100mA / 50V Digital transistors (with built-in resistors)

DTC143TM / DTC143TE / DTC143TUA / DTC143TKA / DTC143TSA

Applications

Inverter, Interface, Driver

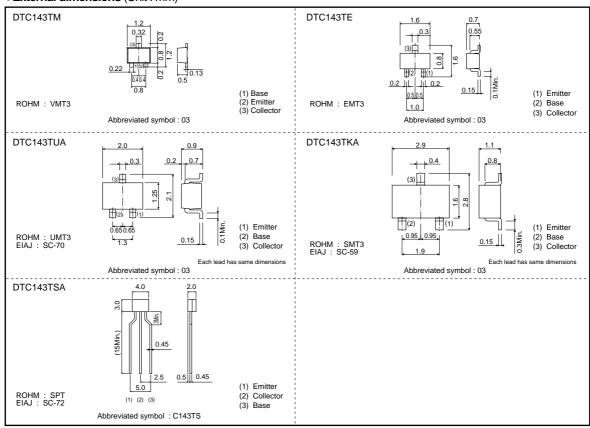
Features

- 1) 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.
- 3) Only the on/off conditions need to be set for operation, making the device design easy.

Structure

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

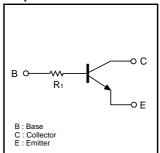
●External dimensions (Unit : mm)



Packaging specifications

	Package	VMT3	EMT3	UMT3	SMT3	SPT
	Packaging type	Taping	Taping	Taping	Taping	Taping
	Code	T2L	TL	T106	T146	TP
Part No.	Basic ordering unit (pieces)	8000	3000	3000	3000	5000
DTC143TM		0	-	-	-	-
DTC143TE		-	0	-	-	-
DTC143TU	4	-	-	0	-	-
DTC143TKA		-	-	-	0	_
DTC143TSA		-	-	-	_	

●Equivalent circuit



R1=4.7kΩ

● Absolute maximum ratings (Ta=25°C)

Parameter	Symbol	Limits					
Parameter		DTC143TM	DTC143TE	DTC143TUA	DTC143TKA	DTC143TSA	Unit
Collector-base voltage	Vсво	50				V	
Collector-emitter voltage	VCEO	50					V
Emitter-base voltage	Vево	5					
Collector current	lc	100					mA
Collector power dissipation	Pc	150 200		300	mW		
Junction temperature	Tj	150					°C
Storage temperature	Tstg	-55 to +150					

●Electrical characteristics (Ta=25°C)

Parameter	Symbol	Min.	Тур.	Max.	Unit	Conditions
Collector-base breakdown voltage	ВУсво	50	-	_	V	Ic=50μA
Collector-emitter breakdown voltage	BVceo	50	_	_	V	Ic=1mA
Emitter-base breakdown voltage	ВУево	5	_	_	V	Iε=50μA
Collector cutoff current	Ісво	_	_	0.5	μА	Vcb=50V
Emitter cutoff current	ІЕВО	_	_	0.5	μА	V _{EB} =4V
Collector-emitter saturation voltage	VCE(sat)	_	_	0.3	V	Ic/I _B =5mA/0.25mA
DC current transfer ratio	hfe	100	250	600	_	Ic=1mA, VcE=5V
Input resistance	R ₁	3.29	4.7	6.11	kΩ	-
Transition frequency	f⊤ *	_	250	_	MHz	Vc==10V, I==-5mA, f=100MHz

^{*} Characteristics of built-in transistor

•Electrical characteristic curves

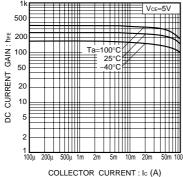


Fig.1 DC current gain vs.

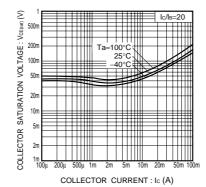


Fig.2 Collector-emitter saturation voltage vs. collector current

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