

# 100mA / 50V Digital transistors

## (with built-in resistors)

## DTC115TM / DTC115TE / DTC115TUA / DTC115TKA

## Applications

Inverter, Interface, Driver

#### Features

- 1)Built-in bias resistors enable the configuration of an inverter circuit without connecting external input resistors.
- 2)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.
- 3)Only the on / off conditions need to be set for operation, making the device design easy.
- 4) Higher mounting densities can be achieved.

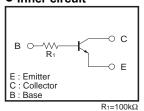
#### Structure

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

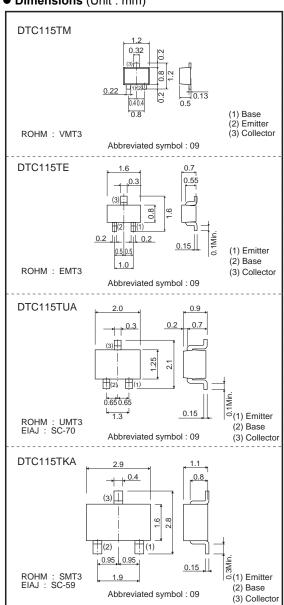
## Packaging specifications

	Package	VMT3	EMT3	UMT3	SMT3	
	Packaging type	Taping	Taping	Taping	Taping	
	Code	T2L	TL	T106	T146	
Part No.	Basic ordering unit (pieces)	8000	3000	3000	3000	
DTC115TM		0	-		-	
DTC115TE		-	0		-	
DTC115TUA		-	-	0	-	
DTC115TKA		-	_	-	0	

## Inner circuit



## Dimensions (Unit : mm)



## • Absolute maximum ratings (Ta=25°C)

	Parameter	Symbol	Limits	Unit
Collector-base vo	oltage	Vсво	50	V
Collector-emitter voltage		VCEO	50	V
Emitter-base volt	age	VEBO	5	V
Collector current		lc	100	mA
Collector power dissipation	DTC115TM / DTC115TE	Б.	150	mW
	DTC115TUA / DTC115TKA	Pc	200	
Junction tempera	ture	Tj	150	°C
Storage temperat	ture	Tstg	-55 to +150	°C

## • 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	Ієво	-	-	0.5	μΑ	V <sub>EB</sub> =4V
Collector-emitter saturation voltage	VCE(sat)	-	-	0.3	V	Ic/I <sub>B</sub> =1mA/0.1mA
DC current transfer ratio	hfe	100	250	600	-	Ic=1mA, VcE=5V
Input resistance	R <sub>1</sub>	70	100	130	kΩ	-
Transition frequency	f⊤*	-	250	-	MHz	VcE=10V, IE=-5mA, f=100MHz

st Characteristics of built-in transistor.

#### • Electrical characteristics curves

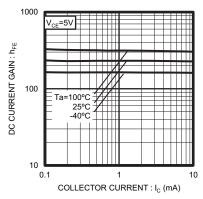


Fig 1. DC Current Gain vs. Collector Current

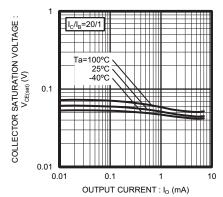


Fig 2. Collector Voltage vs.
Collector Saturation Voltage.

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