



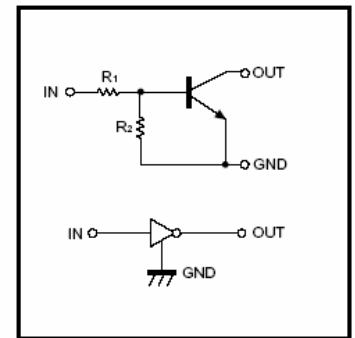
DTC143EE/DTC143EUA/ DTC143ECA/DTC143EKA/DTC143ESA

DIGITAL TRANSISTOR (NPN)

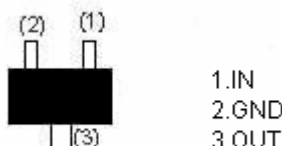
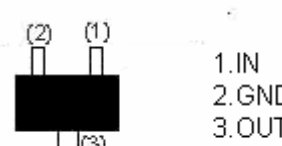
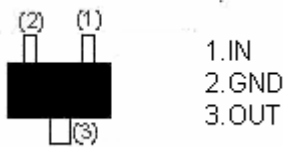
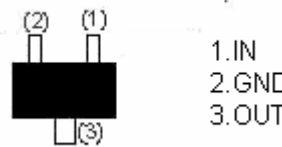
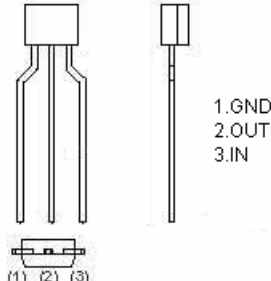
Features

- 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℃)

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 ℃)

Parameter	Symbol	Min.	Typ	Max.	Unit	Conditions
Input voltage	V _{I(off)}			0.5	V	V _{CC} =5V ,I _O =100μA
	V _{I(on)}	3				V _O =0.3V ,I _O =20 mA
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	KΩ	
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

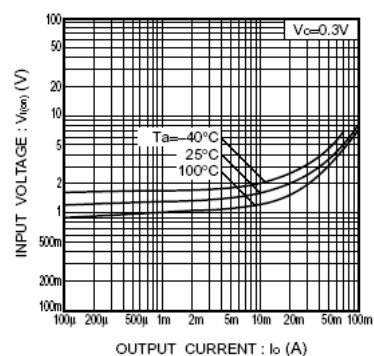


Fig.1 Input voltage vs. output current (ON characteristics)

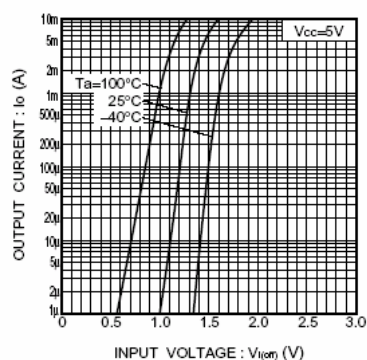


Fig.2 Output current vs. input voltage (OFF characteristics)

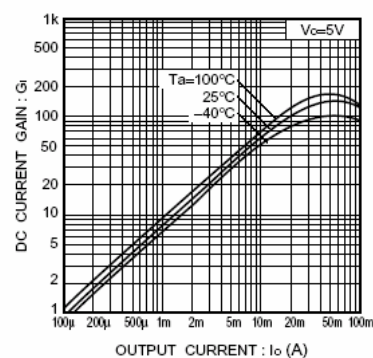


Fig.3 DC current gain vs. output current

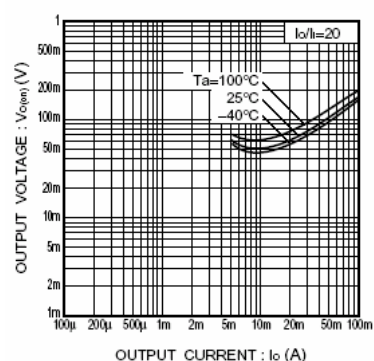


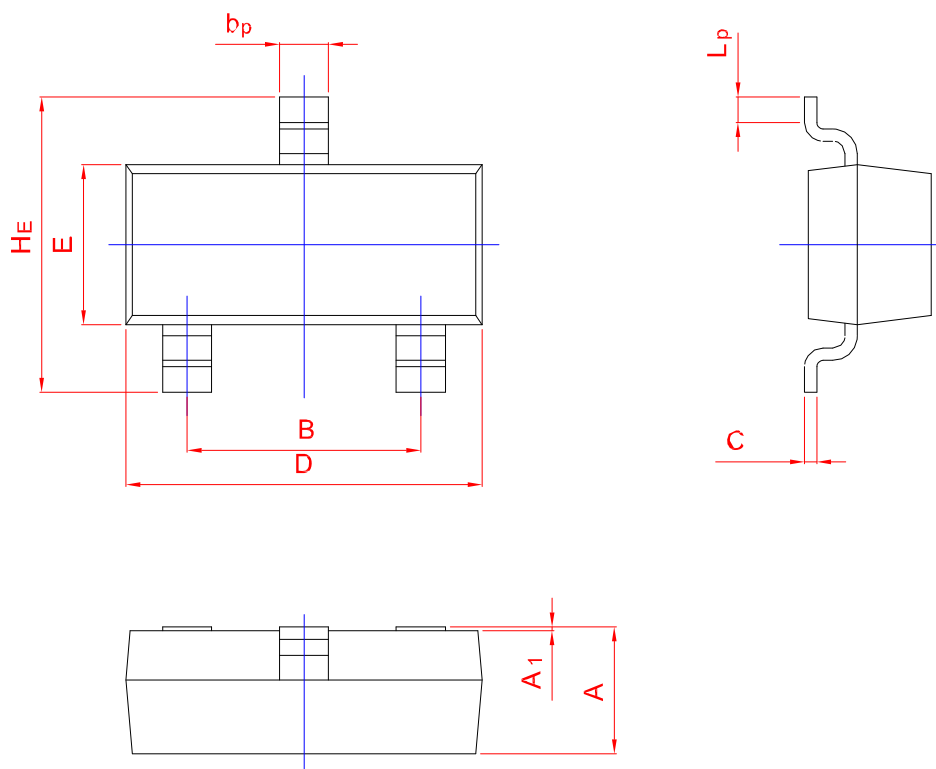
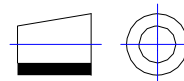
Fig.4 Output voltage vs. output current



PACKAGE OUTLINE

Plastic surface mounted package; 3 leads

SOT-23



UNIT	A	B	b _p	C	D	E	H _E	A ₁	L _p
mm	1.40 0.95	2.04 1.78	0.50 0.35	0.19 0.08	3.10 2.70	1.65 1.20	3.00 2.20	0.100 0.013	0.50 0.20