

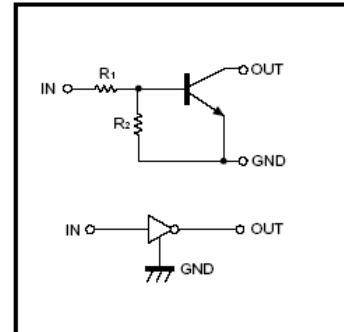
**DTC114EE/DTC114EUA/DTC114EKA
/DTC114ESA/DTC114ECA**

Digital Transistors NPN (Built-in Resistors)

FEATURES

- * Built-in bias resistors enable the configuration of an inverter circuit without connecting external input resistors (see equivalent circuit).
- * Only the on/off conditions need to be set for operation making device design easy.
- * 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.

● **Equivalent circuit**



External dimensions (Units:mm)

<p>DTC114EE</p> <p>SOT-523 Abbreviated symbol : 24</p>	<p>DTC114EUA</p> <p>SOT-323 Abbreviated symbol : 24</p>
<p>DTC114ECA</p> <p>SOT-23 Abbreviated symbol : 24</p>	<p>DTC114EKA</p> <p>SOT-23-3L Abbreviated symbol : 24</p>
<p>DTC114ESA</p> <p>TO-92S</p>	

Absolute maximum ratings(Ta=25°C)

Parameter	Symbol	Limits (DTC114E□)					Unit
		E	UA	CA	KA	SA	
Supply voltage	V _{CC}	50					V
Input voltage	V _{IN}	-10~40					V
Output current	I _o	50					mA
	I _{C(MAX)}	100					
Power dissipation	P _d	150	200			300	mW
Junction temperature	T _j	150					°C
Storage temperature	T _{stg}	-55~150					°C

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				$V_o=0.3V, I_o=10mA$
Output voltage	$V_{O(on)}$			0.3	V	$I_o/I_i=10mA/0.5mA$
Input current	I_i			0.88	mA	$V_i=5V$
Output current	$I_{O(off)}$			0.5	μA	$V_{CC}=50V, V_i=0$
DC current gain	G_i	30				$V_o=5V, I_o=5mA$
Input resistance	R_1	7	10	13	K Ω	
Resistance ratio	R_2/R_1	0.8	1	1.2		
Transition frequency	f_T		250		MHz	$V_{CE}=10V, I_E=-5mA, f=100MHz$

Typical Characteristics

●Electrical characteristic curves

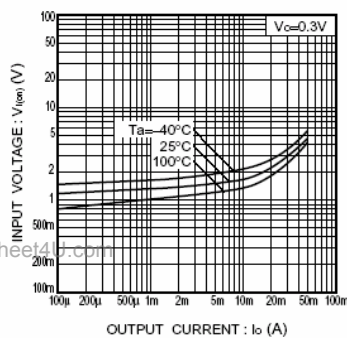


Fig.1 Input voltage vs. output current (ON characteristics)

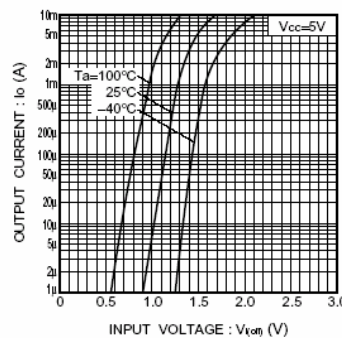


Fig.2 Output current vs. input voltage (OFF characteristics)

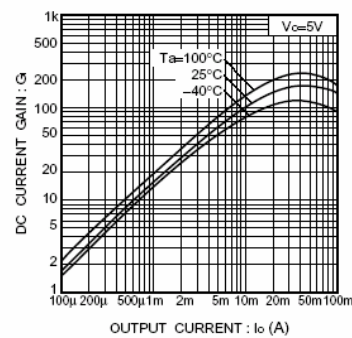


Fig.3 DC current gain vs. output current

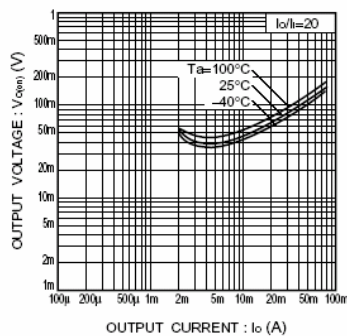


Fig.4 Output voltage vs. output current