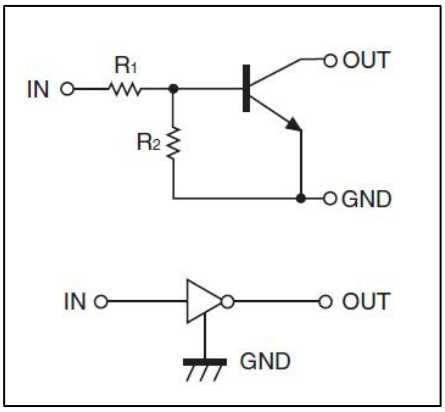
Digital Transistors (Built-in Resistors)

DIGITAL TRANSISTOR (NPN)

• **Equivalent Circuit**

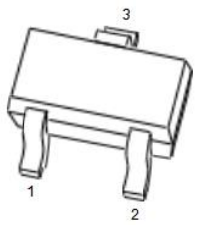


FEATURES

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

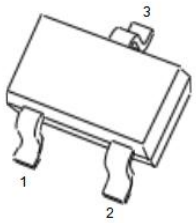
PIN CONNENCTIONS and MARKING

DTC124EE — **SOT-523**



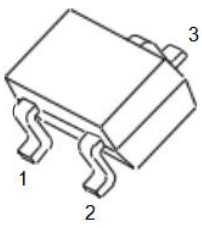
1. IN
2. GND
3.OUT

DTC124EUA — **SOT-323**



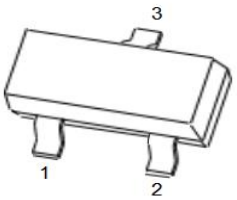
1. IN
2. GND
3. OUT

DTC124EKA — **SOT-23-3L**



1. IN
2. GND
3.OUT

DTC124ECA — **SOT-23**



1.IN
2.GND
3.OUT

ORDERING INFORMATION

Part Number	MARKING	Package	Packing Method	Pack Quantity
DTC124EE	**25**	SOT-523	Reel	3000pcs/Reel
DTC124EUA	**25**	SOT-323	Reel	3000pcs/Reel
DTC124EKA	**25**	SOT-23-3L	Reel	3000pcs/Reel
DTC124ECA	**25**	SOT-23	Reel	3000pcs/Reel

MAXIMUM RATINGS(Ta=25℃ unless otherwise noted)

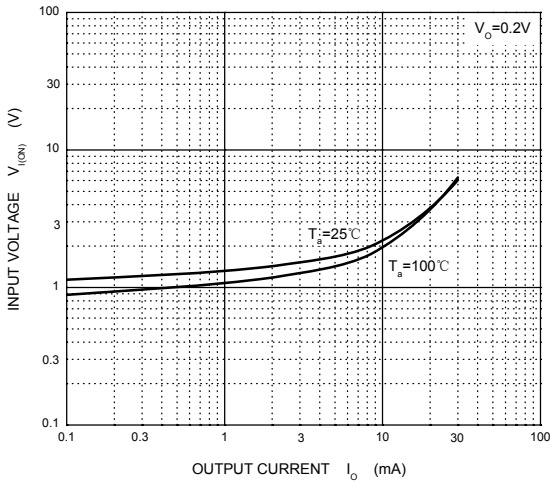
Symbol	Parameter	Limits(DTC124E□)				Unit
		E	UA	KA	CA	
V_{CC}	Supply Voltage	50				V
V_{IN}	Input Voltage	-10～+40				V
I_O	Output Current	30				mA
I_{CM}	Peak Collector Current	100				mA
P_D	Power Dissipation	150	200	200	200	mW
T_J,T_{stg}	Operation Junction and Storage Temperature Range	-55～+150				℃

ELECTRICAL CHARACTERISTICS (Ta=25℃ unless otherwise specified)

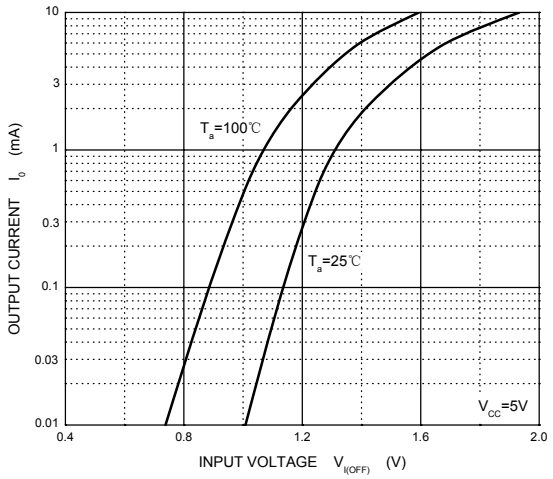
Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Input voltage	$V_{I(off)}$	V_{CC}=5V,I_O=100μA	0.5			V
	$V_{I(on)}$	V_O=0.2V,I_O=5mA			3	V
Output voltage	$V_{O(on)}$	I_O/I_I=10mA/0.5mA		0.1	0.3	V
Input current	I_I	V_I=5V			0.36	mA
Output current	$I_{O(off)}$	V_{CC}=50V,V_I=0			0.5	μA
DC current gain	G_I	V_O=5V,I_O=5mA	56			
Input resistance	R_1		15.4	22	28.6	kΩ
Resistance ratio	R_2/R_1		0.8	1	1.2	
Transition frequency	f_T	V_O=10V,I_O=5mA,f=100MHz		250		MHz

Typical Characteristics

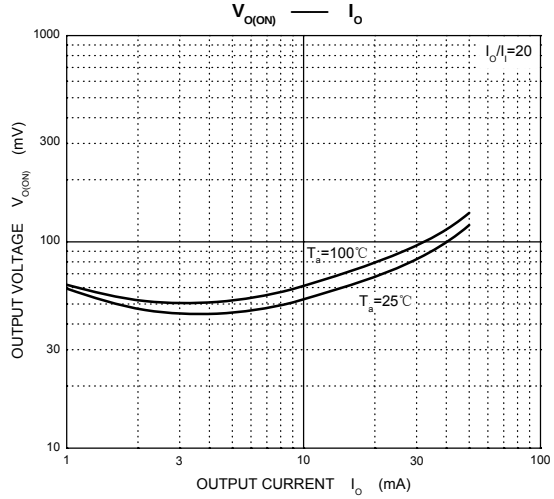
ON Characteristics



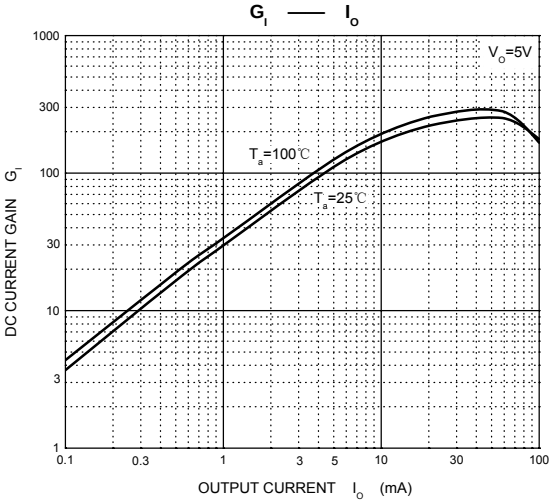
OFF Characteristics



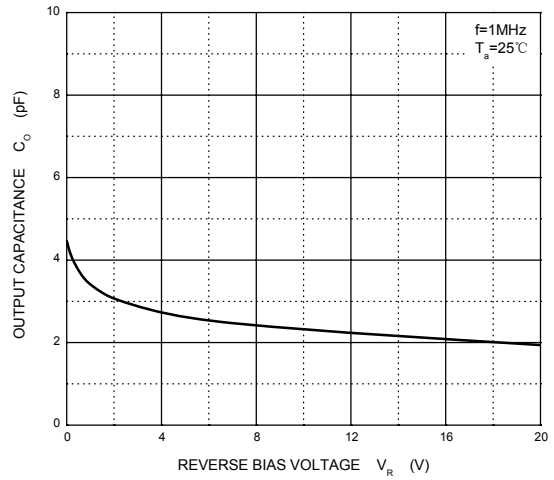
$V_{O(ON)}$ —— I_O



G_I —— I_O



C_O —— V_R



P_D —— T_a