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DTC114WE / DTC114WUA / DTC114WKA / DTC114WSA

Transistors

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

DTC114WE/DTC114WUA/DTC114WKA/DTC114WSA

●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 negative 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.

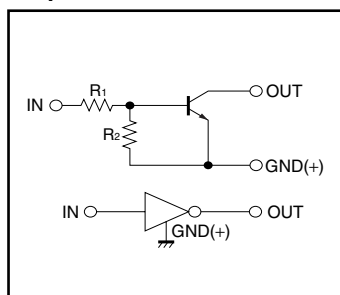
●Structure

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

●Packaging specifications

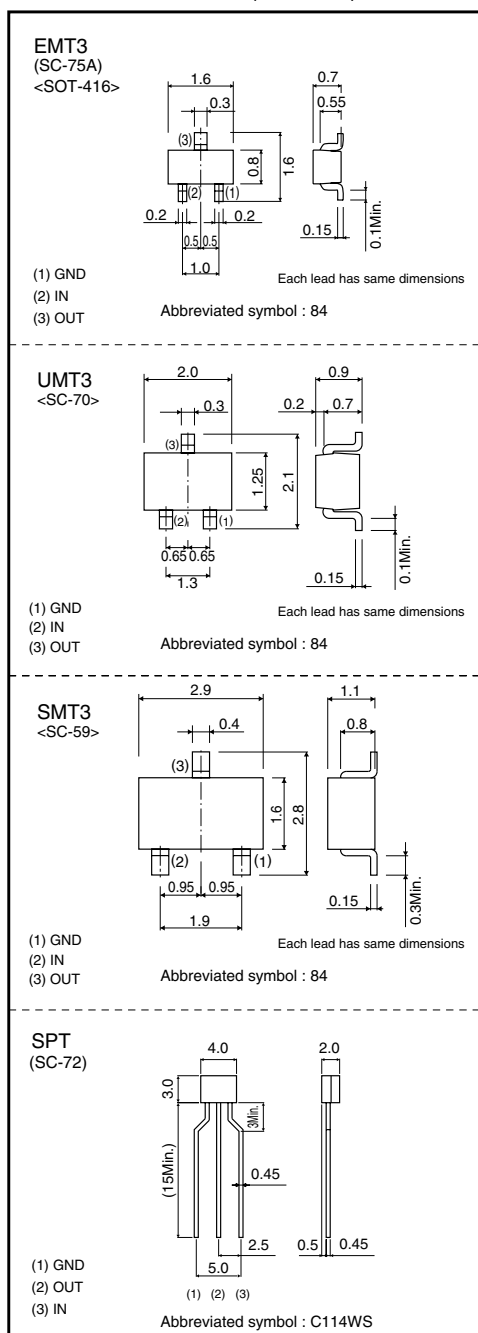
Part No.	Package	EMT3	UMT3	SMT3	SPT
	Packaging type	Taping	Taping	Taping	Taping
	Code	TL	T106	T146	TP
	Basic ordering unit (pieces)	3000	3000	3000	5000
DTC114WE		○	—	—	—
DTC114WUA		—	○	—	—
DTC114WKA		—	—	○	—
DTC114WSA		—	—	—	○

●Equivalent circuit



$R_1=10k\Omega$ / $R_2=4.7k\Omega$

●External dimensions (Unit : mm)



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Transistors

●Absolute maximum ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit
Supply voltage	V _{CC}	50	V
Input voltage	V _I	-10 to +30	V
Output current	I _O	100	mA
	I _{C(Max.)}	100	
Power dissipation	DTC114WE	150*	mW
	DTC114WUA / DTC114WKA	200*	
	DTC114WSA	300*	
Junction temperature	T _J	150	°C
Storage temperature	T _{stg}	-55 to +150	°C

* When mounted on the recommended land

●External characteristics (Unit: mm)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Input voltage	V _{I(off)}	-	-	0.8	V	V _{CC} =5V, I _O =100μA
	V _{I(on)}	3	-	-		V _O =0.3V, I _O =2mA
Output voltage	V _{O(on)}	-	0.1	0.3	V	I _O =10mA, I _I =0.5mA
Input current	I _I	-	-	0.88	mA	V _I =5V
Output current	I _{O(off)}	-	-	0.5	μA	V _{CC} =50V, V _I =0V
DC current gain	G _I	24	-	-	-	I _O =10mA, V _O =5V
Input resistance	R ₁	7	10	13	kΩ	-
Resistance ratio	R ₂ /R ₁	0.37	0.47	0.57	-	-
Transition frequency	f _T *	-	250	-	MHz	V _{CE} =10V, I _E =-5mA, f=100MHz

* Characteristics of built-in transistor

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Transistors

● **Electrical characteristics curves**

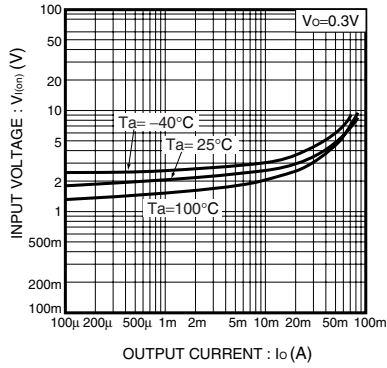


Fig.1 Input voltage vs. Output current (ON characteristics)

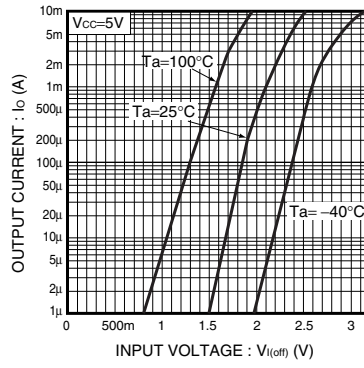


Fig.2 Output current vs. Input voltage (OFF characteristics)

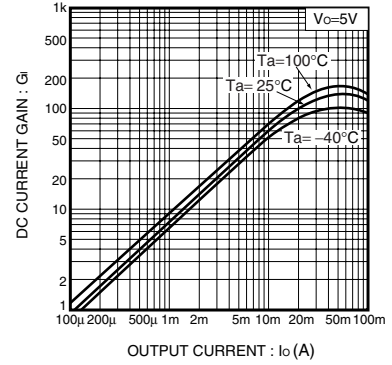


Fig.3 DC current gain vs. Output current

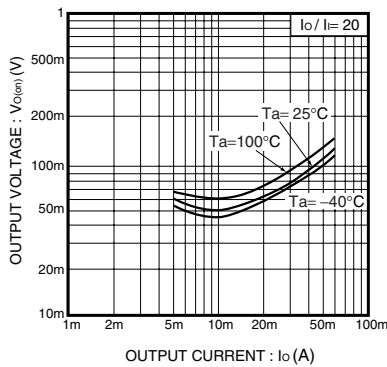


Fig.4 Output voltage vs. Output current

Appendix

Notes

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