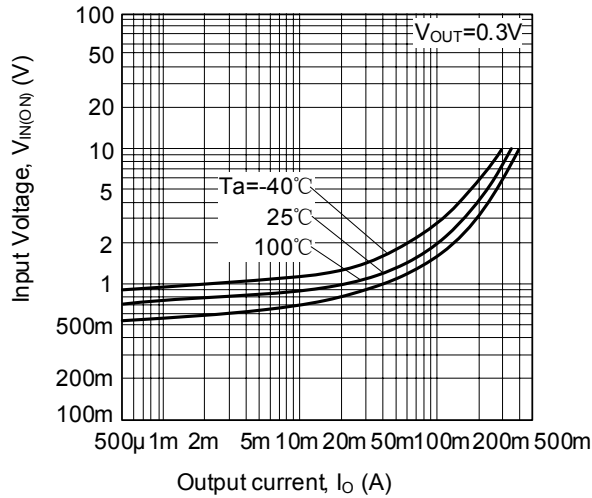


Fig.2 Output Current vs. Input Voltage (OFF Characteristics)

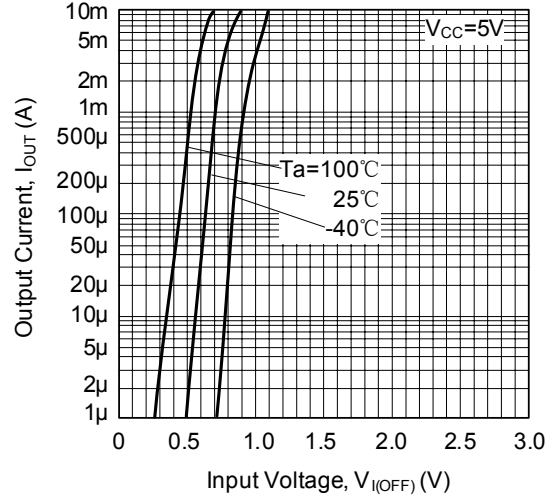


Fig.3 DC Current Gain vs. Output Current

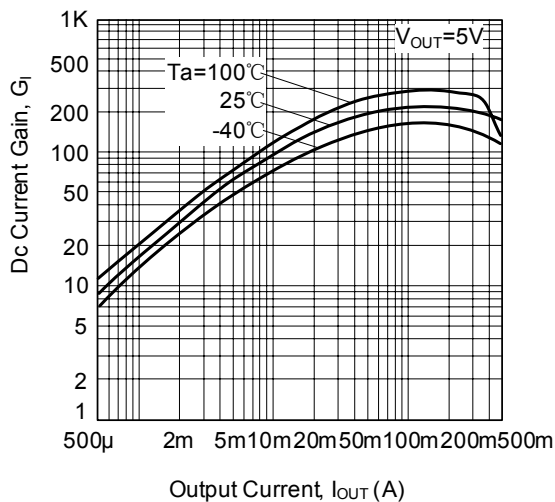
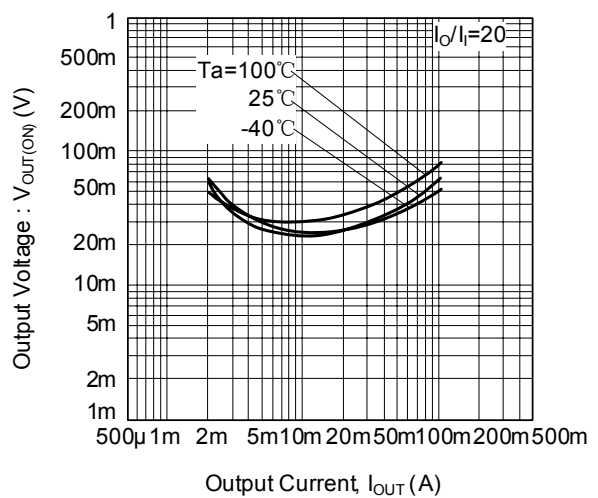


Fig.4 Output Voltage vs. Output Current



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