

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

DTA124TM / DTA124TE / DTA124TUA / DTA124TKA

● Applications

Inverter, Interface, Driver

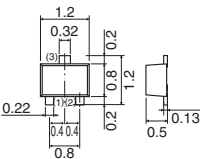
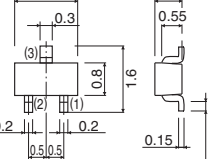
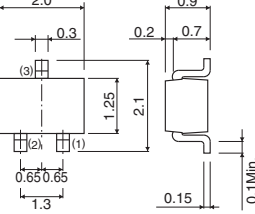
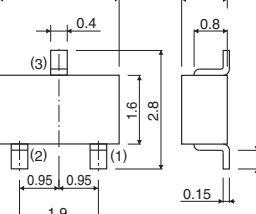
● Features

- 1) Built-in circuit enables 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. They also have the advantage of almost completely eliminating parasitic effects.
- 3) Only the on / off conditions need to be set for operation, making the device design easy.

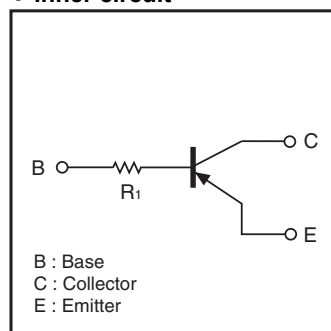
● Structure

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

● Dimensions (Unit : mm)

DTA124TM  ROHM : VMT3 Abbreviated symbol : 95 (1) Base (2) Emitter (3) Collector	DTA124TE  ROHM : EMT3 Abbreviated symbol : 95 (1) Emitter (2) Base (3) Collector
DTA124TUA  ROHM : UMT3 EIAJ : SC-70 Abbreviated symbol : 95 (1) Emitter (2) Base (3) Collector Each lead has same dimensions	DTA124TKA  ROHM : SMT3 EIAJ : SC-59 Abbreviated symbol : 95 (1) Emitter (2) Base (3) Collector Each lead has same dimensions

● Inner circuit



$R_1 = 22k\Omega$

● Packaging specifications

Part No.	Package	VMT3	EMT3	UMT3	SMT3
	Package type	Taping	Taping	Taping	Taping
	Code	T2L	TL	T106	T146
	Basic ordering unit (pieces)	8000	3000	3000	3000
DTA124TM		○	—	—	—
DTA124TE		—	○	—	—
DTA124TUA		—	—	○	—
DTA124TKA		—	—	—	○

● Absolute maximum ratings (Ta=25°C)

Parameter	Symbol	Limits				Unit
		DTA124TM	DTA124TE	DTA124TUA	DTA124TKA	
Collector-base voltage	V _{CB0}	-50				V
Collector-emitter voltage	V _{CE0}	-50				V
Emitter-base voltage	V _{EB0}	-5				V
Collector current	I _C	-100				mA
Collector power dissipation	P _C	150		200		mW
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_{CB0}	-50	—	—	V	$I_C = -50\mu A$
Collector-emitter breakdown voltage	BV_{CE0}	-50	—	—	V	$I_C = -1mA$
Emitter-base breakdown voltage	BV_{EB0}	-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	$I_C/I_B = -5mA/-0.5mA$
DC current transfer ratio	h_{FE}	100	250	600	—	$V_{CE} = -5V, I_C = -1mA$
Input resistance	R_i	15.4	22	28.6	k Ω	—
Transition frequency	f_T *	—	250	—	MHz	$V_{CE} = -10V, I_E = 5mA, f = 100MHz$

* Characteristics of built-in transistor

● Electrical characteristic curves

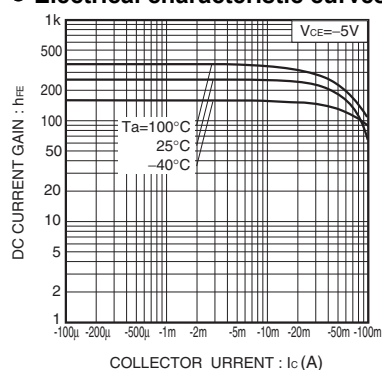


Fig.1 DC current gain vs. collector current

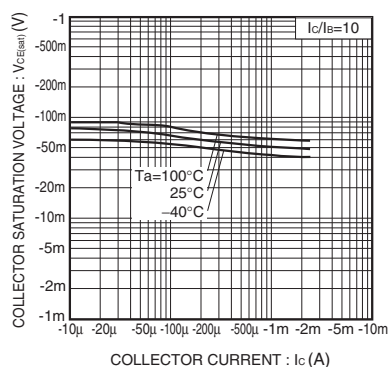


Fig.2 Collector-emitter saturation voltage vs. collector current

Notes

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