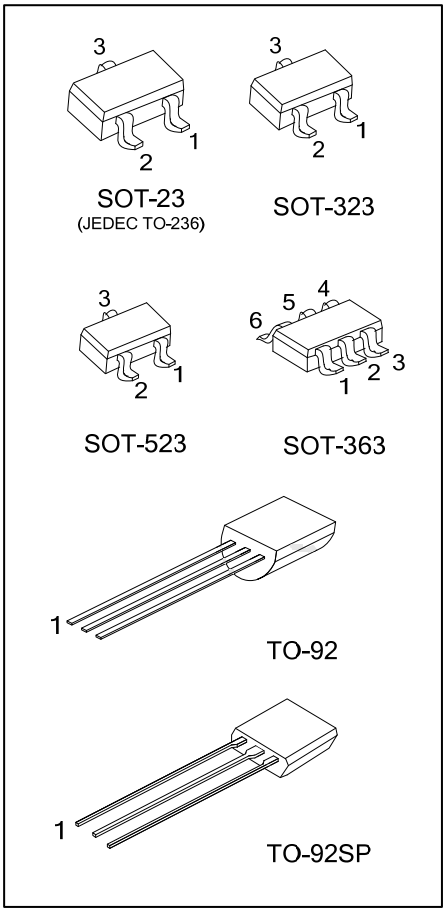
DTC123J

NPN SILICON TRANSISTOR

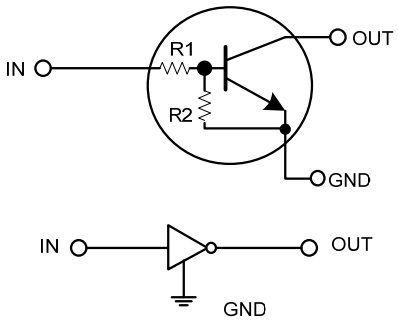
NPN DIGITAL TRANSISTOR (BUILT-IN RESISTORS)



■ FEATURES

* Built-in bias resistors enable the configuration of an inverter circuit without connecting external input resistors (see equivalent circuit).
* The bias resistors consist of thin-film resistors with complete isolation to allow negative biasing of the input. They also have the advantage of almost completely eliminating parasitic effects.
* Only the on/off conditions need to be set for operation, making device design easy.

■ EQUIVALENT CIRCUIT



■ ORDERING INFORMATION

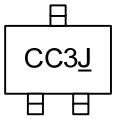
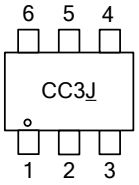
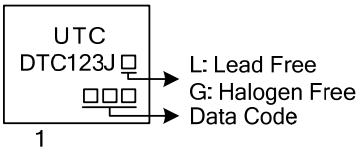
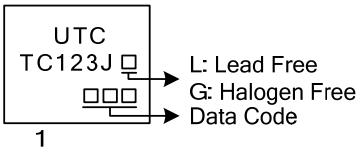
Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
-	DTC123JG-AE3-R	SOT-23	G	I	O	Tape Reel
-	DTC123JG-AL3-R	SOT-323	G	I	O	Tape Reel
-	DTC123JG-AN3-R	SOT-523	G	I	O	Tape Reel
-	DTC123JG-AL6-T	SOT-363	G	I	O	Tube
-	DTC123JG-AL6-R	SOT-363	G	I	O	Tape Reel
DTC123JL-T92-K	DTC123JG-T92-K	TO-92	G	O	I	Bulk
DTC123JL-T92-B	DTC123JG-T92-B	TO-92	G	O	I	Tape Box
DTC123JL-T9S-K	DTC123JG-T9S-K	TO-92SP	G	O	I	Bulk
DTC123JL-T9S-B	DTC123JG-T9S-B	TO-92SP	G	O	I	Tape Box

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

DTC123JG-AE3-R
(1)Packing Type
(2)Package Type
(3)Green Package

(1) R: Tape Reel, B: Tape Box, T: Tube, K: Bulk
(2) AE3: SOT-23, AL3: SOT-323, AN3: SOT-523, AL6: SOT-363, T92: TO-92, T9S: TO-92SP
(3) L: Lead Free, G: Halogen Free and Lead Free

■ MARKING

SOT-23 / SOT-323 / SOT-523	SOT-363
	
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}	-5 ~ +12	V
Output Current		I_O	100	mA
		$I_{C(MAX.)}$	100	
Power Dissipation	SOT-23/SOT-323 SOT-363	P_D	200	mW
	SOT-523		150	
	TO-92		625	
	TO-92SP		550	
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	$V_{I\ (OFF)}$	V_{CC}=5V, I_O=100μA			0.5	V
	$V_{I\ (ON)}$	V_O=0.3V, I_O=5mA	1.1			
Output Voltage	$V_{O\ (ON)}$	I_O/I_I=5mA/0.25mA		0.1	0.3	V
Input Current	I_I	V_I=5V			3.6	mA
Output Current	$I_{O(OFF)}$	V_{CC}=50V, V_I=0V			0.5	μA
DC Current Gain	h_{FE}	V_O=5V, I_O=10mA	80			
Input Resistance	R_1		1.54	2.2	2.86	KΩ
Resistance Ratio	R_2/R_1		17	21	26	
Transition Frequency	f_T	V_{CE}=10V, I_E=−5mA, f=100MHz (Note)		250		MHz

Note: Transition frequency of the device

■ TYPICAL CHARACTERISTICS