

**SOT-23 DIGITAL TRANSISTORS  
TRANSISTORS(NPN)**


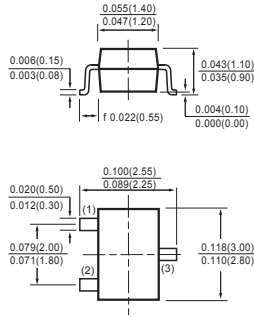
**FEATURES**

- \* 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 marking device design easy.

**MECHANICAL DATA**


- \* Case: Molded plastic
- \* Epoxy: UL 94V-O rate flame retardant
- \* Lead: MIL-STD-202E method 208C guaranteed
- \* Mounting position: Any
- \* Weight: 0.008 gram

**SOT-23**

Dimensions in inches and (millimeters)

**MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS**  
Ratings at 25°C ambient temperature unless otherwise specified.



(1) IN  
(2) GND  
(3) OUT

**MAXIMUM RATINGS** ( @ TA = 25°C unless otherwise noted )

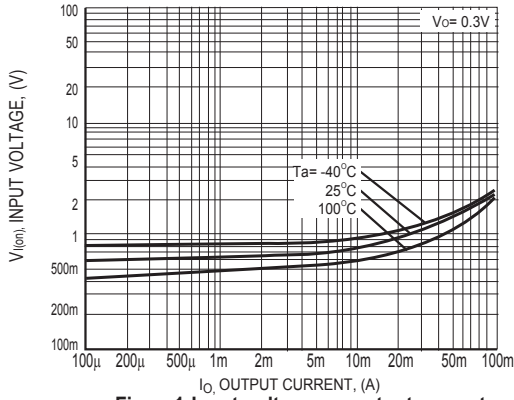
RATINGS	SYMBOL	LIMITS	UNITS
Supply voltage	V <sub>CC</sub>	-50	V
Input voltage	V <sub>IN</sub>	-5~+10	V
Output current	I <sub>O</sub>	100	mA
	I <sub>C(MAX)</sub>	100	
Power dissipation	P <sub>d</sub>	200	mW
Junction temperature	T <sub>j</sub>	150	°C
Storage temperature	T <sub>stg</sub>	-55 ~150	°C

**ELECTRICAL CHARACTERISTICS** ( @ TA = 25°C unless otherwise noted )

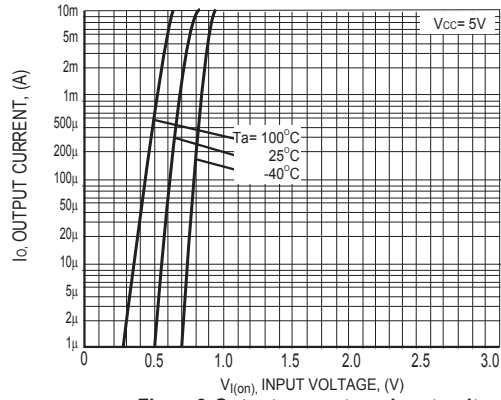
CHARACTERISTICS	SYMBOL	MIN	TYP	MAX	UNITS
Input voltage (V <sub>CC</sub> = 5V, I <sub>O</sub> = 100μA)	V <sub>I(off)</sub>	-	-	0.3	V
Input voltage (V <sub>O</sub> = 0.3V, I <sub>O</sub> = 20mA)	V <sub>I(on)</sub>	3	-	-	
Output voltage (I <sub>O</sub> / I <sub>I</sub> = 10mA / 0.5mA)	V <sub>O(on)</sub>	-	-	0.3	V
Input current (V <sub>I</sub> = 5V)	I <sub>I</sub>	-	-	7.2	mA
Output current (V <sub>CC</sub> = 50V, V <sub>I</sub> = 0)	I <sub>O(off)</sub>	-	-	0.5	μA
DC current gain (V <sub>O</sub> = 5V, I <sub>O</sub> = 5mA)	G <sub>I</sub>	33	-	-	-
Input resistance	R <sub>1</sub>	0.7	1	1.3	KΩ
Resistance ratio	R <sub>2</sub> / R <sub>1</sub>	8	10	12	-
Transition frequency (V <sub>CE</sub> = 10V, I <sub>E</sub> = -5mA, f= 100MHz)	f <sub>T</sub>	-	250	-	MHz

NOTE: "Fully ROHS compliant", "100% Sn plating (Pb-free)".

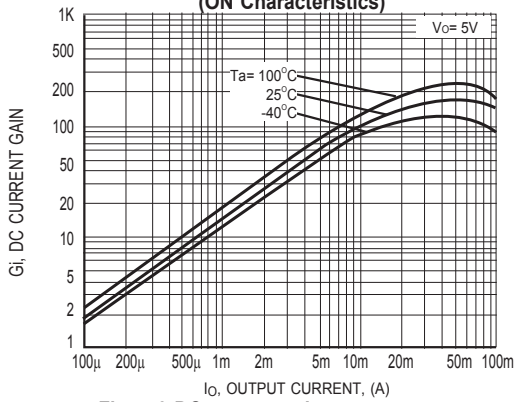
## RATING AND CHARACTERISTICS CURVES (DTC113ZCA)



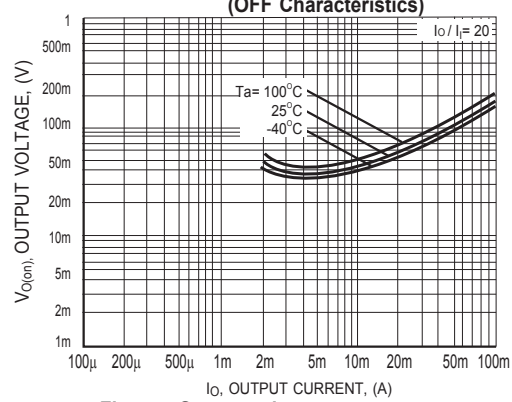
**Figure1 Input voltage vs. output current (ON Characteristics)**



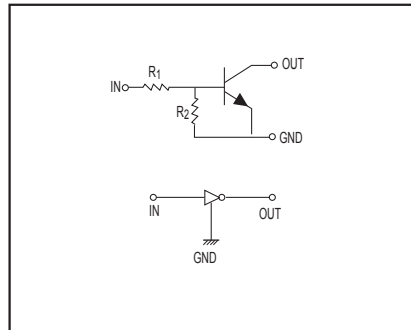
**Figure2 Output current vs. input voltage (OFF Characteristics)**



**Figure3 DC current gain vs. output current**



**Figure4 Output voltage vs. output current**



**Figure5 Equivalent circuit**

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