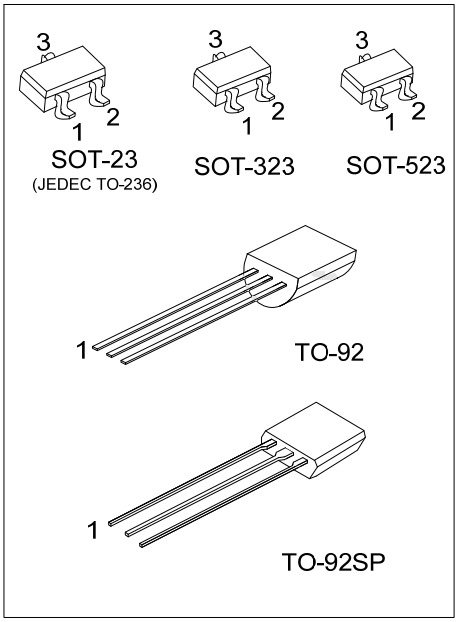
DTC144E

NPN SILICON TRANSISTOR

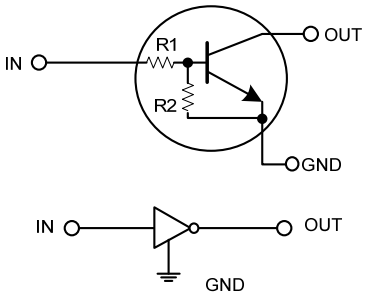
NPN DIGITAL TRANSISTOR (BUILT- IN BIAS RESISTORS)



■ 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

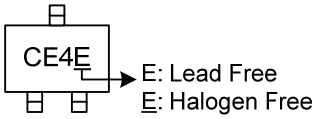
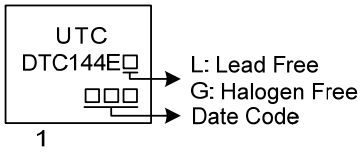
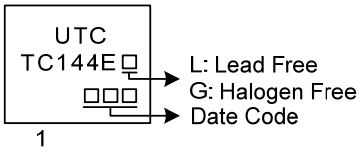
Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
DTC144EL-AE3-R	DTC144EG-AE3-R	SOT-23	I	G	O	Tape Reel
DTC144EL-AL3-R	DTC144EG-AL3-R	SOT-323	I	G	O	Tape Reel
DTC144EL-AN3-R	DTC144EG-AN3-R	SOT-523	I	G	O	Tape Reel
DTC144EL-T92-B	DTC144EG-T92-B	TO-92	G	O	I	Tape Box
DTC144EL-T92-K	DTC144EG-T92-K	TO-92	G	O	I	Bulk
DTC144EL-T9S-B	DTC144EG-T9S-B	TO-92SP	G	O	I	Tape Box
DTC144EL-T9S-K	DTC144EG-T9S-K	TO-92SP	G	O	I	Bulk

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

DTC144EG-AE3-R
(1)Packing Type
(2)Package Type
(3)Green Package

(1) B: Tape Box, K: Bulk, R: Tape Reel
(2) AE3: SOT-23, AL3: SOT-323, AN3: SOT-523
T92: TO-92, T9S: TO-92SP
(3) G: Halogen Free and Lead Free, L: Lead Free

■ MARKING

SOT-23 / SOT-323 / SOT-523	TO-92	TO-92SP
		

■ ABSOLUTE MAXIMUM RATINGS (T_A= 25°C, unless otherwise specified)

PARAMETER		SYMBOL	RATINGS	UNIT
Supply Voltage		V_{CC}	50	V
Input Voltage		V_{IN}	-10 ~ +40	V
Output Current		I_{OUT}	30	mA
		$I_{OUT(MAX)}$	100	mA
Power Dissipation	TO-92SP	P_D	550	mW
	TO-92		625	
	SOT-523		150	
	SOT-23/SOT-323		200	
Junction Temperature		T_J	+150	°C
Storage Temperature		T_{STG}	-55 ~ +150	°C

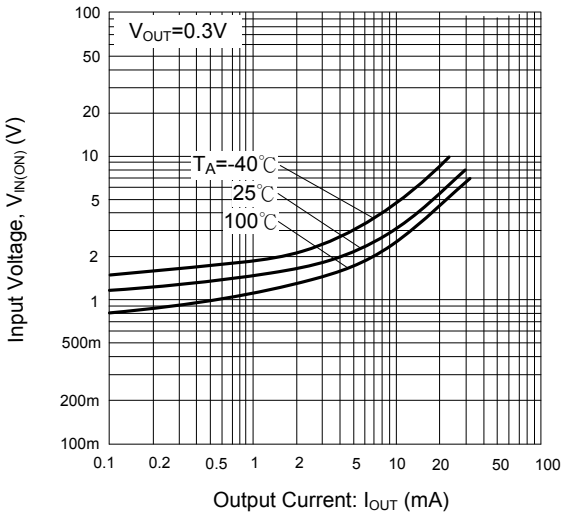
Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.

■ ELECTRICAL CHARACTERISTICS (T_A= 25°C, unless otherwise specified)

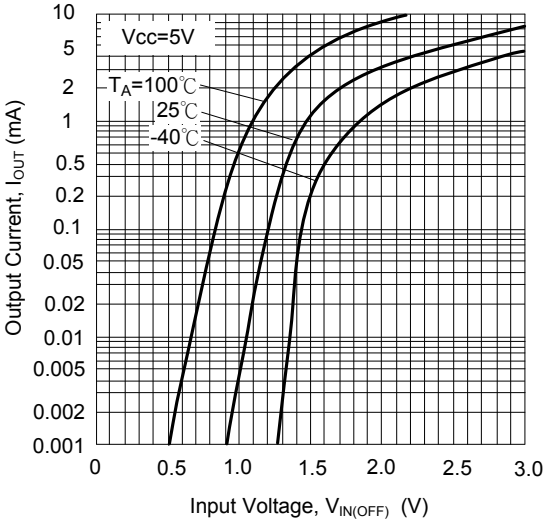
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Input Voltage	$V_{IN(OFF)}$	V_{CC}= 5V, I_{OUT}=100μA			0.5	V
	$V_{IN(ON)}$	V_{OUT}= 0.3V, I_{OUT}= 2mA	3			
Output Voltage	$V_{OUT(ON)}$	I_{OUT}/I_{IN}= 10mA / 0.5mA		0.1	0.3	V
Input Current	I_{IN}	V_{IN}= 5V			0.18	mA
Output Current	$I_{OUT(OFF)}$	V_{CC}= 50V , V_{IN}=0V			0.5	μA
DC Current Gain	h_{FE}	V_{OUT}= 5V, I_{OUT}= 5mA	68			
Input Resistance	R1		32.9	47	61.1	kΩ
Resistance Ratio	R2/R1		0.8	1	1.2	
Transition Frequency	f_T	V_{CE}= 10V, I_E= -5mA, f=100MHz		250		MHz

■ TYPICAL CHARACTERISTICS

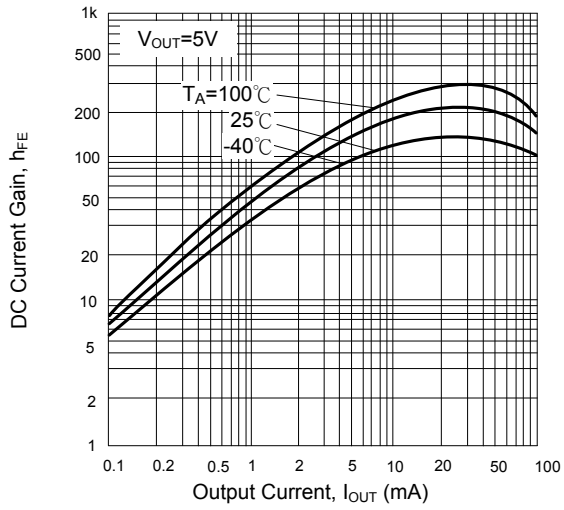
Input Voltage vs. Output Current
(ON Characterristics)



Output Current vs. Input Voltage
(OFF Characterristics)



DC Current Gain vs. Output Current



Output Voltage vs. Output Current