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

DTA115TM / DTA115TE / DTA115TUA / DTA115TKA

● Applications
Inverter, Interface, Driver

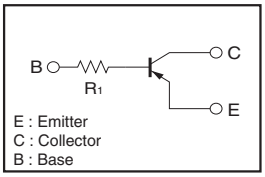
● Features
1) Built-in bias resistors enable the configuration of an inverter circuit without connecting external input resistors.
2) The bias resistors consist of thin-film resistors with complete isolation to allow positive biasing of the input, and parasitic effects are almost completely eliminated.
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)

● Packaging specifications

	Package	VMT3	EMT3	UMT3	SMT3
	Packaging type	Taping	Taping	Taping	Taping
	Code	T2L	TL	T106	T146
Part No.	Basic ordering unit (pieces)	8000	3000	3000	3000
DTA115TM		○	–	–	–
DTA115TE		–	○	–	–
DTA115TUA		–	–	○	–
DTA115TKA		–	–	–	○

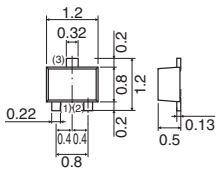
● Inner circuit



R1=100kΩ

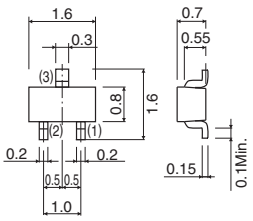
● Dimensions (Unit : mm)

DTA115TM



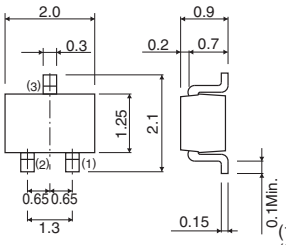
ROHM : VMT3
Abbreviated symbol : 99
(1) Base
(2) Emitter
(3) Collector

DTA115TE



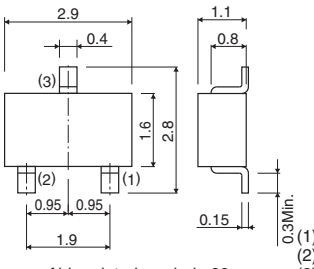
ROHM : EMT3
EIAJ : SC-75A
Abbreviated symbol : 99
(1) Emitter
(2) Base
(3) Collector

DTA115TUA



ROHM : UMT3
EIAJ : SC-70
Abbreviated symbol : 99
(1) Emitter
(2) Base
(3) Collector

DTA115TKA



ROHM : SMT3
EIAJ : SC-59
Abbreviated symbol : 99
(1) Emitter
(2) Base
(3) Collector

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● Absolute maximum ratings (Ta=25°C)

Parameter		Symbol	Limits	Unit
Collector-base voltage		V_{CBO}	–50	V
Collector-emitter voltage		V_{CEO}	–50	V
Emitter-base voltage		V_{EBO}	–5	V
Collector current		I_C	–100	mA
Collector power dissipation	DTA115TM / DTA115TE	P_C	150	mW
	DTA115TUA / DTA115TKA		200	
Junction temperature		Tj	150	°C
Storage temperature		Tstg	–55 to +150	°C

● Electrical characteristics (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	BV_{CBO}	–50	–	–	V	I_C= –50μA
Collector-emitter breakdown voltage	BV_{CEO}	–50	–	–	V	I_C= –1mA
Emitter-base breakdown voltage	BV_{EBO}	–5	–	–	V	I_E= –50μA
Collector cutoff current	I_{CBO}	–	–	–0.5	μA	V_{CB}= –50V
Emitter cutoff current	I_{EBO}	–	–	–0.5	μA	V_{EB}= –4V
Collector-emitter saturation voltage	$V_{CE(sat)}$	–	–	–0.3	V	I_C/I_B= –1mA/–0.1mA
DC current transfer ratio	h_{FE}	100	250	600	–	I_C= –1mA , V_{CE}= –5V
Input resistance	R_1	70	100	130	kΩ	–
Transition frequency	f_T *	–	250	–	MHz	V_{CE}= –10V , I_E=5mA , f=100MHz

*Characteristics of built-in transistor

● Electrical characteristic curves

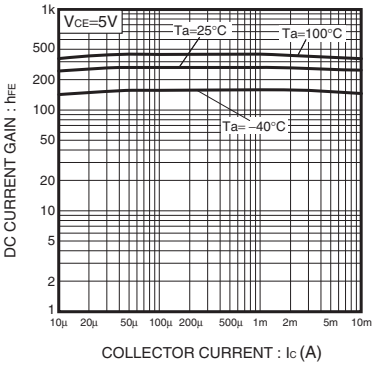

Fig.1 DC current gain vs. Collector current

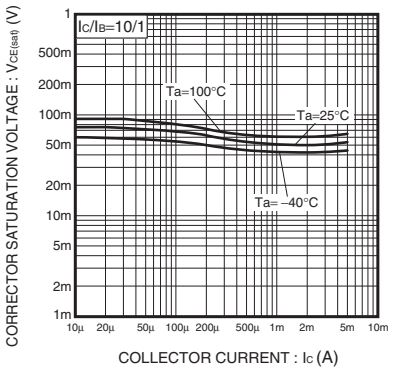

Fig.2 Collector-Emitter saturation voltage vs. Collector current

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