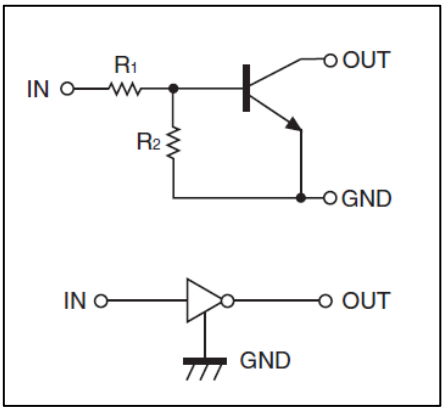
Digital Transistors (Built-in Resistors)

DTC144EE/DTC144EUA
DTC144EKA /DTC144ECA

DIGITAL TRANSISTOR (NPN)

• Equivalent Circuit

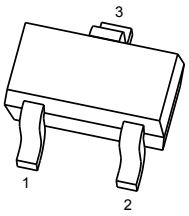


FEATURES

- 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

DTC144EE

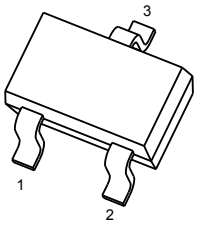


SOT-523

1. IN
2. GND
3. OUT

MARKING: 26

DTC144EUA

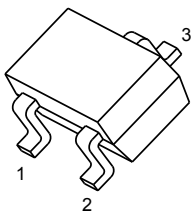


SOT-323

1. IN
2. GND
3. OUT

MARKING: 26

DTC144EKA

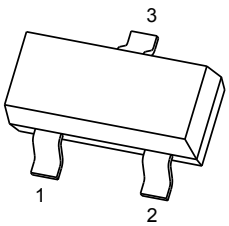


SOT-23-3L

1. IN
2. GND
3. OUT

MARKING: 26

DTC144ECA



SOT-23

1.IN
2.GND
3.OUT

MARKING: 26

MAXIMUM RATINGS(Ta=25℃ unless otherwise noted)

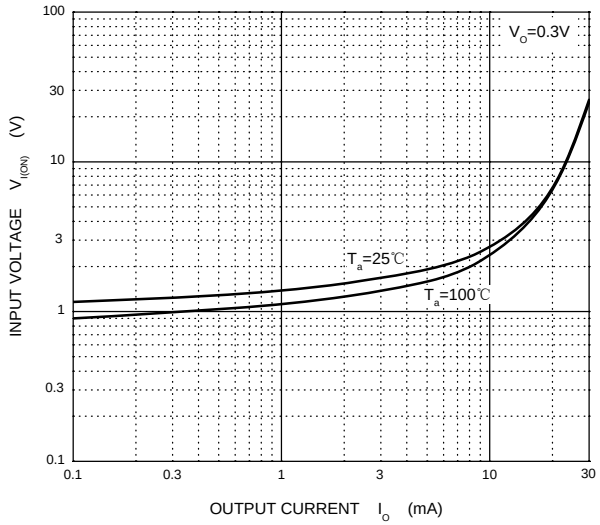
Symbol	Parameter	Limits(DTC144E□)				Unit
		E	UA	CA	KA	
V_{CC}	Supply Voltage	50				V
V_{IN}	Input Voltage	-10～+40				V
I_O	Output Current	30				mA
I_{CM}	Peak Collector Current	100				mA
P_D	Power Dissipation	150	200	200	200	mW
T_j	Junction Temperature	150				℃
T_{stg}	Storage Temperature	-55～+150				℃

ELECTRICAL CHARACTERISTICS (Ta=25℃ unless otherwise specified)

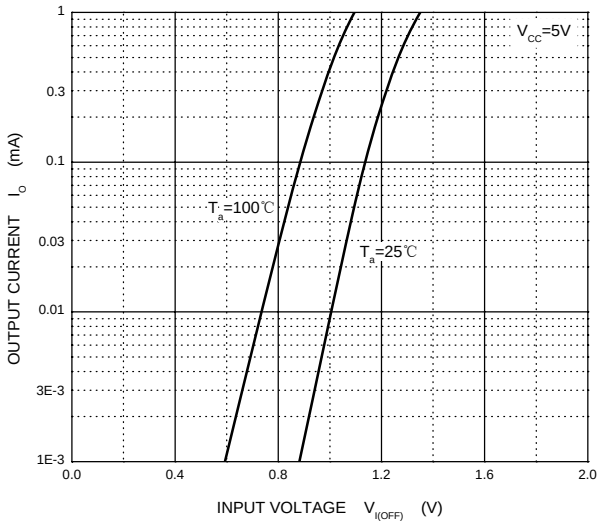
Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Input voltage	$V_{I(off)}$	V_{CC}=5V,I_O=100μA	0.5			V
	$V_{I(on)}$	V_O=0.3V,I_O=2mA			3	V
Output voltage	$V_{O(on)}$	I_O/I_I=10mA/0.5mA			0.3	V
Input current	I_I	V_I=5V			0.18	mA
Output current	$I_{O(off)}$	V_{CC}=50V,V_I=0			0.5	μA
DC current gain	G_I	V_O=5V,I_O=5mA	68			
Input resistance	R_1		32.9	47	61.1	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

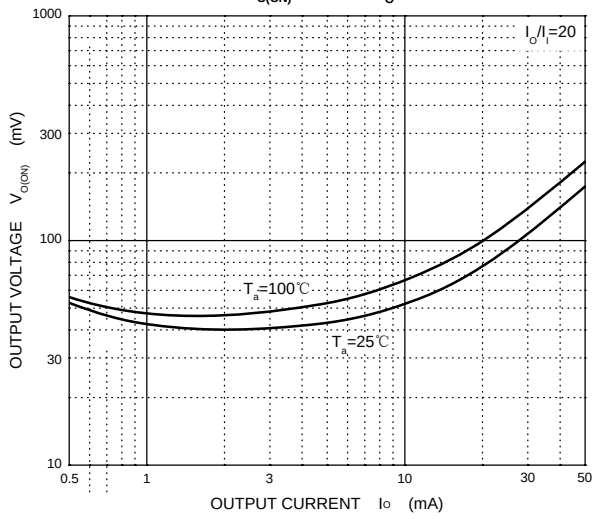
ON Characteristics



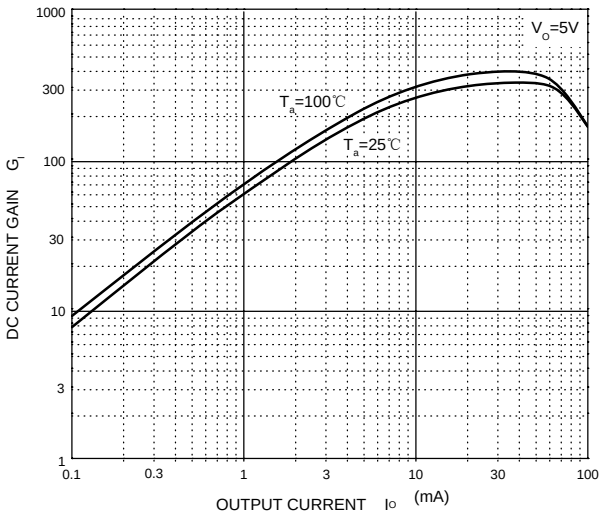
OFF Characteristics



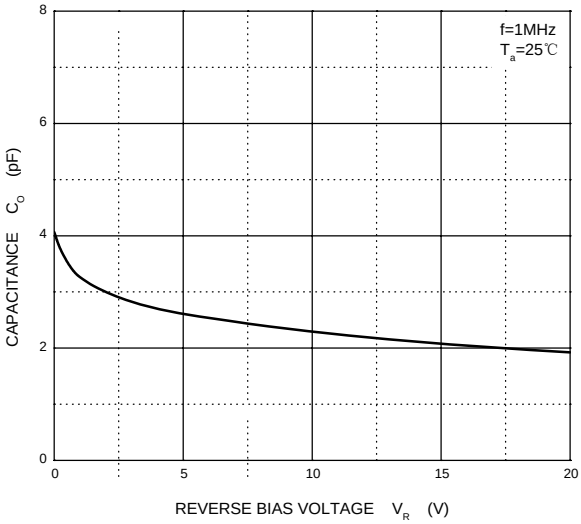
$V_{O(ON)}$ —— I_O



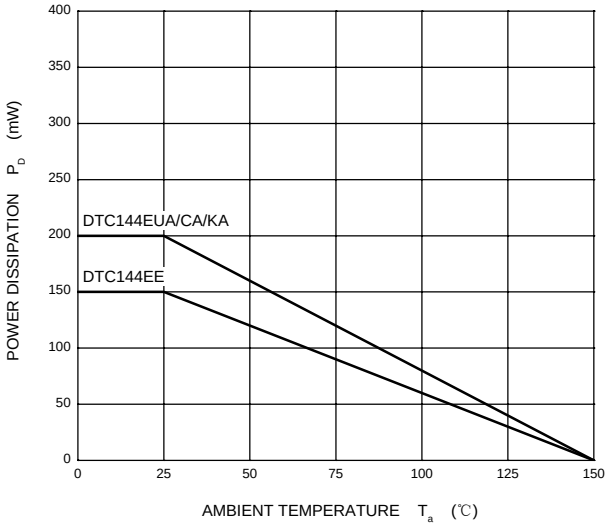
G_I —— I_O



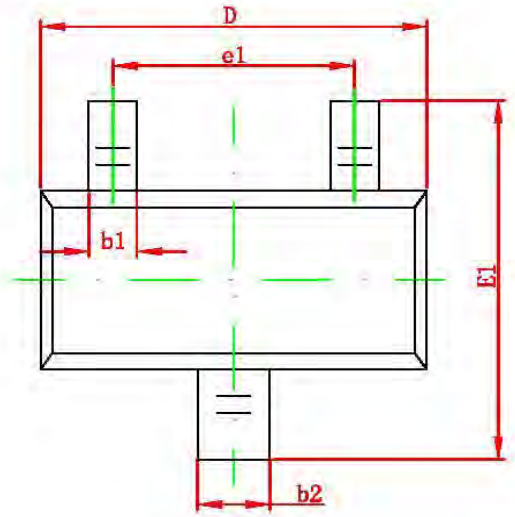
C_O —— V_R

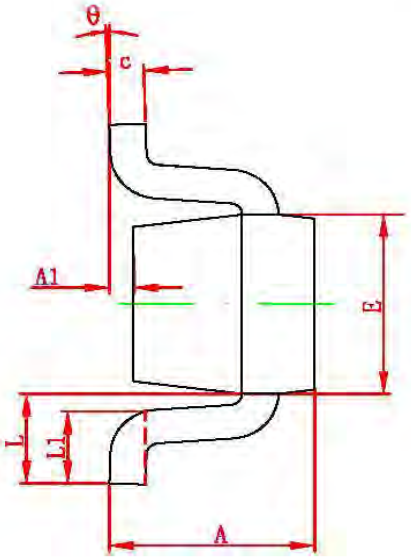


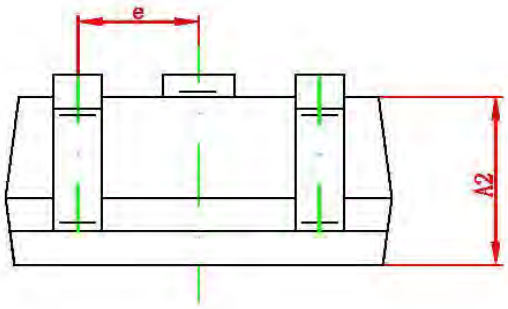
P_D —— T_a



SOT-523 PACKAGE OUTLINE DIMENSIONS







Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.700	0.900	0.028	0.035
A1	0.000	0.100	0.000	0.004
A2	0.700	0.800	0.028	0.031
b1	0.150	0.250	0.006	0.010
b2	0.250	0.350	0.010	0.014
c	0.100	0.200	0.004	0.008
D	1.500	1.700	0.059	0.067
E	0.700	0.900	0.028	0.035
E1	1.450	1.750	0.057	0.069
e	0.500 TYP.		0.020 TYP.	
e1	0.900	1.100	0.035	0.043
L	0.400 REF.		0.016 REF.	
L1	0.260	0.460	0.010	0.018
θ	0°	8°	0°	8°