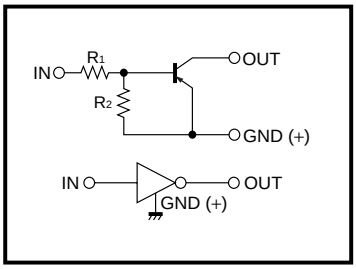
Digital transistors (built-in resistors)

DTA115EM / DTA115EE / DTA115EUA / DTA115EKA / DTA115ESA

●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 positive 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

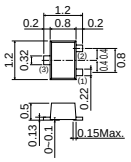


●Structure

PNP digital transistor (Built-in resistor type)

●External dimensions (Unit : mm)

DTA115EM

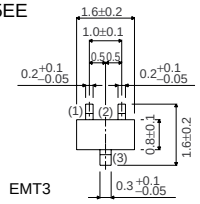


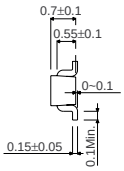
ROHM : VMT3

Abbreviated symbol : 19

(1) IN
(2) GND
(3) OUT

DTA115EE



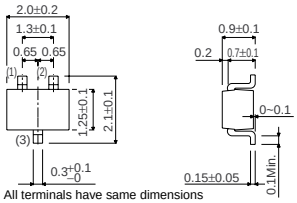


ROHM : EMT3

Abbreviated symbol : 19

(1) GND
(2) IN
(3) OUT

DTA115EUA



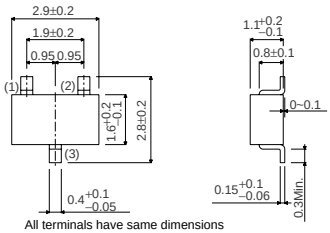
ROHM : UMT3
EIAJ : SC-70

All terminals have same dimensions

Abbreviated symbol : 19

(1) GND
(2) IN
(3) OUT

DTA115EKA



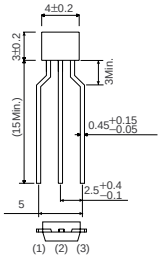
ROHM : SMT3
EIAJ : SC-59

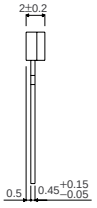
All terminals have same dimensions

Abbreviated symbol : 19

(1) GND
(2) IN
(3) OUT

DTA115ESA





ROHM : SPT
EIAJ : SC-72

(1) GND
(2) OUT
(3) IN

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

Parameter		Symbol	Limits	Unit
Supply voltage		V_{CC}	–50	V
Input voltage		V_I	–40 to +10	V
Output current		I_O	–20	mA
		$I_{C(Max.)}$	–100	
Power dissipation	DTA115EM / DTA115EE	Pd	150	mW
	DTA115EUA / DTA115EKA		200	
	DTA115ESA		300	
Junction temperature		Tj	150	°C
Storage temperature		Tstg	–55 to +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_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 ＊

＊Transition frequency of the device.

●**Package, marking, and packaging specifications**

Type	DTA115EM	DTA115EE	DTA115EUA	DTA115EKA	DTA115ESA
Package	VMT3	EMT3	UMT3	SMT3	SPT
Marking	19	19	19	19	–
Packaging code	T2L	TL	T106	T146	TP
Basic ordering unit (pieces)	8000	3000	3000	3000	5000

●**Electrical characteristics curves**

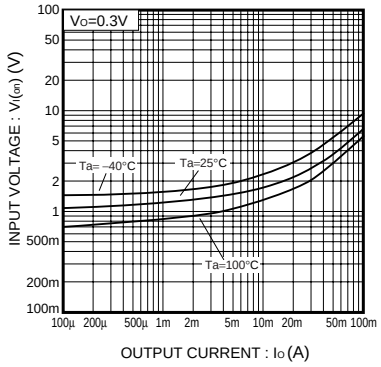


Fig.1 Input voltage vs. Output current (ON characteristics)

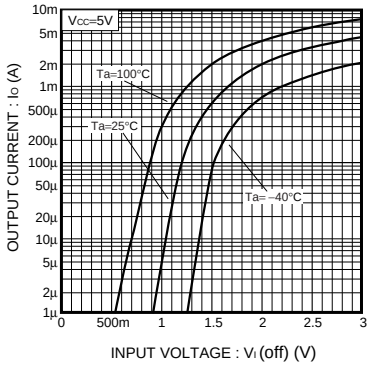


Fig.2 Output current vs. Input voltage (OFF characteristics)

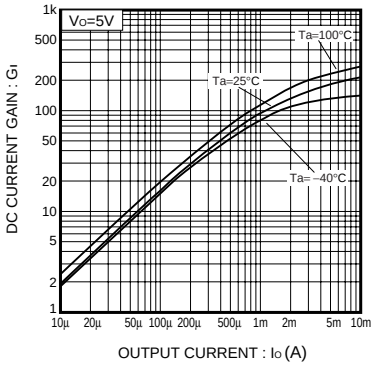


Fig.3 DC current gain vs. Output current

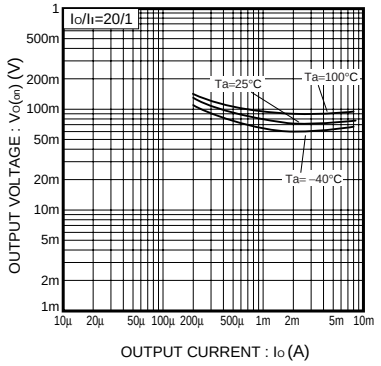


Fig.4 Output voltage vs. Output current

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