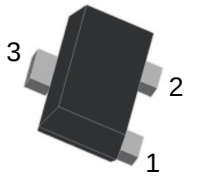
Digital Transistors (Built-in Resistors)

DIGITAL TRANSISTOR (NPN)



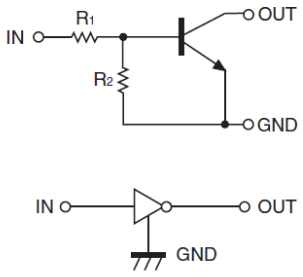
1. IN
2. GND
3. OUT

SOT-723

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 positive 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,marking Device design easy
- Moisture Sensitivity Level 3

Equivalent Circuit



MECHANICAL DATA

- Case: SOT-723
- Epoxy UL:94V-0
- Mounting Position:Any
- R_1=100KΩ, R_2=100KΩ

Marking Code	
DTC115EM	29

Absolute Maximum Ratings (Ta=25℃ unless otherwise noted)

Parameters	Symbols	Value	Unit
Supply Voltage	V_{CC}	50	V
Input Voltage	V_{IN}	-10~+40	V
Output Current	I_O	100	mA
Power Dissipation	P_D	100	mW
Junction Temperature	T_J	-55-+150	°C
Storage Temperature	T_{STG}	-55-+150	°C

Electrical Characteristics(Ta=25℃ unless otherwise noted)

Parameter	Conditions	Symbol	Min	Typ	Max	Unit
Input on voltage	V_O=0.3V, I_O=1mA	$V_{I(ON)}$			3	V
Input off voltage	V_{CC}=5V, I_O=0.1mA	$V_{I(OFF)}$	0.5			V
Output voltage	I_O/I_I=5mA/0.25mA	$V_{O(on)}$		0.1	0.3	V
Input current	V_I=5V	I_I			0.15	mA
Output current	V_{CC}=50V, V_I=0	$I_{O(oFF)}$			0.5	μA
DC current gain	V_O=5V, I_O=5mA	G_I	82			
Input resistor	-	R_1	70	100	130	KΩ
Resistor ratio	-	R_2/R_1	0.8	1.0	1.2	
Transition frequency	V_O=10V, I_O=5mA, f=100MHz	f_T		250		MHz

Typical characteristics

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

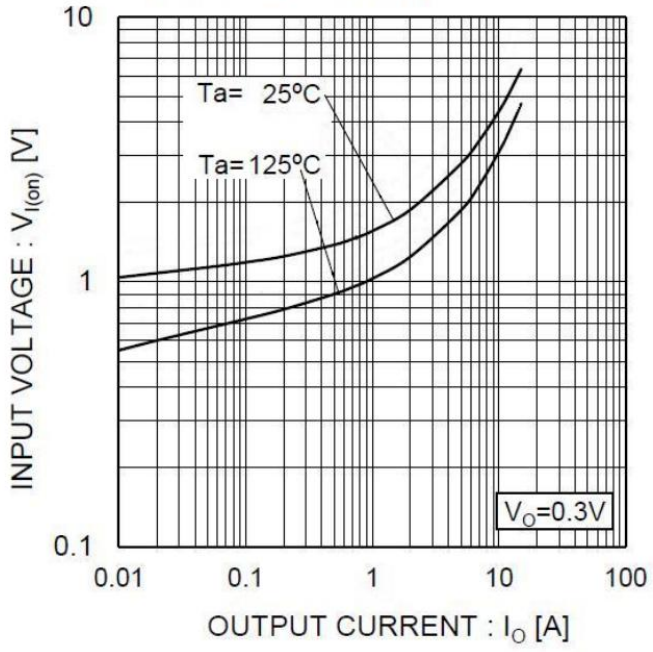


Fig.2 Output current vs. input voltage (OFF characteristics)

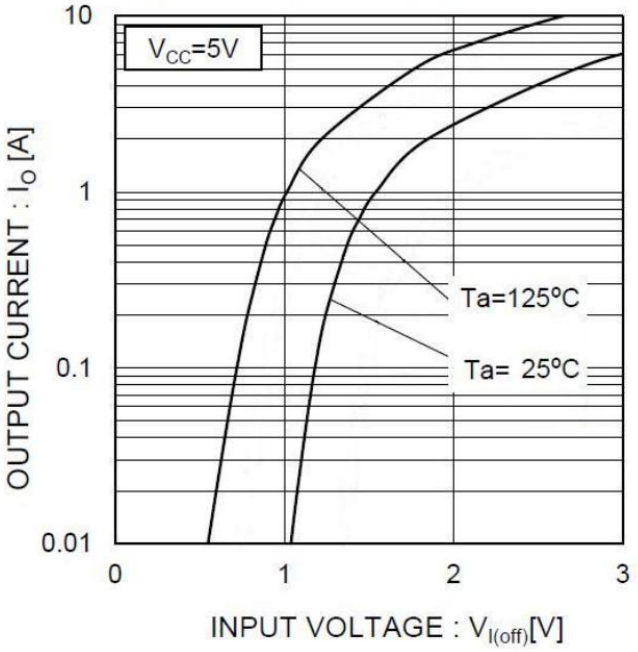


Fig.3 Output current vs. output voltage

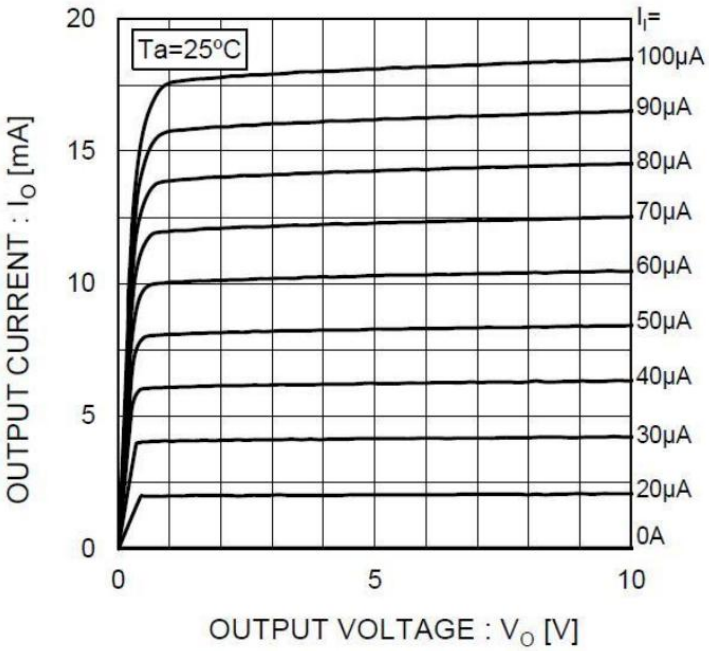
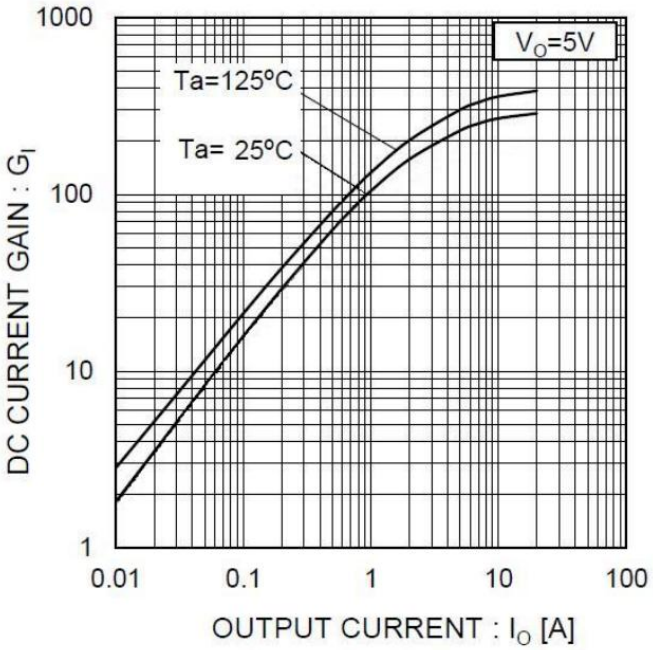


Fig.4 DC current gain vs. output current

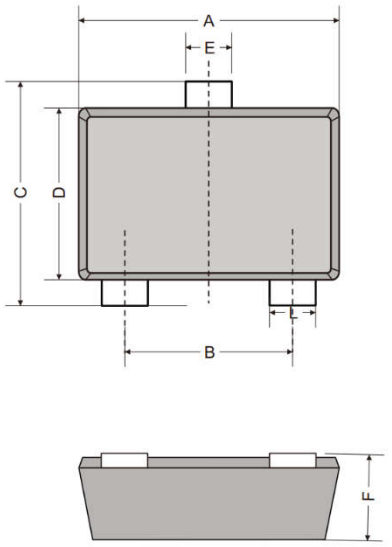


Ordering information

Package	Packing Description	Base Quantity	Packing Quantity
SOT-723	Tape/Reel,7"reel	8000pcs/Reel	64000PCS/Box 320000PCS/Carton

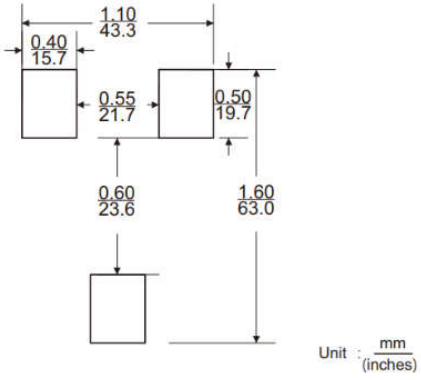
Package Dimensions

SOT-723



Dim.	Millimeter (mm)		mil	
	Min.	Max.	Min.	Max.
A	1.10	1.30	43.3	51.2
B	-	0.80	-	31.5
C	1.10	1.30	43.3	51.2
D	0.70	0.90	27.6	35.4
E	0.20	0.30	7.9	11.8
F	0.40	0.50	15.7	19.7
G	0.15	0.25	5.9	9.8
H	0.06	0.16	2.4	6.3
L	0.15	0.25	5.9	9.8

The recommended mounting pad size



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