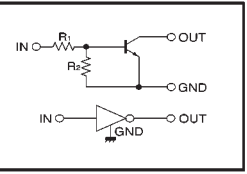
Digital transistors (built-in resistors)

DTC115EE / DTC115EUA / DTC115EKA / DTC115ESA

●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 device design easy.
4） Higher mounting densities can be achieved.

●Circuit schematic



●Absolute maximum ratings（Ta=25℃）

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	DTC115EE	Pd	150	mW
	DTC115EUA / DTC115EKA		200	
	DTC115ESA		300	
Junction temperature		Tj	150	℃
Storage temperature		Tstg	−55～+150	℃

●Package, marking, and packaging specifications

Part No.	DTC115EE	DTC115EUA	DTC115EKA	DTC115ESA
Package	EMT3	UMT3	SMT3	SPT
Marking	29	29	29	—
Packaging code	TL	T106	T146	TP
Basic ordering unit (pieces)	3000	3000	3000	5000

●Electrical characteristics（Ta=25℃）

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_I=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_1	70	100	130	kΩ	—
Resistance ratio	R_2/R_1	0.8	1	1.2	—	—
Transition frequency	f_T	—	250	—	MHz	V_{CE}=10V , I_E=−5mA , f=100MHz *