

DTC115EM / DTC115EE / DTC115EUA  
DTC115EKA / DTC115ESA

Transistors

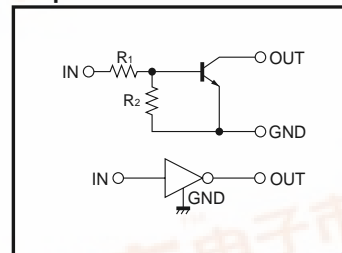
Digital transistors (built-in resistors)

DTC115EM / DTC115EE / DTC115EUA  
DTC115EKA / DTC115ESA

●Features

- 1) Built-in bias resistors enable the configuration of an inverter circuit without connecting external input resistors (see the equivalent circuit).
- 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 device design easy.
- 4) Higher mounting densities can be achieved.

●Equivalent circuit



●Structure

NPN digital transistor (with built-in resistors)

●External dimensions (Units : mm)

<p>DTC115EM</p> <p>ROHM : VMT3</p> <p>Abbreviated symbol : 29</p> <p>(1) IN (2) GND (3) OUT</p>	<p>DTC115EE</p> <p>ROHM : EMT3</p> <p>Abbreviated symbol : 29</p> <p>(1) GND (2) IN (3) OUT</p>
<p>DTC115EUA</p> <p>ROHM : UMT3 EIAJ : SC-70</p> <p>All terminals have same dimensions</p> <p>Abbreviated symbol : 29</p> <p>(1) GND (2) IN (3) OUT</p>	<p>DTC115EKA</p> <p>ROHM : SMT3 EIAJ : SC-59</p> <p>All terminals have same dimensions</p> <p>Abbreviated symbol : 29</p> <p>(1) GND (2) IN (3) OUT</p>
<p>DTC115ESA</p> <p>ROHM : SPT EIAJ : SC-72</p> <p>(1) GND (2) OUT (3) IN</p>	

# DTC115EM / DTC115EE / DTC115EUA DTC115EKA / DTC115ESA

## Transistors

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

Parameter	Symbol	Limits	Unit
Supply voltage	V <sub>cc</sub>	50	V
Input voltage	V <sub>i</sub>	-10~+40	V
Output current	I <sub>o</sub>	20	mA
	I <sub>c(Max.)</sub>	100	
Power dissipation	DTC115EM / DTC115EE	150	mW
	DTC115EUA / DTC115EKA	200	
	DTC115ESA	300	
Junction temperature	T <sub>J</sub>	150	°C
Storage temperature	T <sub>stg</sub>	-55~+150	°C

### ● Electrical characteristics (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Input voltage	V <sub>i(off)</sub>	-	-	0.5	V	V <sub>cc</sub> =5V, I <sub>o</sub> =100μA
	V <sub>i(on)</sub>	3	-	-		V <sub>ce</sub> =0.3V, I <sub>o</sub> =1mA
Output voltage	V <sub>O(on)</sub>	-	0.1	0.3	V	I <sub>o</sub> =5mA, I <sub>i</sub> =0.25mA
Input current	I <sub>i</sub>	-	-	0.15	mA	V <sub>i</sub> =5V
Output current	I <sub>o(off)</sub>	-	-	0.5	μA	V <sub>cc</sub> =50V, V <sub>e</sub> =0V
DC current gain	G <sub>i</sub>	82	-	-	-	I <sub>o</sub> =5mA, V <sub>ce</sub> =5V
Input resistance	R <sub>i</sub>	70	100	130	kΩ	-
Resistance ratio	R <sub>z</sub> /R <sub>1</sub>	0.8	1	1.2	-	-
Transition frequency	f <sub>r</sub>	-	250	-	MHz	V <sub>ce</sub> =10V, I <sub>E</sub> =-5mA, f=100MHz *

\*Transition frequency of the device.

### ● Package, marking, and packaging specifications

Type	DTC115EM	DTC115EE	DTC115EUA	DTC115EKA	DTC115ESA
Package	VMT3	EMT3	UMT3	SMT3	SPT
Marking	29	29	29	29	-
Packaging code	T2L	TL	T106	T146	TP
Basic ordering unit (pieces)	8000	3000	3000	3000	5000

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