500mA / 50V Digital transistors (with built-in resistors) DTD143EK / DTD143EC / DTD143ES

Applications

Inverter, Interface, Driver

Features

- Built-in bias resistors enable the configuration of an inverter circuit without connecting external input resistors (see equivalent circuit).
- 2) 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 the device design easy.

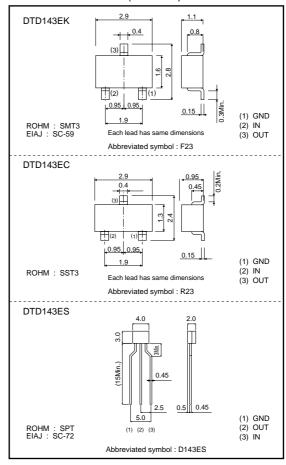
Structure

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

Packaging specifications

	Package	SMT3	SST3	SPT
	Packaging type	Taping	Taping	Taping
	Code	T146	T116	TP
Part No.	Basic ordering unit (pieces)	3000	3000	5000
DTD143EK		0	-	-
DTD143EC		-	0	-
DTD143ES		_	-	0

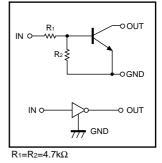
•External dimensions (Unit : mm)



Absolute maximum ratings (Ta=25°C)

Parameter	Symbol		Limits		Unit	
	Symbol	DTD143EK	DTD143EC	DTD143ES	Unit	
Supply voltage	Vcc		50		V	
Input voltage	Vin	-10 to +30			V	
Output current	lc		500		mA	
Power dissipation	PD	2	00	300	mW	
Junction temperature	Tj		150		°C	
Storage temperature	Tstg	-55 to +150			°C	

•Equivalent circuit





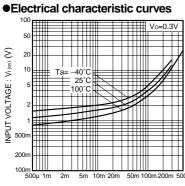
DTD143EK / DTD143EC / DTD143ES

Transistors

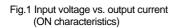
•Electrical characteristics (Ta=25°C)

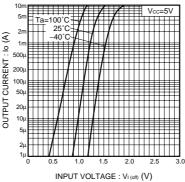
Parameter	Symbol	Min.	Тур.	Max.	Unit	Conditions	
la su du calda su a	VI (off)	-	-	0.5	V	Vcc=5V, Io=100μA	
Input voltage	VI (on)	3	-	-		Vo=0.3V, Io=20mA	
Output voltage	Vo (on)	-	0.1	0.3	V	lo/l=50mA/2.5mA	
Input current	h	-	-	1.8	mA	Vi=5V	
Output current	IO (off)	-	-	0.5	μA	Vcc=50V, Vi=0V	
DC current gain	Gi	47	-	-	_	Vo=5V, Io=50mA	
Input resistance	R1	3.29	4.7	6.11	kΩ	_	
Resistance ratio	R2/R1	0.8	1	1.2	_	_	
Transition frequency	f⊤ *	-	200	-	MHz	Vce=10V, Ie= -50mA, f=100MHz	

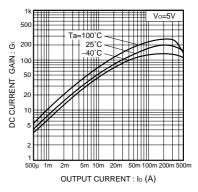
* Characteristics of built-in transistor











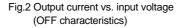


Fig.3 DC current gain vs. output current

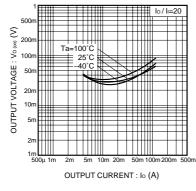


Fig.4 Output voltage vs. output current

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