500mA / 50V Digital transistors (with built-in resistors)

DTD122JK

Applications

Inverter, Interface, Driver

Features

- Built-in bias resistors enable the configuration of an inverter circuit without connecting external input resistors
- The bias resistors consist of thin-film resistors with complete isolation to allow negative biasing of the input, and parasitic effects are almost completely eliminated.
- Only the on / off conditions need to be set for operation, making the device design easy.
- 4) Higher mounting densities can be achieved.

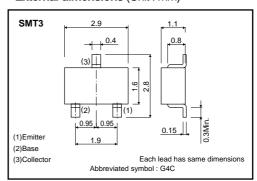
Structure

NPN epitaxial planar silicon transistor (Resistor built-in type)

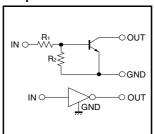
Packaging specifications

0 0 1					
	Package	SMT3			
	Packaging type	Taping			
	Code	T146			
Part No.	Basic ordering unit (pieces)	3000			
DTB122JI	0				

●External dimensions (Unit : mm)



Equivalent circuit



 $R_1=0.22k\Omega$ $R_2=4.7k\Omega$

● Absolute maximum ratings (Ta=25°C)

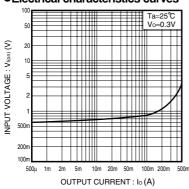
Parameter	Symbol	Limits	Unit
Supply voltage	Vcc	50	V
Input voltage	VIN	−5 to +5	V
Output current	Ic	500	mA
Power dissipation	Po	200	mW
Junction temperature	Tj	150	°C
Storage temperature	Tstg	-55 to +150	°C

●External characteristics (Ta=25°C)

Parameter	Symbol	Min.	Тур.	Max.	Unit	Conditions
long trade as	VI(off)	-	_	0.3	V	Vcc=5V , Io=100μA
Input voltage	V _{I(on)}	2	-	-		Vo=0.3V , Io=30mA
Output voltage	V _{O(on)}	_	0.1	0.3	V	lo/li=50mA/2.5mA
Input current	lı	_	-	45	mA	Vi=5V
Output current	IO(off)	_	-	0.5	μΑ	Vcc=50V , V⊫0V
DC current gain	Gı	47	-	-	_	lo=50mA , Vo=5V
Input resistance	R ₁	154	220	286	Ω	-
Resistance ratio	R ₂ /R ₁	17.1	21.3	25.6	_	-
Transition frequency	f⊤ *	_	200	-	MHz	Vc=10V , I=-50mA , f=100MHz

^{*} Characteristics of built-in transistor

•Electrical characteristics curves



2m 1m OUTPUT CURRENT: Io (A) 500µ 200µ 100μ 20µ 5μ INPUT VOLTAGE: VI(off)

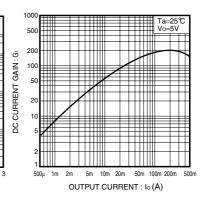


Fig.1 Input voltage vs. Output current (ON characteristics)

Fig.2 Output current vs. Input voltage Fig.3 DC current gain vs. Output current (OFF characteristics)

2.5

1.5

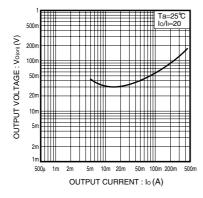


Fig.4 Output voltage vs. Output current

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