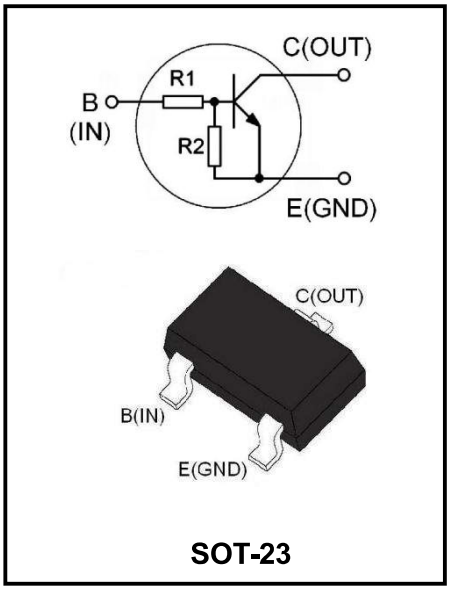
500mA NPN Digital Transistor



SOT-23

Features

- Built-In Biasing Resistors, R_1 =1kΩ, R_2 = 10kΩ
- Built-in bias resistors enable the configuration of an inverter circuit without connecting external input resistors.
- Only the on/off conditions need to be set for operation, making the circuit design easy.
- Complementary PNP Types: DTB113Z

Product Specification Classification

Part Number	Package	Marking	Pack
DTD113Z	SOT-23	G21	3000PCS/Tape

Absolute Maximum Ratings (Ta=25℃)

Parameter	Symbol	Value	Unit
Supply voltage	V_{CC}	50	V
Input voltage	V_{IN}	-5 ~ +10	V
Output current	I_{OUT}	500	mA
Power dissipation	P_D	200	mA
Junction temperature	T_j	150	℃
Storage temperature	T_{stg}	-55~150	℃

Electrical Characteristics (Ta=25℃)

Parameter	Symbol	Conditions	Value			Unit
			Min	Typ	Max	
Input voltage	$V_{IN(off)}$	V_{CC}=5V, I_O=100μA			0.3	V
	$V_{IN(on)}$	V_O=0.3V, I_O=20 mA	1.5			V
Output voltage	$V_{OUT(on)}$	I_{OUT} =50mA, I_{IN} = 2.5mA		0.1	0.3	V
Input current	I_I	V_{IN}=5V			7.2	mA
Output current	$I_{OUT(off)}$	V_{CC}=50V ,V_I= 0			0.5	μA
DC current gain	h_{FE}	V_{OUT}=5V ,I_{OUT}=50mA	82			
Input resistance	R_1		0.7	1	1.3	KΩ
Resistance ratio	R_2/R_1		8	10	12	
Transition frequency	f_T	V_{CE}=10V, I_E=-50mA, f=100MHz		200		MHz

Typical Characteristic

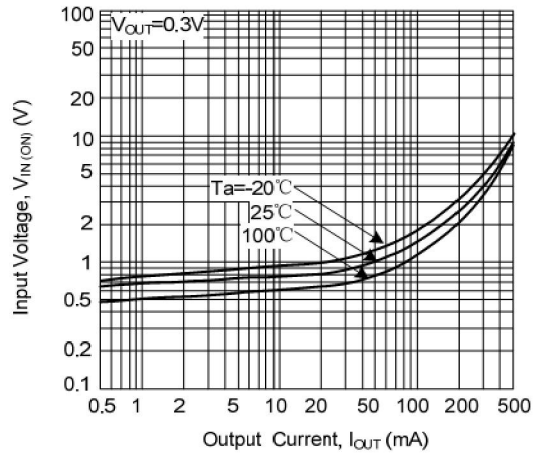


Figure 1. ON Characteristic

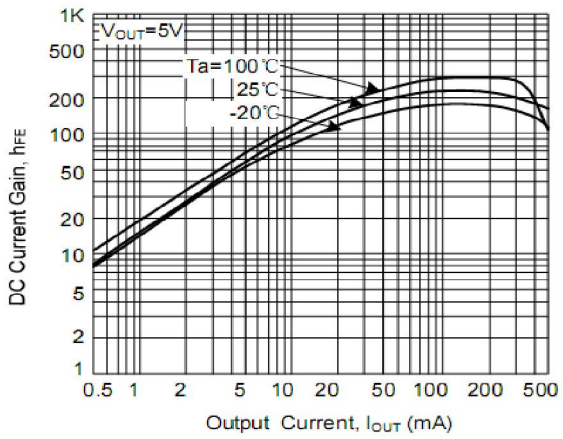


Figure2. DC current Gain

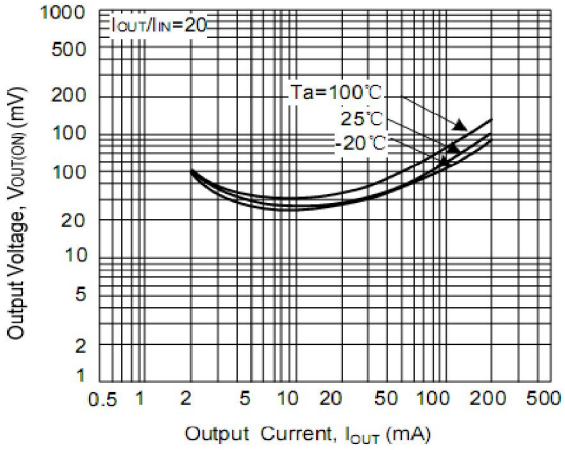


Figure 3. Output voltage vs. output current

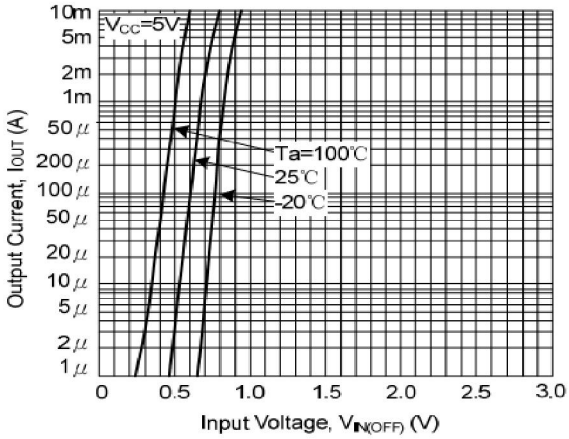
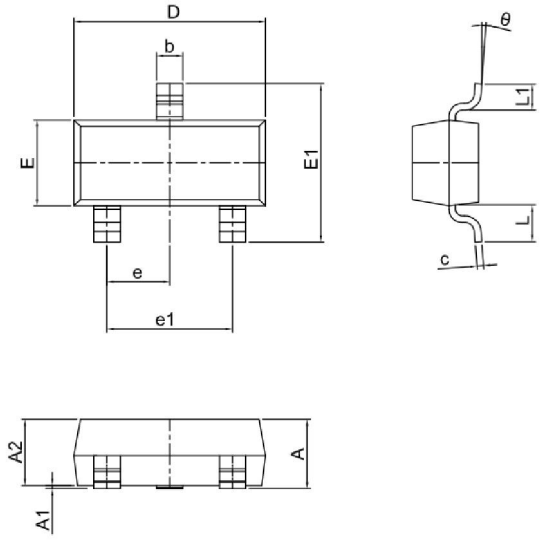


Figure 4. Output current vs. input voltage

Package Dimensions



Symbol	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	0.90	1.15	0.035	0.045
A1	0.00	0.10	0.000	0.004
A2	0.90	1.05	0.035	0.041
b	0.30	0.50	0.012	0.020
c	0.08	0.15	0.003	0.006
D	2.80	3.00	0.110	0.118
E	1.20	1.40	0.047	0.055
E1	2.25	2.55	0.089	0.100
e	0.90	1.00	0.035	0.039
e1	1.80	2.00	0.071	0.079
L	0.50	0.60	0.020	0.024
L1	0.30	0.50	0.012	0.020