



Digital transistors (built-in resistors)

DTC143EE/DTC143EUA/

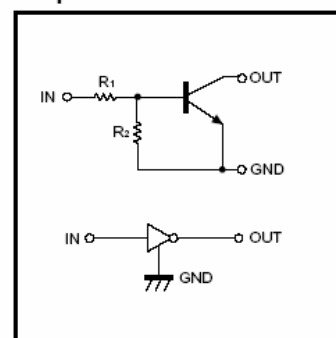
DTC143ECA/DTC143EKA/DTC143ESA

DIGITAL TRANSISTOR (NPN)

Features

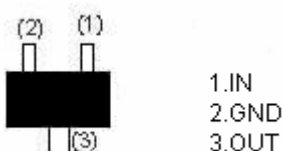
- 1) Built-in bias resistors enable the configuration of an inverter circuit without connecting external input resistors (see equivalent circuit).
- 2) The bias resistors consist of thin-film resistors with complete isolation to allow negative biasing of the input. They also have the advantage of almost completely eliminating parasitic effects.
- 3) Only the on/off conditions need to be set for operation, making device design easy.

●Equivalent circuit



PIN CONNENCTIONS AND MARKING

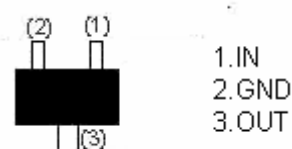
DTC143EE



SOT-523

Abbreviated symbol: 23

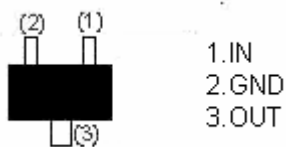
DTC143EUA



SOT-323

Abbreviated symbol: 23

DTC143EKA



SOT-23-3L

Abbreviated symbol: 23

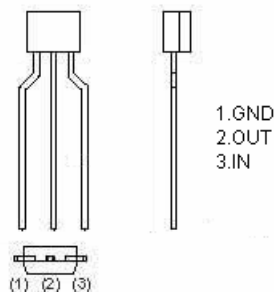
DTC143ECA



SOT-23

Abbreviated symbol: 23

DTC143ESA



TO-92S

Absolute maximum ratings(Ta=25°C)

Parameter	Symbol	Limits (DTC143E□)					Unit
		E	UA	KA	CA	SA	
Supply voltage	V _{CC}	50					V
Input voltage	V _{IN}	-10~+30					V
Output current	I _O	100					mA
	I _{C(MAX)}	100					
Power dissipation	P _d	150	200			300	mW
Junction temperature	T _j	150					℃
Storage temperature	T _{stg}	-55~150					℃

Electrical characteristics (Ta=25°C)

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

Typical Characteristics

●Electrical characteristic curves

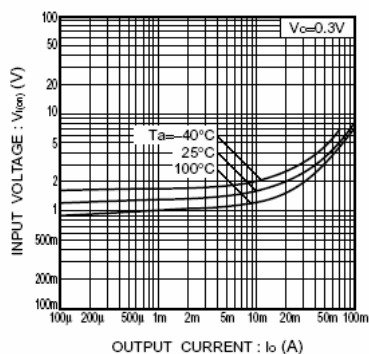


Fig.1 Input voltage vs. output current (ON characteristics)

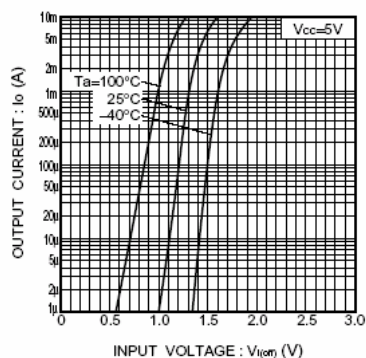


Fig.2 Output current vs. input voltage (OFF characteristics)

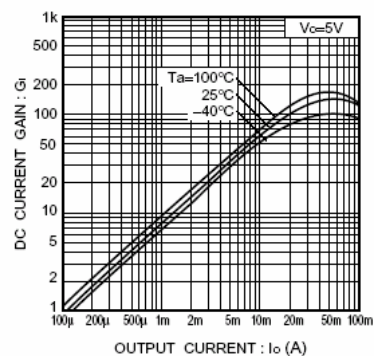


Fig.3 DC current gain vs. output current

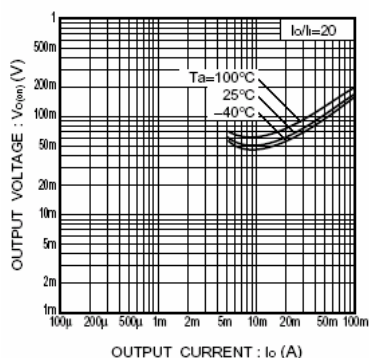


Fig.4 Output voltage vs. output current