DTC114ECA

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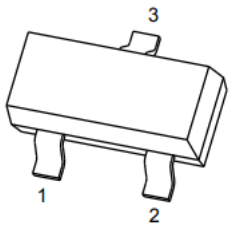
NPN Silicon Surface Mount Transistor with Monolithic Bias Resistor Network

General description

SOT-23 Bias Resistor Transistor.
NPN Silicon Surface Mount Transistor with
Monolithic Bias Resistor Network.

This new series of digital transistors is designed to replace a single device and its external resistor bias network. The BRT (Bias Resistor Transistor) contains a single transistor with a monolithic bias network consisting of two resistors: a series base resistor and a base-emitter resistor. The BRT eliminates these individual components by integrating them into a single device. The device is 3 designed for low power surface mount applications.



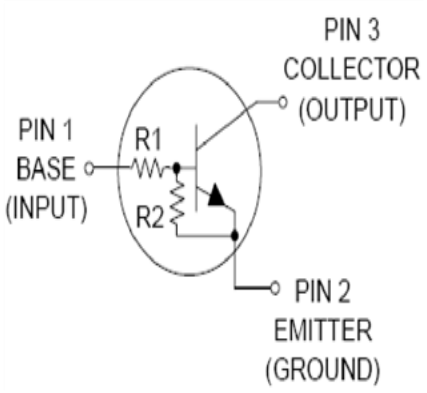
SOT-23

1. IN
2. GND
3. OUT

FEATURES

- Simplifies Circuit Design
- Reduces Board Space
- Reduces Component Count

Electrical Symbol:



Absolute Maximum Ratings (T_A = 25°C unless otherwise noted)

Symbol	Parameter	Value	Units
V_{CBO}	Collector-Base Voltage	50	V
V_{CEO}	Collector-Emitter Voltage	50	V
I_C	Collector Current	100	mA
P_D	Power Dissipation	200	mW
T_J T_{STG}	Junction & Storage Temperature Range	-55 to +150	°C

Device Marking:

Device	Marking
DTC114ECA	24

Electrical Characteristics (T_A = 25°C unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Input voltage	$V_{I(off)}$	V_{CC}=5V,I_O=100μA	0.5			V
	$V_{I(on)}$	V_O=0.3V,I_O=10mA			3	V
Output voltage	$V_{O(on)}$	I_O/I_I=10mA/0.5mA			0.3	V
Input current	I_I	V_I=5V			0.88	mA
Output current	$I_{O(off)}$	V_{CC}=50V,V_I=0			0.5	μA
DC current gain	G_I	V_O=5V,I_O=5mA	30			
Input resistance	R_1		7	10	13	kΩ
Resistance ratio	R_2/R_1		0.8	1	1.2	
Transition frequency	f_T	V_O=10V,I_O=5mA,f=100MHz		250		MHz

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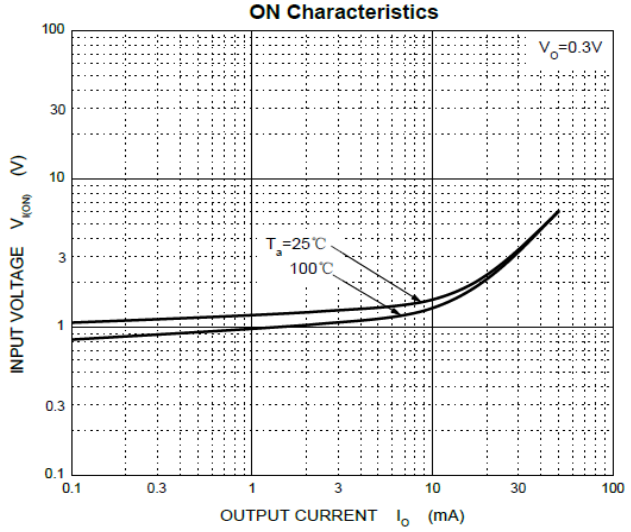
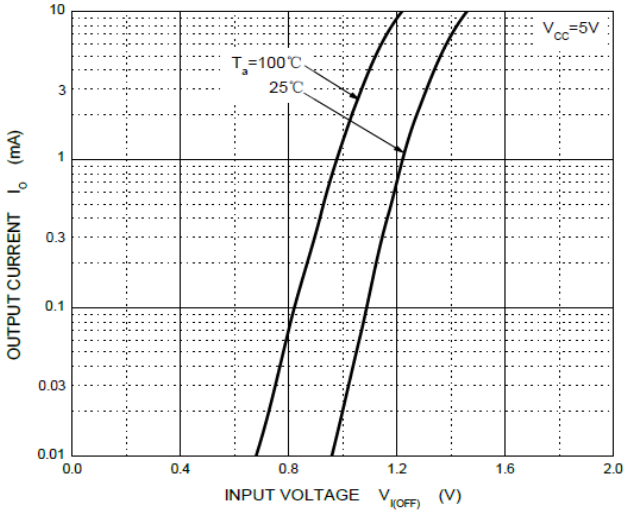
Typical Characteristics

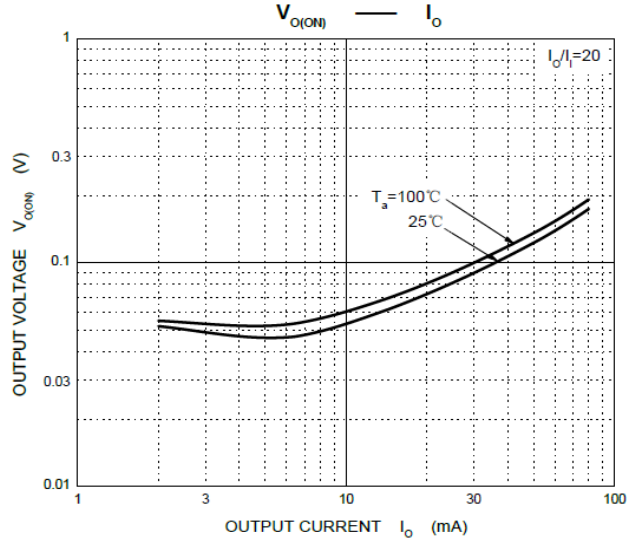
ON Characteristics



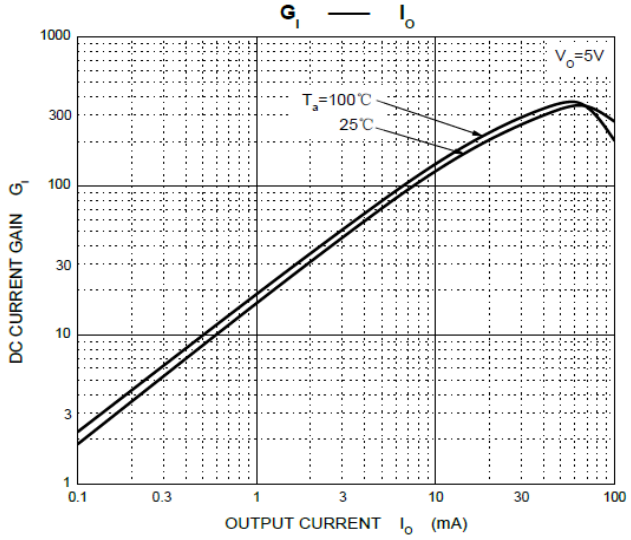
OFF Characteristics



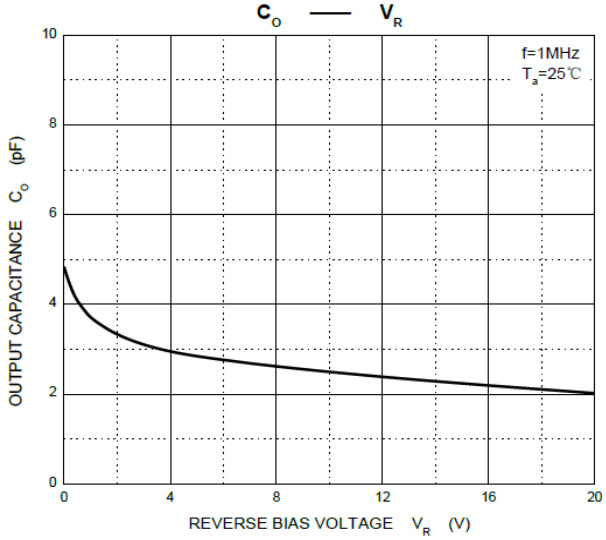
$V_{O(ON)}$ — I_O



G_I — I_O



C_O — V_R



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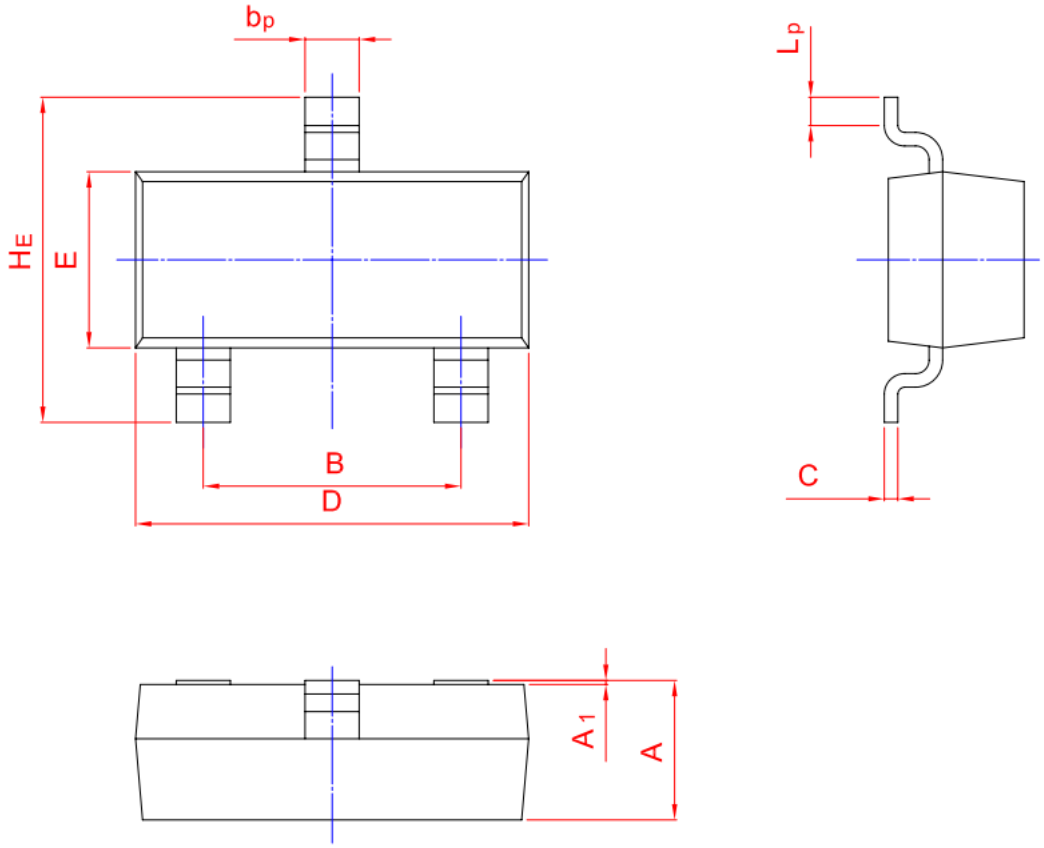
SOT-23 Package Outline



UNIT	A	B	bp	C	D	E	HE	A1	Lp
mm	1.40 0.95	2.04 1.78	0.50 0.35	0.19 0.08	3.10 2.70	1.65 1.20	3.00 2.20	0.100 0.013	0.50 0.20

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