500mA / 50V Digital transistors (with built-in resistors)

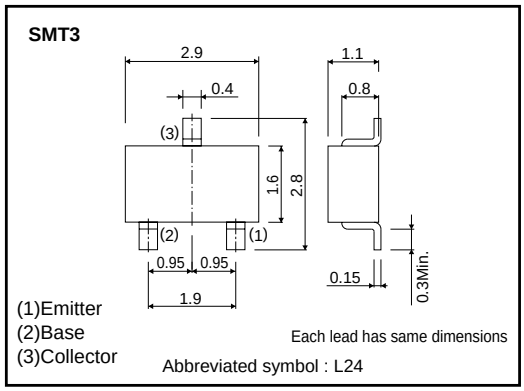
DTD114GK

●**Applications**
Inverter, Interface, Driver

●**Feature**
1) The built-in bias resistors consist of thin-film resistors with complete isolation to allow negative biasing of the input, and parasitic effects are almost completely eliminated.
2) Only the on / off conditions need to be set for operation, making the device design easy.
3) Higher mounting densities can be achieved.

●**Structure**
NPN epitaxial planar silicon transistor
(Resistor built-in type)

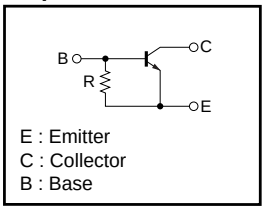
●**External dimensions** (Unit : mm)



●**Packaging specifications**

	Package	SMT3
	Packaging type	Taping
	Code	T146
Part No.	Basic ordering unit (pieces)	3000
DTD114GK		◯

●**Equivalent circuit**



R=10kΩ

●**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	500	mA
Collector power dissipation	P_C	200	mW
Junction temperature	Tj	150	℃
Storage temperature	Tstg	–55 to+150	℃

●**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=720μA
Collector cutoff current	I_{CBO}	–	–	0.5	μA	V_{CB}=50V
Emitter cutoff current	I_{EBO}	300	–	580	μA	V_{EB}=4V
Collector-emitter saturation voltage	$V_{CE(sat)}$	–	–	0.3	V	I_C/I_B=50mA / 2.5mA
DC current transfer ratio	h_{FE}	56	–	–	–	I_C=50mA , V_{CE}=5V
Emitter-base resistance	R	7	10	13	kΩ	–
Transition frequency	f_T *	–	200	–	MHz	V_{CE}=10V , I_E=–50mA , f=100MHz

* Characteristics of built-in transistor.

●**Electrical characteristics curves**

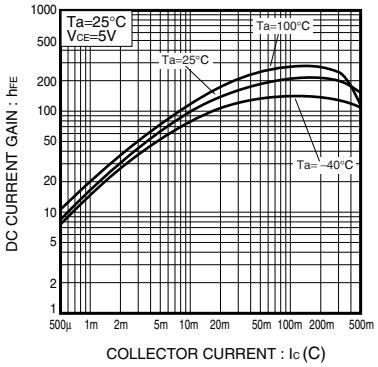


Fig.1 DC current transfer ratio vs. Collector current

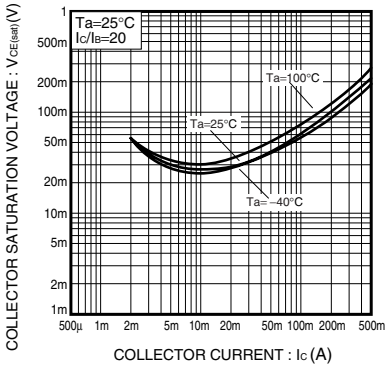


Fig.2 Collector-Emitter saturation voltage vs. Collector current

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