



DTC123E

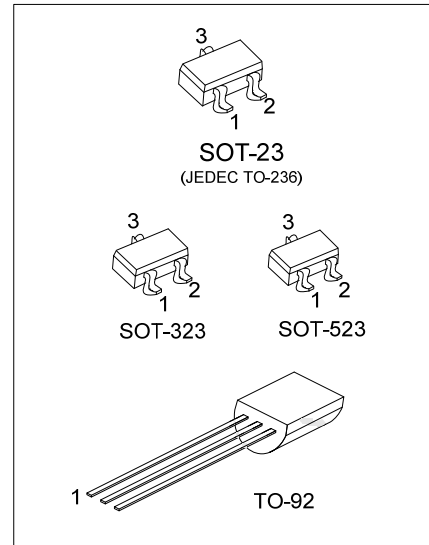
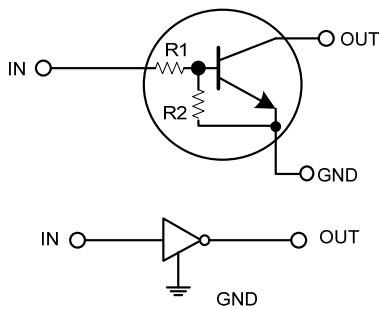
NPN SILICON TRANSISTOR

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	I	G	O	Tape Reel
DTC123EL-AL3-R	DTC123EG-AL3-R	SOT-323	I	G	O	Tape Reel
DTC123EL-AN3-R	DTC123EG-AN3-R	SOT-523	I	G	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

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

<p>DTC123EG-AE3-R</p> <p>(1)Packing Type (2)Package Type (3)Green Package</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 and Lead Free, L: Lead Free</p>
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■ MARKING

SOT-23 / SOT-323 / SOT-523	TO-92
<p>CC3E E: Lead Free E: Halogen Free</p>	<p>UTC DTC123E 1 L: Lead Free G: Halogen Free Date Code</p>

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

PARAMETER		SYMBOL	RATINGS	UNIT
Supply Voltage		V_{CC}	50	V
Input Voltage		V_{IN}	-10 ~ +12	V
Output Current		I_{OUT}	100	mA
Power Dissipation	SOT-523	P_D	150	mW
	SOT-23/SOT-323		200	mW
	TO-92		625	mW
Junction Temperature		T_J	+150	$^{\circ}\text{C}$
Storage Temperature		T_{STG}	-55 ~ +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.

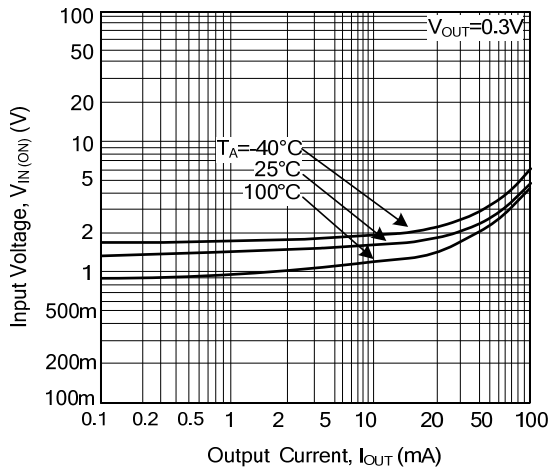
■ ELECTRICAL SPECIFICATIONS ($T_A=25^{\circ}\text{C}$, unless others specified)

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
	$V_{IN(ON)}$	$V_{OUT}=0.3\text{V}, I_{OUT}=20\text{mA}$	3			
Output Voltage	$V_{OUT(ON)}$	$I_{OUT}/I_{IN}=10\text{mA}/0.5\text{mA}$		0.1	0.3	V
Input Current	I_{IN}	$V_{IN}=5\text{V}$			3.8	mA
Output Current	$I_{OUT(OFF)}$	$V_{CC}=50\text{V}, V_{IN}=0\text{V}$			0.5	μA
DC Current Gain	h_{FE}	$V_{OUT}=5\text{V}, I_{OUT}=20\text{mA}$	20			
Input Resistance	R_1		1.54	2.2	2.86	K Ω
Resistance Ratio	R_2/R_1		0.8	1	1.2	
Transition Frequency	f_T	$V_{CE}=10\text{V}, I_E=-5\text{mA}, f=100\text{MHz}$ (Note)		250		MHz

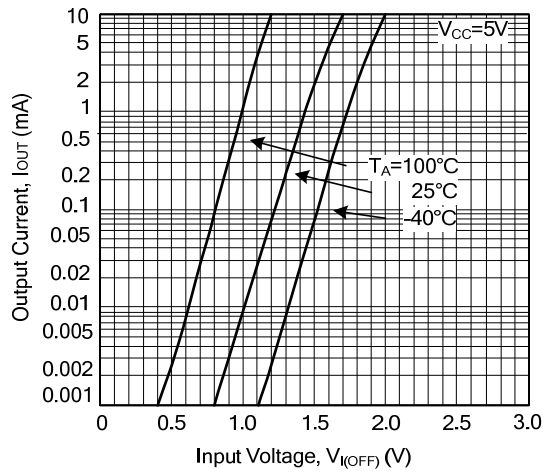
Note: Transition frequency of the device

■ TYPICAL CHARACTERISTIC

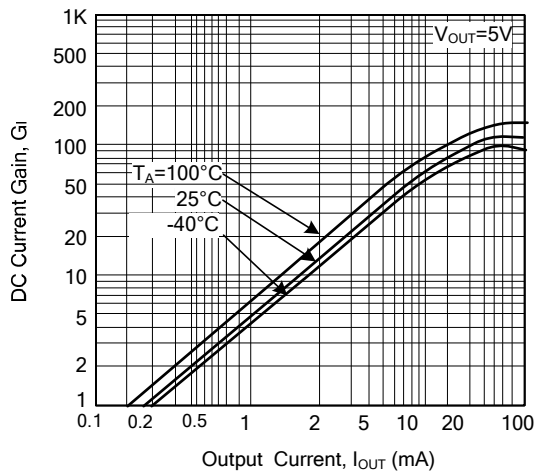
Input Voltage vs. Output Current
(ON Characteristics)



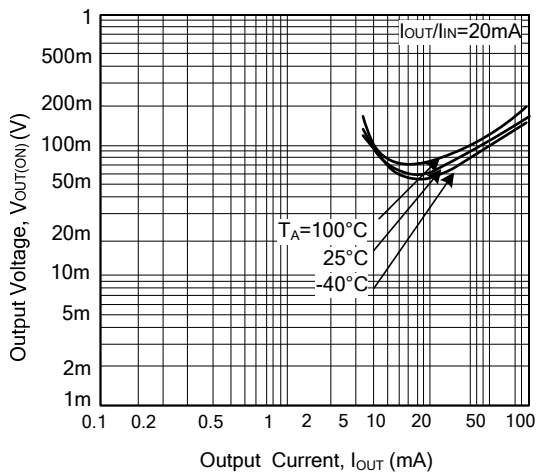
Output Current vs. Input Voltage
(OFF Characteristics)



DC Current Gain vs. Output Current



Output Voltage vs. Output Current



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