

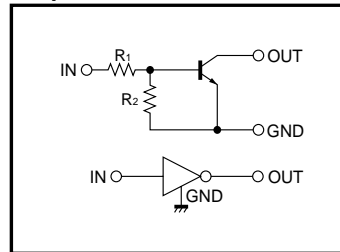
Digital transistors (built-in resistors)

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 _{CC}	50	V
Input voltage	V _I	-10~+40	V
Output current	I _O	20	mA
	I _{C(Max.)}	100	
Power dissipation	DTC115EM / DTC115EE	150	mW
	DTC115EUA / DTC115EKA	200	
	DTC115ESA	300	
Junction temperature	T _J	150	°C
Storage temperature	T _{stg}	-55~+150	°C

●Electrical characteristics (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Input voltage	V _{I(off)}	-	-	0.5	V	V _{CC} =5V, I _O =100μA
	V _{I(on)}	3	-	-		V _O =0.3V, I _O =1mA
Output voltage	V _{O(on)}	-	0.1	0.3	V	I _O =5mA, I _B =0.25mA
Input current	I _I	-	-	0.15	mA	V _I =5V
Output current	I _{O(off)}	-	-	0.5	μA	V _{CC} =50V, V _I =0V
DC current gain	G _I	82	-	-	-	I _O =5mA, V _O =5V
Input resistance	R _I	70	100	130	kΩ	-
Resistance ratio	R ₂ /R ₁	0.8	1	1.2	-	-
Transition frequency	f _r	-	250	-	MHz	V _{CE} =10V, I _E =-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