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

DTA115TM / DTA115TE / DTA115TUA / DTA115TKA / DTA115TSA

●Applications
Inverter, Interface, Driver

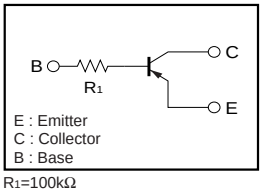
●Features
1) Built-in bias resistors enable the configuration of an inverter circuit without connecting external input resistors.
2) The bias resistors consist of thin-film resistors with complete isolation to allow positive biasing of the input, and parasitic effects are almost completely eliminated.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

Part No.	Package	VMT3	EMT3	UMT3	SMT3	SPT
	Packaging type	Taping	Taping	Taping	Taping	Taping
	Code	T2L	TL	T106	T146	TP
	Basic ordering unit (pieces)	8000	3000	3000	3000	5000
DTA115TM		○	–	–	–	–
DTA115TE		–	○	–	–	–
DTA115TUA		–	–	○	–	–
DTA115TKA		–	–	–	○	–
DTA115TSA		–	–	–	–	○

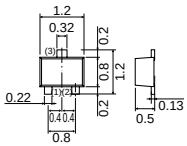
●Equivalent circuit



R_1=100kΩ

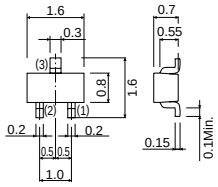
●External dimensions (Unit : mm)

DTA115TM



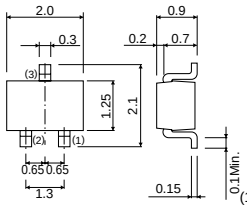
ROHM : VMT3
Abbreviated symbol : 99
(1) Base
(2) Emitter
(3) Collector

DTA115TE



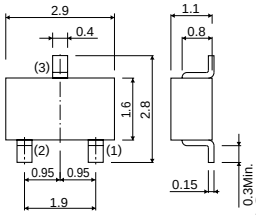
ROHM : EMT3
EIAJ : SC-75A
Abbreviated symbol : 99
(1) Emitter
(2) Base
(3) Collector

DTA115TUA



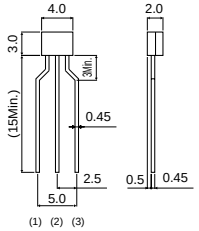
ROHM : UMT3
EIAJ : SC-70
Abbreviated symbol : 99
(1) Emitter
(2) Base
(3) Collector

DTA115TKA



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

DTA115TSA



ROHM : SPT
EIAJ : SC-72
Abbreviated symbol : A115TS
(1) Emitter
(2) Collector
(3) Base

●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	
	DTA115TSA		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
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 characteristics curves

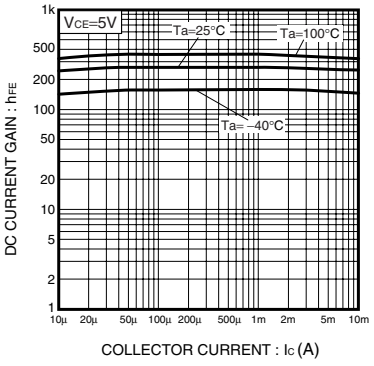


Fig.1 DC current gain vs. Collector current

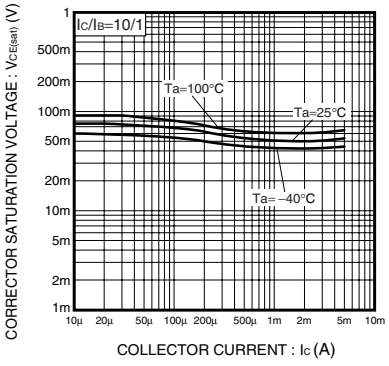


Fig.2 Collector-Emitter saturation voltage vs. Collector current

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