

-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.

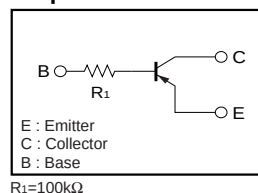
●Structure

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

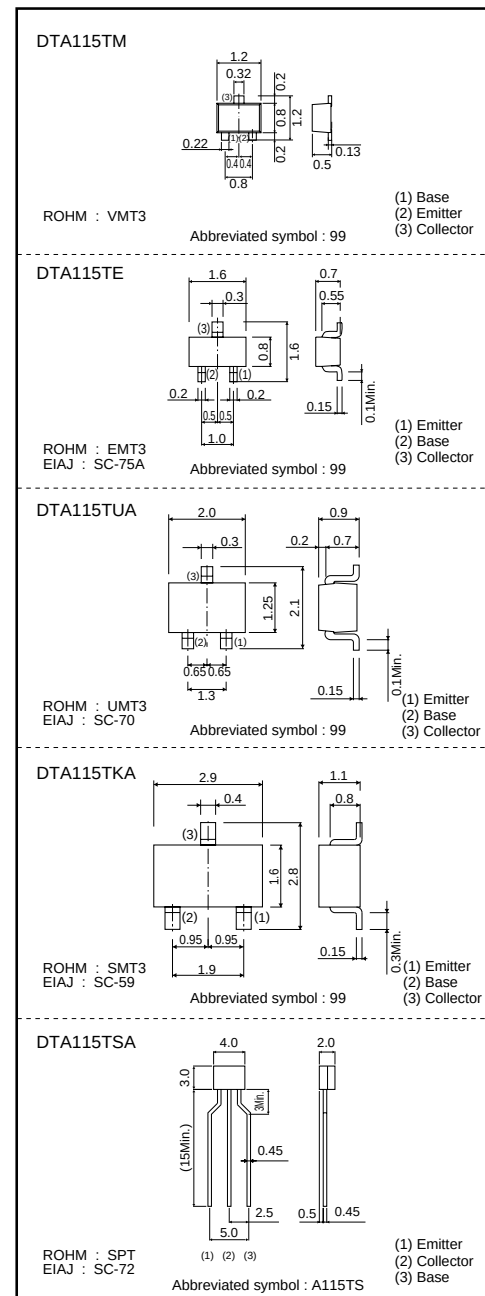
●Packaging specifications

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
Part No.					
DTA115TM	○	—	—	—	—
DTA115TE	—	○	—	—	—
DTA115TUA	—	—	○	—	—
DTA115TKA	—	—	—	○	—
DTA115TSA	—	—	—	—	○

●Equivalent circuit



●External dimensions (Unit : mm)



DTA115TM / DTA115TE / DTA115TUA / DTA115TKA / DTA115TSA

Transistors

●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		T_j	150	°C
Storage temperature		T_{stg}	-55 to +150	°C

●Electrical characteristics (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	BV_{CBO}	-50	-	-	V	$I_C = -50\mu A$
Collector-emitter breakdown voltage	BV_{CEO}	-50	-	-	V	$I_C = -1mA$
Emitter-base breakdown voltage	BV_{EBO}	-5	-	-	V	$I_E = -50\mu A$
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	$I_C/I_E = -1mA/-0.1mA$
DC current transfer ratio	h_{FE}	100	250	600	-	$I_C = -1mA, V_{CE} = -5V$
Input resistance	R_1	70	100	130	k Ω	-
Transition frequency	f_T *	-	250	-	MHz	$V_{CE} = -10V, I_E = 5mA, f = 100MHz$

*Characteristics of built-in transistor

●Electrical characteristics curves

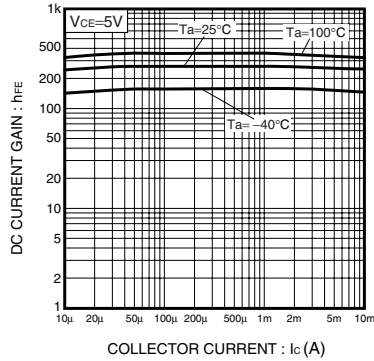


Fig.1 DC current gain
vs. Collector current

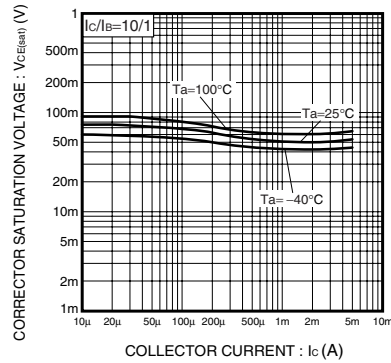


Fig.2 Collector-Emitter saturation voltage
vs. Collector current

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