

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

**FEATURES**

- \* Built-in bias resistors enable the configuration of an inverter circuit without connecting external input resistors.
- \* 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.

**MECHANICAL DATA**

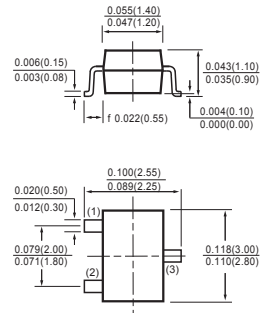
- \* Case: Molded plastic
- \* Epoxy: UL 94V-O rate flame retardant
- \* Lead: MIL-STD-202E method 208C guaranteed
- \* Mounting position: Any
- \* Weight: 0.008 gram

**MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS**

Ratings at 25°C ambient temperature unless otherwise specified.



**SOT-23**



**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>	-10~+30	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>	-	-	0.5	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>	-	-	1.8	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> = 10mA)	G <sub>I</sub>	20	-	-	-
Input resistance	R <sub>1</sub>	3.29	4.7	6.11	KΩ
Resistance ratio	R <sub>2</sub> / R <sub>1</sub>	0.8	1	1.2	-
Transition frequency (V <sub>O</sub> = 10V, I <sub>O</sub> = 5mA, f = 100MHz)	f <sub>T</sub>	-	250	-	MHz

## RATING AND CHARACTERISTICS CURVES (DTC143ECA)

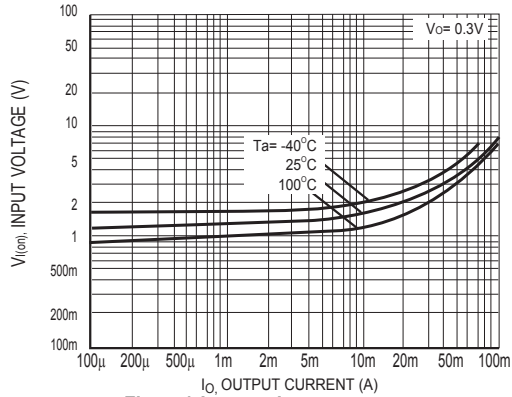


Figure1 Input voltage vs. output current  
(ON Characteristics)

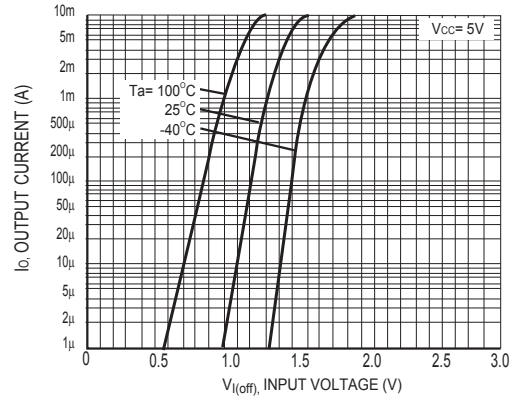


Figure2 Output current vs. input voltage  
(OFF Characteristics)

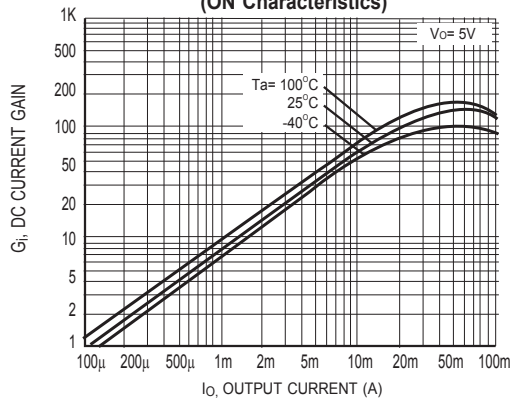


Figure3 DC current gain vs. output current

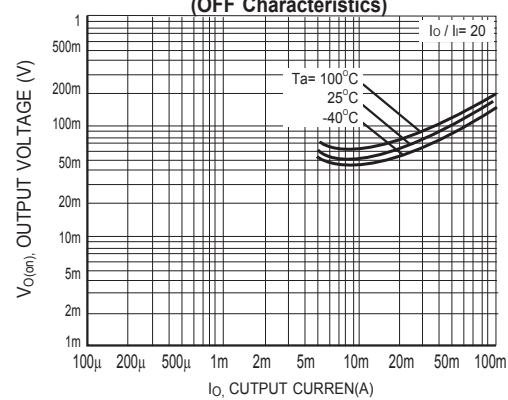


Figure4 Output voltage vs. output current

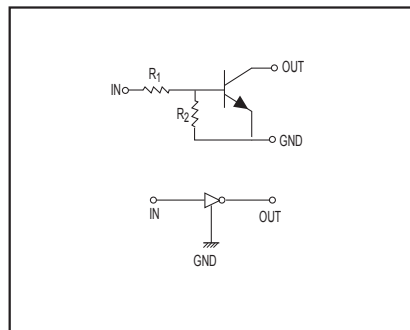


Figure5 Equivalent circuit

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