UTC DTC123Y

NPN DIGITAL TRANSISTOR

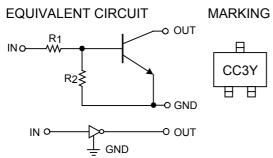
NPN DIGITAL TRANSISTOR (BUILT-IN RESISTORS)

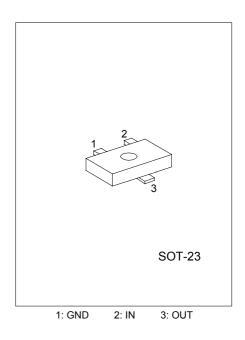
FEATURES

*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.





ABSOLUTE MAXIMUM RATINGS (Ta=25°C)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	Vcc	50	V
Input Voltage	VIN	-5 ~ +12	V
Output Current	lo	100	mA
	IC(MAX)	100	mA
Power Dissipation	PD	200	mW
Junction Temperature	Tj	150	°C
Storage Temperature	Tstg	-55 ~ +150	°C

ELECTRICAL CHARACTERISTICS (Ta=25°C)

SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
VI(off)	Vcc= 5V, Io=100 μ A			0.3	v
VI(ON)	Vo= 0.3V, Io= 20mA	3			v
VO(ON)	lo/li= 10mA/0.5 mA		0.1	0.3	V
li	VI= 5V			3.8	mA
IO(off)	Vcc= 50V, VI=0V			0.5	μA
Gı	Vo= 5V, lo= 10mA	33			
R 1		1.54	2.2	2.86	kΩ
R2/R1		3.6	4.5	5.5	
fτ	Vce= 10 V, Ie= -5mA, f=100MHz*		250		MHz
	VI(off) VI(ON) VO(ON) II IO(off) GI R1 R2/R1	VI(off) Vcc= 5V, Io=100 µ A VI(ON) Vo= 0.3V, Io= 20mA Vo(ON) Io/II= 10mA/0.5 mA II VI= 5V Io(off) Vcc= 50V, VI=0V GI Vo= 5V, Io= 10mA R1 R2/R1	VI(off) Vcc= 5V, lo=100 μ A VI(ON) Vo= 0.3V, lo= 20mA 3 Vo(ON) lo/li= 10mA/0.5 mA 1 II Vi= 5V 1 Io(off) Vcc= 50V, Vi=0V 33 R1 1.54 3.6	VI(off) Vcc= 5V, lo=100 µ A 0 VI(ON) Vo= 0.3V, lo= 20mA 3 VO(ON) Io/II= 10mA/0.5 mA 0.1 II VI= 5V 0 Io(off) Vcc= 50V, VI=0V 0 GI Vo= 5V, Io= 10mA 33 R1 1.54 2.2 R2/R1 3.6 4.5	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$

*Transition frequency of the device

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50

20

10

5

 $100 \,\mu$ 200 μ 500 μ 1m

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2.5

lo/l=20

50m 100m

3.0

Input voltage vs. output current Output current vs input voltage (ON characteristics) (OFF characteristics) 100 10m Vcc=5V Vo=0.3V 5m 50 2m 20 1m Input Voltage, VI(ON) (V) Output Current, lo (A) **500** μ 10 Ta=100° **200** µ 5 ·25° Ta=-40° **100** μ -40°(-25°(2 100°C 50 μ **20** μ **10** μ 500m 5μ 200m 2 /1 100m _____ 100µ 200µ 1μ 500µ 1m 2m 5m 10m 20m 50m 100m 0 1.0 1.5 2.0 0.5 INPUT VOLTAGE, VI(off) (V) Output Current, Io (A) Output voltage vs. output current DC current gain vs. output current 1K Vo= 5V 500r 500 Ta=100°C **100**°C Та 200 -25° 200m Output Voltage, Vo(on) (V) 25°(-40°℃ DC Current Gain, GI 40°(100m 100

2m 5m 10m 20m

Output Current, Io(A)

ELECTRICAL CHARACTERISTIC CURVES

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50m 100m

50n

20m 10m

5m

2m 1m

100µ 200µ

500µ 1m

2m 5m 10m 20m

Output Current, Io (A)

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