-100mA / -50V Digital transistors (with built-in resistors)

DTA115EM / DTA115EE / DTA115EUA / DTA115EKA / DTA115ESA

●Applications

Inverter, Interface, Driver

●Features

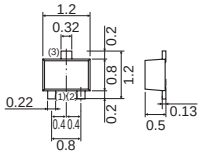
1) Built-in bias resistors enable the configuration of an inverter circuit without connecting external input resistors (see equivalent circuit).
2) The bias resistors consist of thin-film resistors with complete isolation to allow positive biasing of the input, and parasitic effects are almost completely eliminated.
3) Only the on/off conditions need to be set for operation, making the device design easy.
4) Higher mounting densities can be achieved.

●Structure

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

●External dimensions (Unit : mm)

DTA115EM

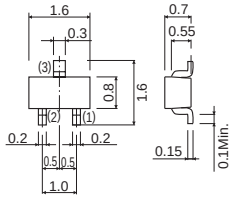


ROHM : VMT3

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

Abbreviated symbol : 19

DTA115EE

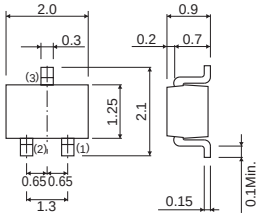


ROHM : EMT3

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

Abbreviated symbol : 19

DTA115EUA



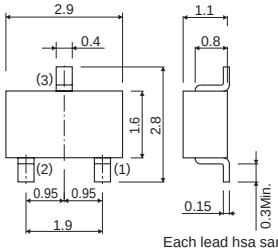
ROHM : UMT3
EIAJ : SC-70

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

Each lead hsa same dimensions

Abbreviated symbol : 19

DTA115EKA



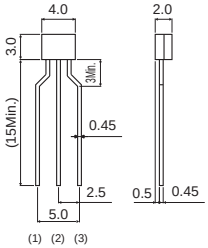
ROHM : SMT3
EIAJ : SC-59

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

Each lead hsa same dimensions

Abbreviated symbol : 19

DTA115ESA



ROHM : SPT
EIAJ : SC-72

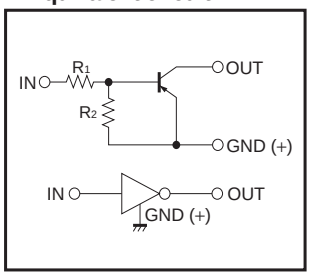
(1) GND
(2) OUT
(3) IN

Abbreviated symbol : A115ES

●Packaging specifications

Part No.	Package	VMT3	EMT3	UMT3	SMT3	SPT
	Packging type	Taping	Taping	Taping	Taping	Taping
	Code	T2L	TL	T106	T146	TP
	Basic ordering unit (pieces)	8000	3000	3000	3000	5000
DTA115EM		○	–	–	–	–
DTA115EE		–	○	–	–	–
DTA115EUA		–	–	○	–	–
DTA115EKA		–	–	–	○	–
DTA115ESA		–	–	–	–	○

●Equivalent circuit



R_1=R_2=100kΩ

●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	P_D	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

* Characteristics of built-in transistor

●**Electrical characteristics curves**

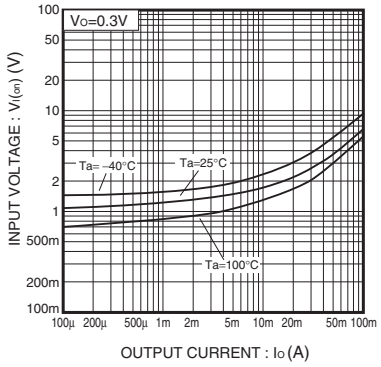


Fig.1 Input voltage vs. Output current (ON characteristics)

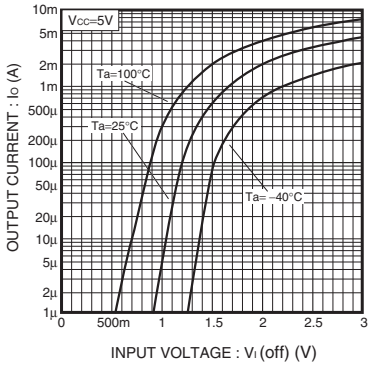


Fig.2 Output current vs. Input voltage (OFF characteristics)

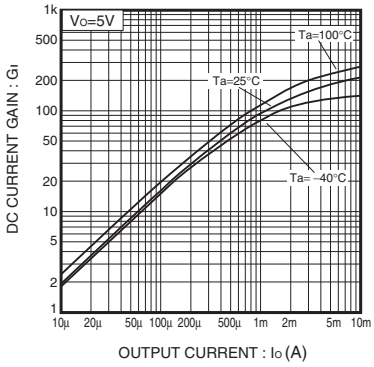


Fig.3 DC current gain vs. Output current

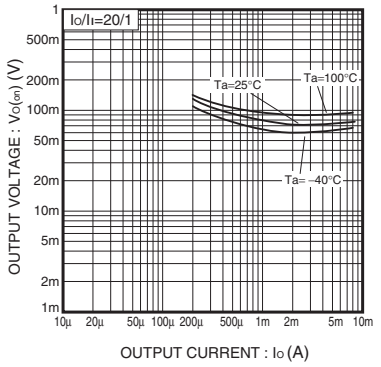


Fig.4 Output voltage vs. Output current

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