

Bipolar Transistors Silicon NPN Epitaxial Type

TDTC114E

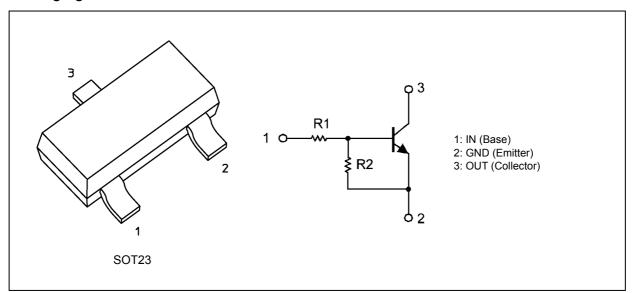
1. Applications

- Switching
- · Inverter Circuits
- · Driver Circuits

2. Features

- (1) The integrated bias resistor reduces the number of external parts required, making it possible to reduce system size and assembly time.
- (2) Toshiba offers transistors with a wide range of resistance to accommodate various circuit designs.
- (3) Complementary to TDTA114E

3. Packaging and Internal Circuit



4. Absolute Maximum Ratings (Note) (Unless otherwise specified, Ta = 25 °C)

Characteristics	Symbol	Rating	Unit
Supply voltage	V _{CC}	50	V
Output current	Io	100	mA
Power dissipation	P _D	320	mW
Junction temperature	Tj	150	°C
Storage temperature	T _{stg}	-55 to 150	°C

Note: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.) are within the absolute maximum ratings.

Please design the appropriate reliability upon reviewing the Toshiba Semiconductor Reliability Handbook ("Handling Precautions"/"Derating Concept and Methods") and individual reliability data (i.e. reliability test report and estimated failure rate, etc).

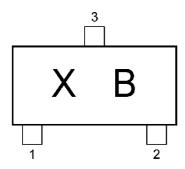
Start of commercial production



5. Electrical Characteristics (Unless otherwise specified, T_a = 25 °C)

Characteristics	Symbol	Note	Test Condition	Min	Тур.	Max	Unit
Input voltage (off)	$V_{I(off)}$		V _{CC} = 5 V, I _O = 0.1 mA	_	_	1.0	V
Input voltage (on)	$V_{I(on)}$		V _O = 0.3 V, I _O = 10 mA	3.4	_	_	V
Output voltage	V _{O(on)}		I _O = 10 mA, I _I = 0.5 mA	_	0.1	0.3	V
Input bias current	I _I		V _I = 5 V	_	_	0.88	mA
Output current	I _{O(off)}		V _{CC} = 50 V, V _I = 0 V	_	_	500	nA
DC current gain	G _l		V _O = 5 V, I _O = 5 mA	30	_	_	_
Input resistance	R ₁		_	7	10	13	kΩ
Resistance ratio	R ₂ /R ₁		_	0.8	1.0	1.2	_
Transition frequency	f _T		V _{CE} = 10 V, I _E = -5 mA, f = 1MHz	_	250	_	MHz

6. Marking





7. Characteristics Curves (Note)

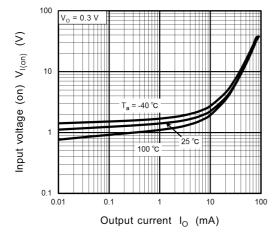


Fig. 7.1 V_{I(on)} - I_O

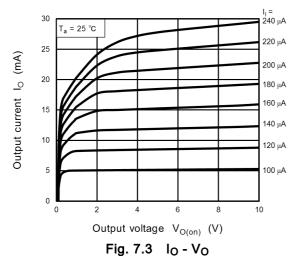




Fig. 7.5 V_{O(on)} - I_O

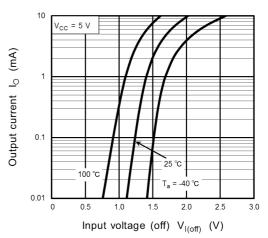
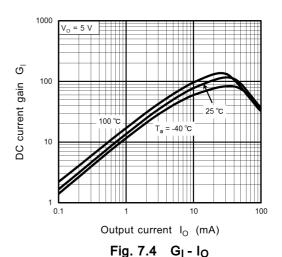


Fig. 7.2 Io - V_{I(off)}



Note: The above characteristics curves are presented for reference only and not guaranteed by production test, unless otherwise noted.

I_O / I_I = 20

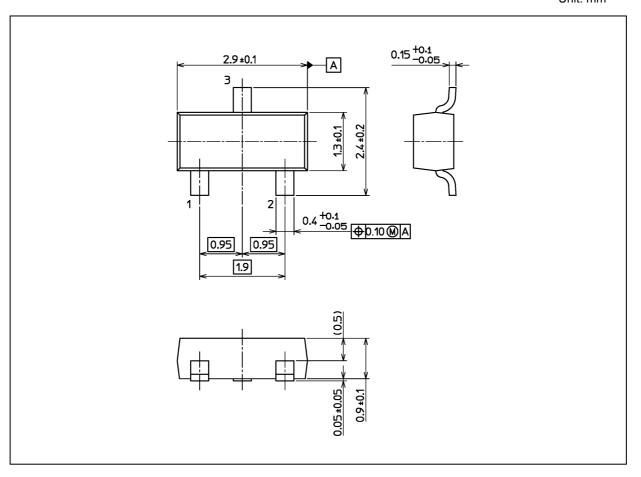
Output voltage V_{O(on)} (V)

0.01



Package Dimensions

Unit: mm



Weight: 9 mg (typ.)

Package Name(s)				
Nickname: SOT23				



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