

Digital transistors (built-in resistors)

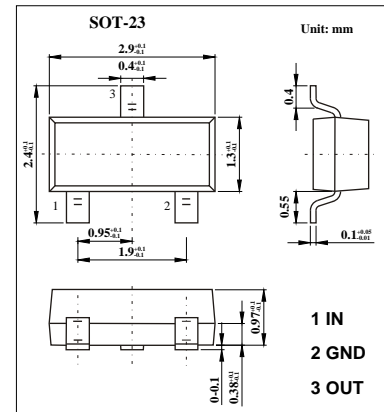
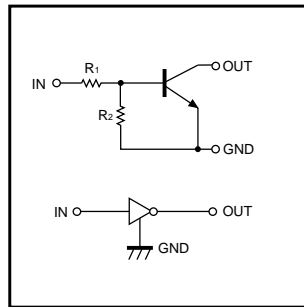
DTC143EKA

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 positive 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 $T_A=25$

Parameter	Symbol	Rating	Unit
Supply voltage	V_{CC}	50	V
Input voltage	V_{IN}	-10 to +30	V
Collector current	I_O	100	mA
	$I_{C(max)}$	100	
power dissipation	P_d	200	mW
Junction temperature	T_j	150	
Storage temperature	T_{stg}	-55 to +150	

Electrical Characteristics $T_A=25 \pm 3$

Parameter	Symbol	Test conditions	Min.	Typ.	Max.	Unit
Input voltage	$V_{I(off)}$	$V_{CC} = 5V, I_O = 100 \mu A$			0.5	V
	$V_{I(on)}$	$V_O = 0.3V, I_O = 20mA$	3			
Output voltage	$V_{O(on)}$	$I_O = -10mA, I_I = 0.5mA$		0.1	0.3	V
Input current	I_I	$V_I = 5V$			1.8	mA
Output current	$I_{D(off)}$	$V_{CC} = 50V, V_I = 0V$			0.5	μA
DC current gain	G_I	$V_O = 5V, I_O = 10mA$	20			
Input resistance	R_1		3.29	4.7	6.11	k
Resistance ratio	R_2/R_1		0.8	1	1.2	
Transition frequency	f_T	$V_{CE} = 10V, I_E = -5mA, f = 100MHz^*$		250		MHz

*Transition frequency of the device

DTC143EKA

■ Typical Characteristics

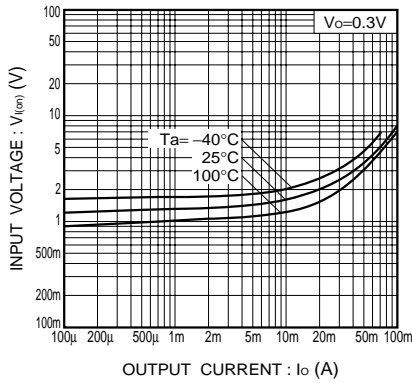


Fig.1 Input voltage vs. output current (ON characteristics)

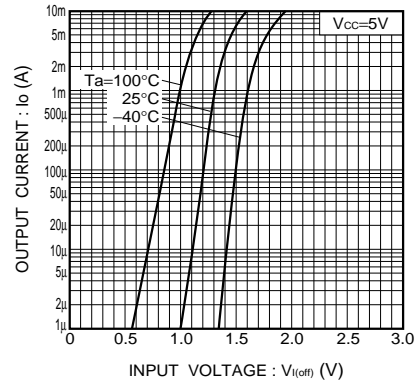


Fig.2 Output current vs. input voltage (OFF characteristics)

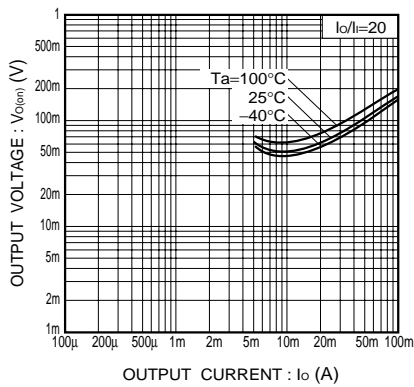


Fig.4 Output voltage vs. output current

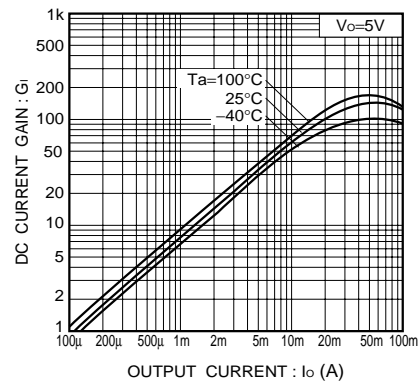


Fig.3 DC current gain vs. output current