



# DTC123E

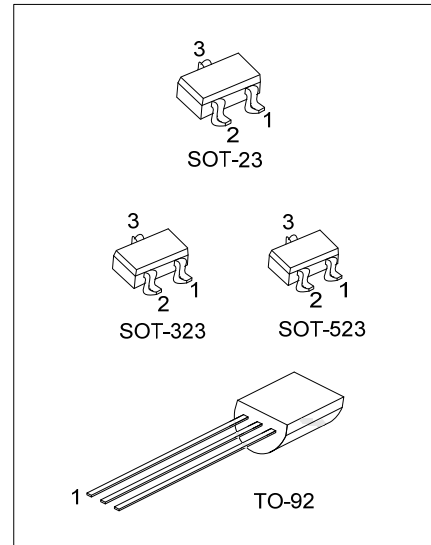
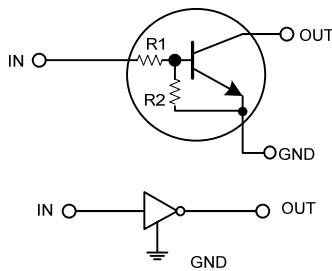
## NPN SILICON TRANSISTOR

### 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

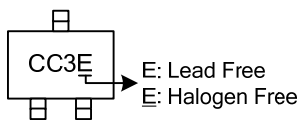


■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
DTC123EL-AE3-R	DTC123EG-AE3-R	SOT-23	G	I	O	Tape Reel
DTC123EL-AL3-R	DTC123EG-AL3-R	SOT-323	G	I	O	Tape Reel
DTC123EL-AN3-R	DTC123EG-AN3-R	SOT-523	G	I	O	Tape Reel
DTC123EL-T92-B	DTC123EG-T92-B	TO-92	G	O	I	Tape Box
DTC123EL-T92-K	DTC123EG-T92-K	TO-92	G	O	I	Bluk

<p>DTC123EL-AE3-R</p> <p>(1) Packing Type (2) Package Type (3) Lead Free</p>	<p>(1) B: Tape Box, K: Bluk, R: Tape Reel (2) AE3: SOT-23, AL3: SOT-323, AN3: SOT-523 T92: TO-92 (3) G: Halogen Free, L: Lead Free</p>
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■ MARKING



■ ABSOLUTE MAXIMUM RATINGS (T<sub>A</sub>=25°C)

PARAMETER		SYMBOL	RATINGS	UNIT
Supply Voltage		V <sub>CC</sub>	50	V
Input Voltage		V <sub>IN</sub>	-10 ~ +12	V
Output Current		I <sub>OUT</sub>	100	mA
Power Dissipation	SOT-523	P <sub>D</sub>	150	mW
	SOT-23/SOT-323		200	mW
	TO-92		625	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.

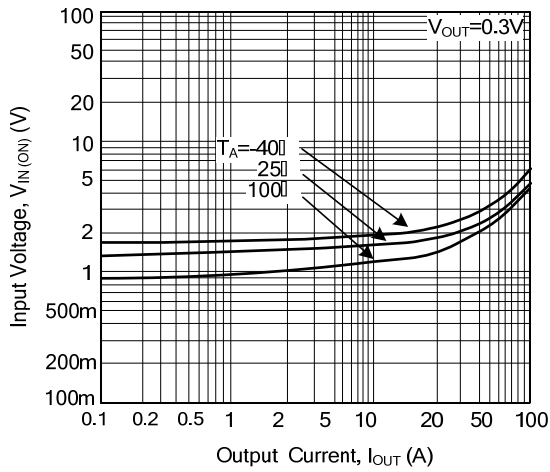
■ ELECTRICAL SPECIFICATIONS (T<sub>A</sub>=25°C)

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> = 20mA	3			
Output Voltage	V <sub>OUT(ON)</sub>	I <sub>OUT</sub> /I <sub>IN</sub> = 10mA/0.5mA		0.1	0.3	V
Input Current	I <sub>IN</sub>	V <sub>IN</sub> = 5V			3.8	mA
Output Current	I <sub>OUT(OFF)</sub>	V <sub>CC</sub> = 50V, V <sub>IN</sub> = 0V			0.5	μA
DC Current Gain	G <sub>IN</sub>	V <sub>OUT</sub> = 5V, I <sub>OUT</sub> = 20mA	20			
Input Resistance	R <sub>1</sub>		1.54	2.2	2.86	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> = -5mA, f = 100MHz (Note)		250		MHz

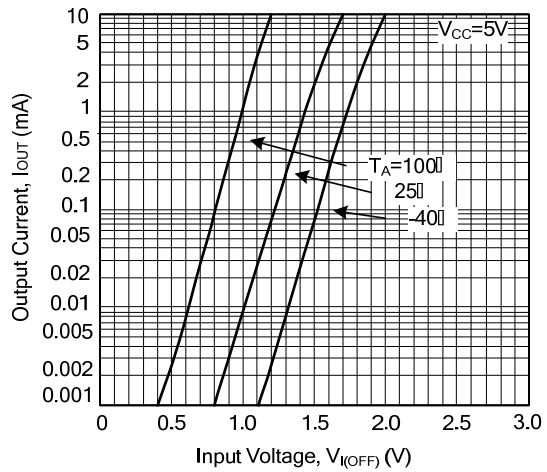
Note: Transition frequency of the device

## TYPICAL CHARACTERISTIC

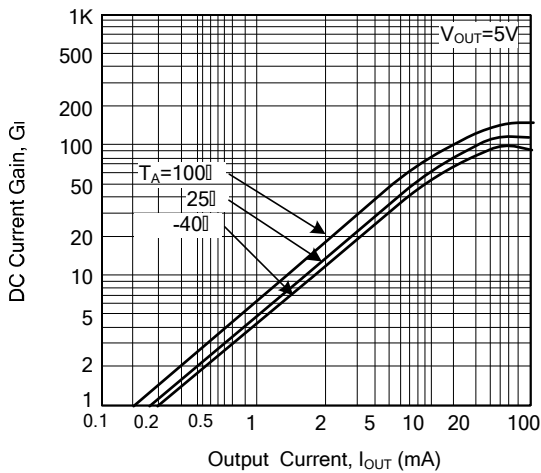
Input Voltage vs. Output Current  
(ON Characteristics)



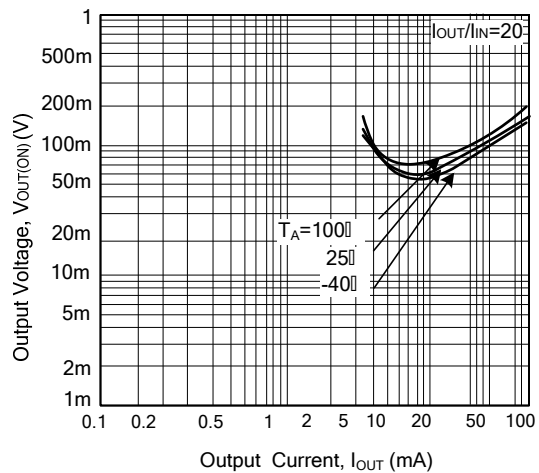
Output Current vs. Input Voltage  
(OFF Characteristics)



DC Current Gain vs. Output Current



Output Voltage vs. Output Current



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