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

DTA144TM / DTA144TE / DTA144TUA / DTA144TKA

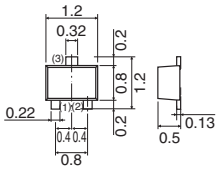
● Applications
Inverter, Interface, Driver

● 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. 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)

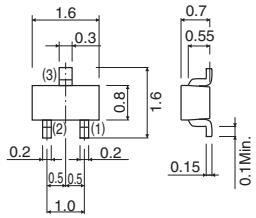
● Dimensions (Unit : mm)

DTA144TM



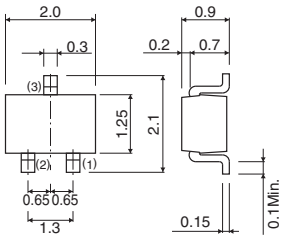
ROHM : VMT3
(1) Base
(2) Emitter
(3) Collector
Abbreviated symbol : 96

DTA144TE



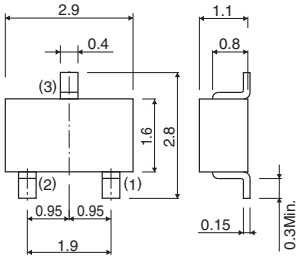
ROHM : EMT3
(1) Emitter
(2) Base
(3) Collector
Abbreviated symbol : 96

DTA144TUA



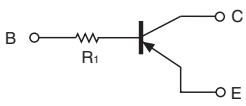
ROHM : UMT3
EIAJ : SC-70
(1) Emitter
(2) Base
(3) Collector
Each lead has same dimensions
Abbreviated symbol : 96

DTA144TKA



ROHM : SMT3
EIAJ : SC-59
(1) Emitter
(2) Base
(3) Collector
Each lead has same dimensions
Abbreviated symbol : 96

● Inner circuit



B : Base
C : Collector
E : Emitter

R_1=47kΩ

● Packaging specifications

Part No.	Package	VMT3	EMT3	UMT3	SMT3
	Packaging type	Taping	Taping	Taping	Taping
	Code	T2L	TL	T106	T146
	Basic ordering unit (pieces)	8000	3000	3000	3000
DTA144TM		○	–	–	–
DTA144TE		–	○	–	–
DTA144TUA		–	–	○	–
DTA144TKA		–	–	–	○

● Absolute maximum ratings (Ta=25°C)

Parameter	Symbol	Limits				Unit
		DTA144TM	DTA144TE	DTA144TUA	DTA144TKA	
Collector-base voltage	V_{CBO}	–50				V
Collector-emitter voltage	V_{CEO}	–50				V
Emitter-base voltage	V_{EBO}	–5				
Collector current	I_C	–100				mA
Collector power dissipation	Pc	150		200		mW
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=–5mA/–0.5mA
DC current transfer ratio	h_{FE}	100	250	600	–	V_{CE}=–5V, I_C=–1mA
Input resistance	R_1	32.9	47	61.1	kΩ	–
Transition frequency	f_T *	–	250	–	MHz	V_{CE}=–10V, I_E=5mA, f=100MHz

* Characteristics of built-in transistor

● Electrical characteristic curves

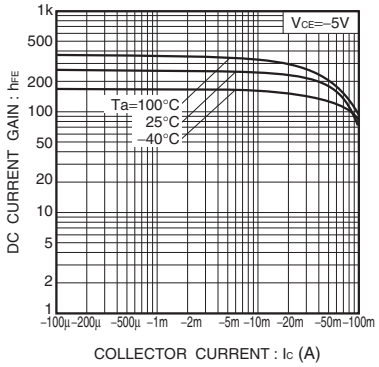


Fig.1 DC current gain vs.collector current

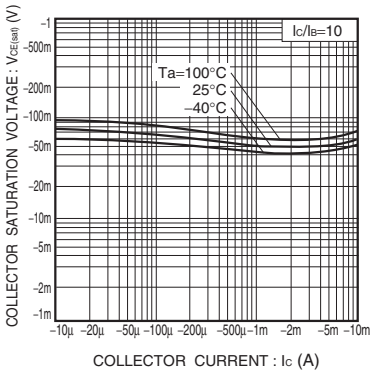


Fig.2 Collector-emitter saturation voltage vs.collector current

Notes

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