



# DTC123J

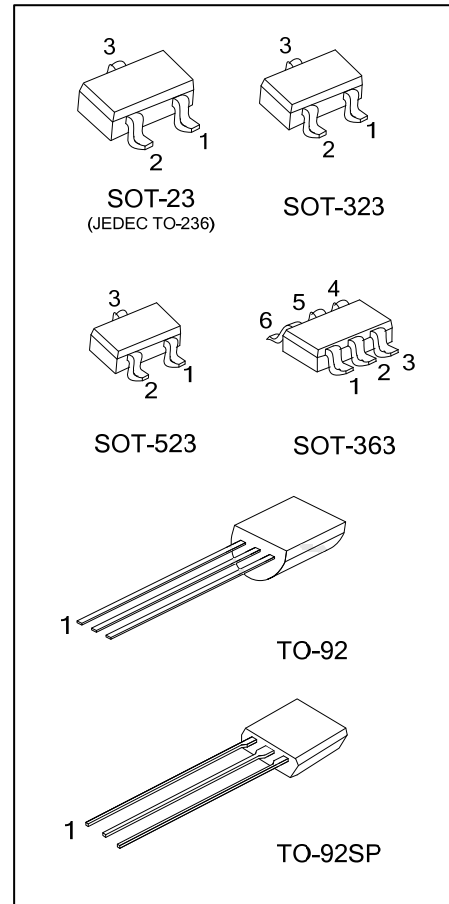
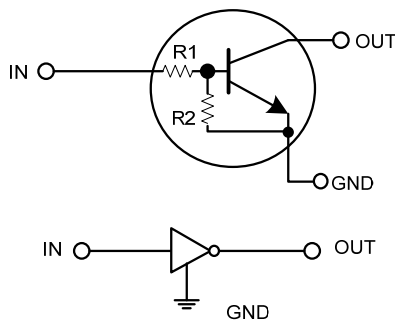
## NPN SILICON TRANSISTOR

### 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



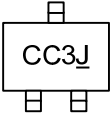
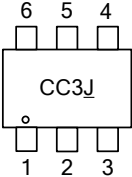
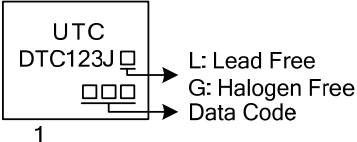
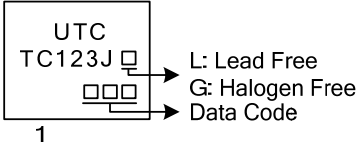
#### ORDERING INFORMATION

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

<p>DTC123JG-AE3-R</p>	<p>(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</p>
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■ MARKING

<p style="text-align: center;">SOT-23 / SOT-323 / SOT-523</p> 	<p style="text-align: center;">SOT-363</p> 
<p style="text-align: center;">TO-92</p> 	<p style="text-align: center;">TO-92SP</p> 

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

PARAMETER		SYMBOL	RATINGS	UNIT
Supply Voltage		V <sub>CC</sub>	50	V
Input Voltage		V <sub>IN</sub>	-5 ~ +12	V
Output Current		I <sub>O</sub>	100	mA
		I <sub>C(MAX.)</sub>	100	
Power Dissipation	SOT-23/SOT-323 SOT-363	P <sub>D</sub>	200	mW
	SOT-523		150	
	TO-92		625	
	TO-92SP		550	
Junction Temperature		T <sub>J</sub>	150	°C
Storage Temperature		T <sub>STG</sub>	-55 ~ +150	°C

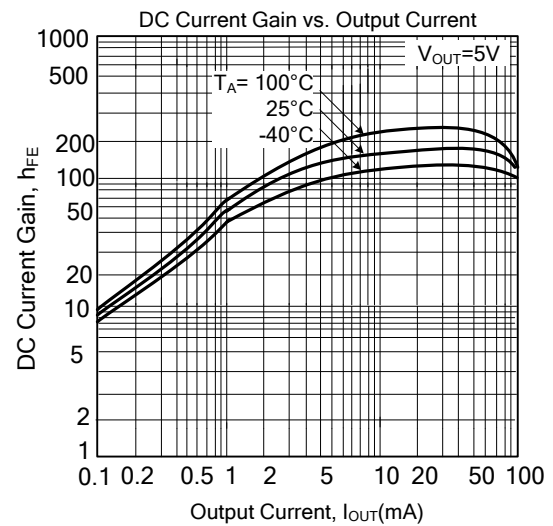
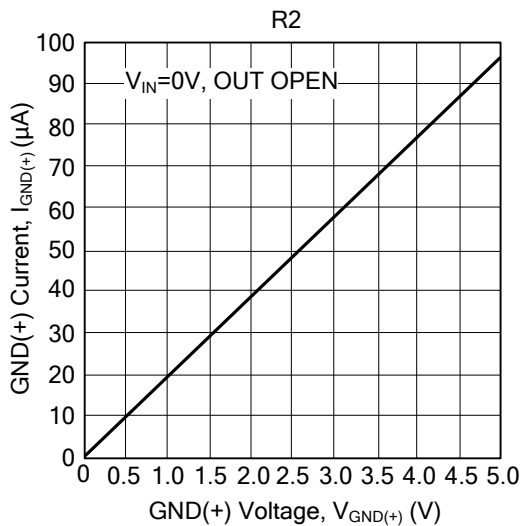
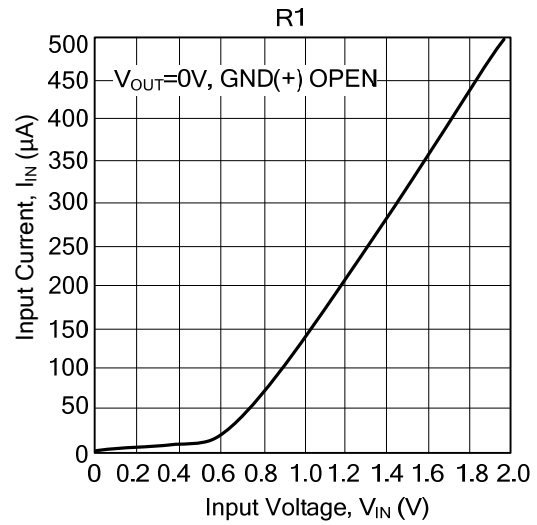
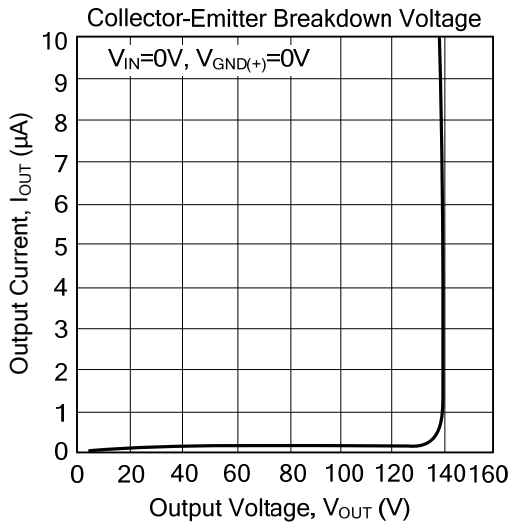
Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.

■ ELECTRICAL CHARACTERISTICS (T<sub>A</sub>=25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Input Voltage	V <sub>I(OFF)</sub>	V <sub>CC</sub> =5V, I <sub>O</sub> =100μA			0.5	V
	V <sub>I(ON)</sub>	V <sub>O</sub> =0.3V, I <sub>O</sub> =5mA	1.1			
Output Voltage	V <sub>O(ON)</sub>	I <sub>O</sub> /I <sub>I</sub> =5mA/0.25mA		0.1	0.3	V
Input Current	I <sub>I</sub>	V <sub>I</sub> =5V			3.6	mA
Output Current	I <sub>O(OFF)</sub>	V <sub>CC</sub> =50V, V <sub>I</sub> =0V			0.5	μA
DC Current Gain	h <sub>FE</sub>	V <sub>O</sub> =5V, I <sub>O</sub> =10mA	80			
Input Resistance	R <sub>1</sub>		1.54	2.2	2.86	KΩ
Resistance Ratio	R <sub>2</sub> /R <sub>1</sub>		17	21	26	
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 CHARACTERISTICS



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