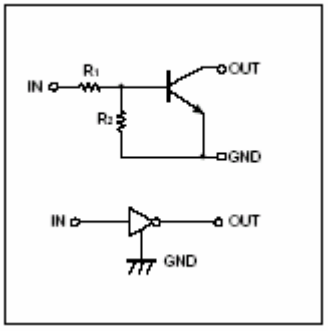
Digital transistors (built-in resistors)

DTC114EM/DTC114EE/DTC114EUA
DTC114EKA /DTC114ECA /DTC114ESA

DIGITAL TRANSISTOR (NPN)

●Equivalent circuit

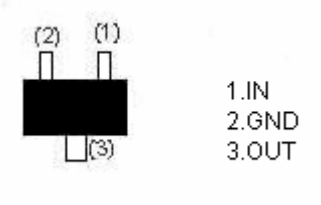


FEATURES

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

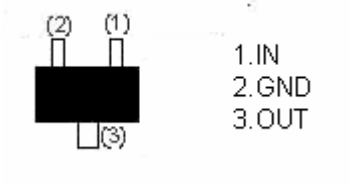
PIN CONNENCTIONS AND MARKING

DTC114EE



SOT-523 Addreviated symbol: 24

DTC114EUA



SOT-323 Addreviated symbol: 24

DTC114EKA

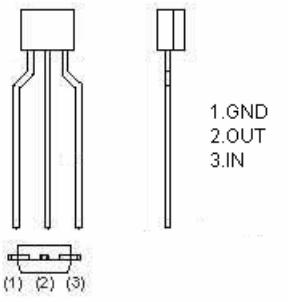
SOT-23-3L

Addreviated symbol: 24

DTC114ECA

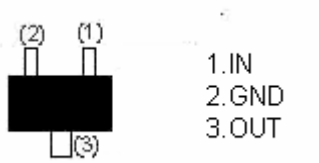
SOT-23 Addreviated symbol: 24

DTC114ESA



TO-92S

DTC114EM



SOT-723 Addreviated symbol: 24

Absolute maximum ratings(Ta=25℃)

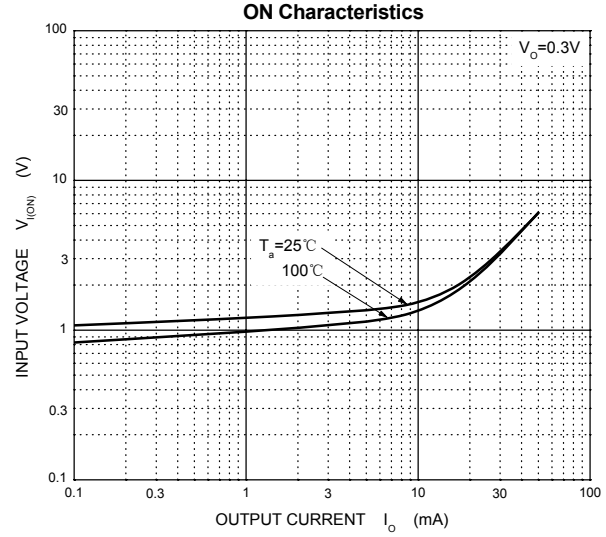
Parameter	Symbol	Limits (DTC114E□)						Unit
		M	E	UA	KA	CA	SA	
Supply voltage	V_{CC}	50						V
Input voltage	V_{IN}	-10~40						V
Output current	I_O	50						mA
	$I_{C(MAX)}$	100						
Power dissipation	P_d	100	150	200			300	mW
Junction temperature	T_j	150						℃
Storage temperature	T_{stg}	-55~150						℃

Electrical characteristics (Ta=25℃)

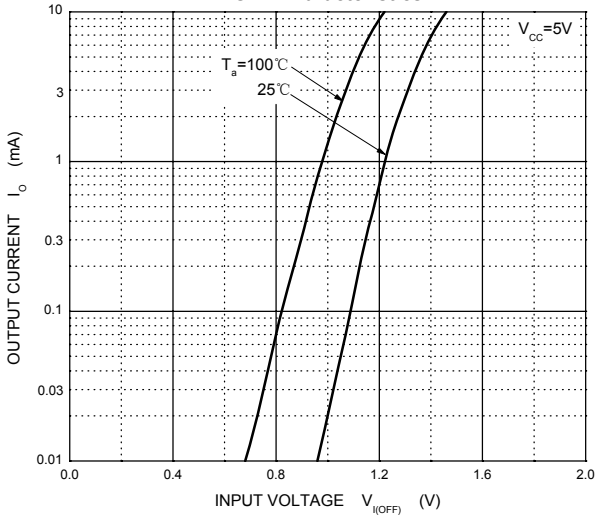
Parameter	Symbol	Min	Typ	Max	Unit	Conditions
Input voltage	$V_{I(off)}$	0.5			V	V_{CC}=5V ,I_O=100μA
	$V_{I(on)}$			3		V_O=0.3V ,I_O=10 mA
Output voltage	$V_{O(on)}$			0.3	V	I_O/I_I=10mA/0.5mA
Input current	I_I			0.88	mA	V_I=5V
Output current	$I_{O(off)}$			0.5	μA	V_{CC}=50V, V_I=0
DC current gain	G_I	30				V_O=5V ,I_O=5mA
Input resistance	R_1	7	10	13	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

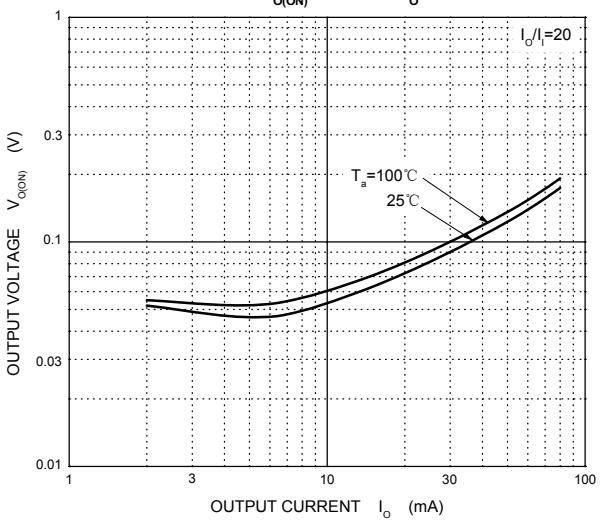
ON Characteristics



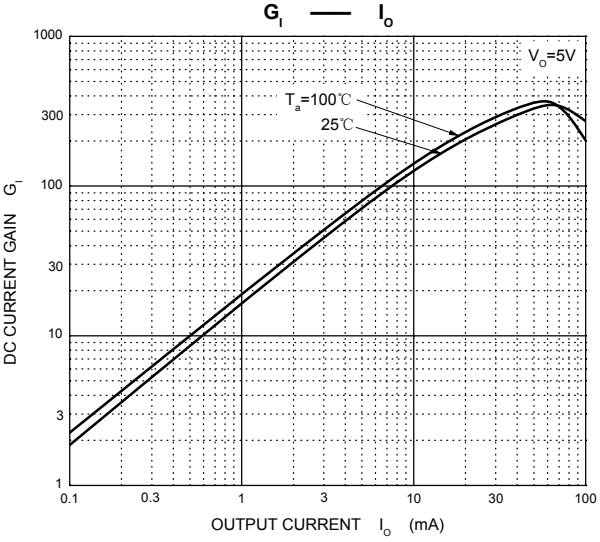
OFF Characteristics



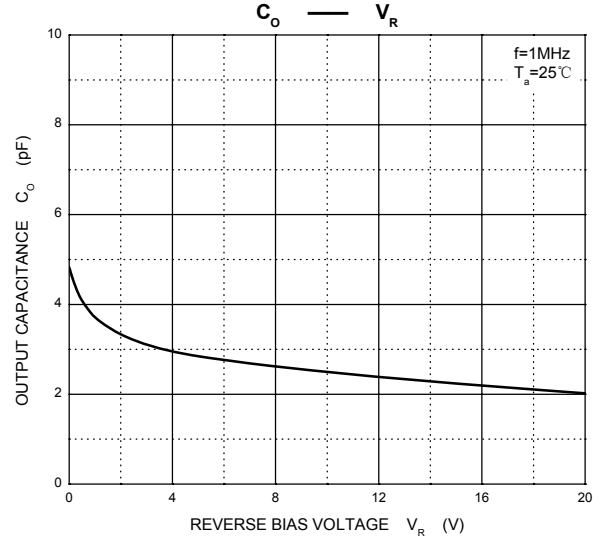
$V_{O(ON)}$ — I_O



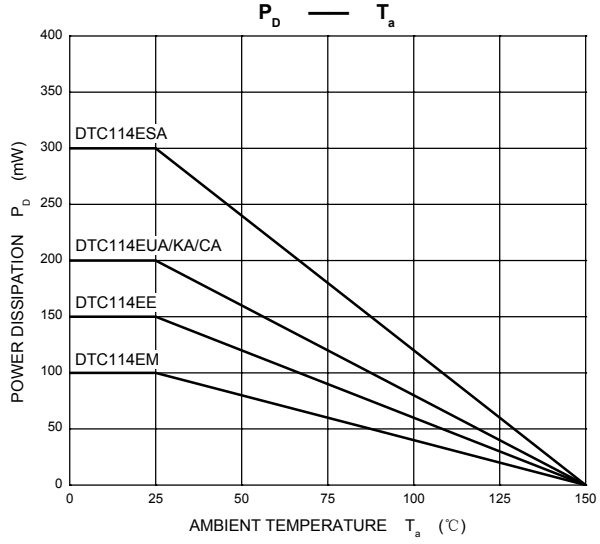
G_I — I_O



C_O — V_R



P_D — T_a



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