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)

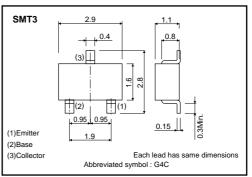
Packaging specifications

	Package	SMT3
	Packaging type	Taping
	Code	T146
Part No.	Basic ordering unit (pieces)	3000
DTB122JK		0

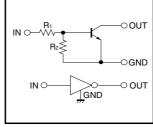
●Absolute maximum ratings (Ta=25°C)

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

•External dimensions (Unit : mm)



Equivalent circuit



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

Transistors

•External characteristics (Ta=25°C)

Parameter	Symbol	Min.	Тур.	Max.	Unit	Conditions
Input voltage	VI(off)	-	-	0.3	v	Vcc=5V , Io=100μA
	VI(on)	2	-	-		Vo=0.3V , Io=30mA
Output voltage	VO(on)	-	0.1	0.3	V	lo/li=50mA/2.5mA
Input current	h	-	-	45	mA	VI=5V
Output current	IO(off)	-	-	0.5	μA	Vcc=50V , V=0V
DC current gain	Gi	47	-	-	-	Io=50mA , Vo=5V
Input resistance	R1	154	220	286	Ω	-
Resistance ratio	R2/R1	17.1	21.3	25.6	_	-
Transition frequency	f⊤ *	-	200	-	MHz	Vce=10V , Ie= -50mA , f=100MHz

* Characteristics of built-in transistor

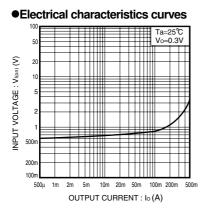


Fig.1 Input voltage vs. Output current (ON characteristics)

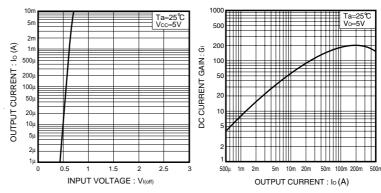


Fig.2 Output current vs. Input voltage Fig.3 DC current gain vs. Output current (OFF characteristics)

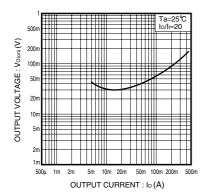


Fig.4 Output voltage vs. Output current

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