

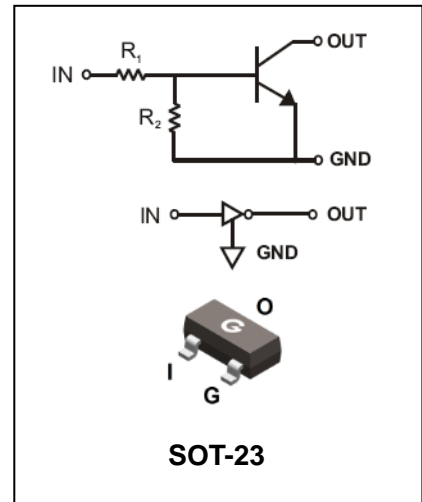
## Digital Transistor

## DTC(R<sub>1</sub>=R<sub>2</sub> SERIES)CA

### FEATURES

- Epitaxial planar die construction.
- Complementary PNP types available(DTA).
- Built-in biasing resistors,R<sub>1</sub>=R<sub>2</sub>.
- Also available in lead free version.

HF



### APPLICATIONS

- The NPN style digital transistor.

### ORDERING INFORMATION

Type No.	Marking	Package Code
DTC114ECA	24	SOT-23
DTC124ECA	25	SOT-23
DTC143ECA	23	SOT-23
DTC144ECA	26	SOT-23
DTC115ECA	29	SOT-23

### MAXIMUM RATING @ Ta=25°C unless otherwise specified

Symbol	Parameter	Value	Units	
V <sub>CC</sub>	Supply Voltage	50	V	
V <sub>IN</sub>	Input Voltage	DTC114ECA DTC124ECA DTC143ECA DTC144ECA DTC115ECA	-10 to+40 -10 to+40 -10 to+30 -10 to+40 -10 to +40	V
I <sub>O</sub>	Output Current	DTC114ECA DTC124ECA DTC143ECA DTC144ECA DTC115ECA	50 30 100 100 100	mA
I <sub>C</sub> (Max.)	Output current	ALL	100	mA
P <sub>D</sub>	Power Dissipation		200	mW
R <sub>θJA</sub>	Thermal Resistance, Junction to Ambient Air *1		409	°C/W
R <sub>θJC</sub>	Thermal Resistance, Junction to Case *1		225	°C/W
R <sub>θJL</sub>	Thermal Resistance, Junction to Lead *1		197	°C/W
T <sub>J</sub> , T <sub>STG</sub>	Operating and Storage and Temperature Range		-55 to +150	°C

Digital Transistor

**DTC(R<sub>1</sub>=R<sub>2</sub> SERIES)CA**

**ELECTRICAL CHARACTERISTICS @ Ta=25°C unless otherwise specified**

Parameter	Symbol	Test conditions	MIN	TYP	MAX	UNIT	
Input Voltage	V <sub>I(off)</sub>	V <sub>CC</sub> =5V, I <sub>O</sub> =100μA	0.5	-	-	V	
Input Voltage	V <sub>I(on)</sub>	DTC114ECA V <sub>O</sub> =0.3V, I <sub>O</sub> =10mA	-	-	3		
		DTC124ECA V <sub>O</sub> =0.2V, I <sub>O</sub> =5mA					
		DTC143ECA V <sub>O</sub> =0.3V, I <sub>O</sub> =20mA					
		DTC144ECA V <sub>O</sub> =0.3V, I <sub>O</sub> =2mA					
		DTC115ECA V <sub>O</sub> =0.3V, I <sub>O</sub> =1mA					
Output Voltage	V <sub>O(on)</sub>	DTC114ECA I <sub>O</sub> /I <sub>I</sub> =10mA/0.5mA	-	-	0.3	V	
		DTC124ECA I <sub>O</sub> /I <sub>I</sub> =10mA/0.5mA					
		DTC143ECA I <sub>O</sub> /I <sub>I</sub> =10mA/0.5mA					
		DTC144ECA I <sub>O</sub> /I <sub>I</sub> =10mA/0.5mA					
		DTC115ECA I <sub>O</sub> /I <sub>I</sub> =5mA/0.25mA					
Input Current	I <sub>I</sub>	V <sub>I</sub> =5V	-	-	0.88	mA	
					0.36		
					1.8		
					0.18		
					0.15		
Output Current	I <sub>O(off)</sub>	V <sub>CC</sub> =50V, V <sub>I</sub> =0V	-	-	0.5	μA	
DC Current Gain	G <sub>I</sub>	DTC114ECA V <sub>O</sub> =5V, I <sub>O</sub> =5mA	30	-	-	-	
		DTC124ECA V <sub>O</sub> =5V, I <sub>O</sub> =5mA	56				
		DTC143ECA V <sub>O</sub> =5V, I <sub>O</sub> =10mA	20				
		DTC144ECA V <sub>O</sub> =5V, I <sub>O</sub> =5mA	68				
		DTC115ECA V <sub>O</sub> =5V, I <sub>O</sub> =5mA	82				
Input Resistor	R <sub>1</sub> (R <sub>2</sub> )		7	10	13	kΩ	
			DTC124ECA	15.4	22		28.6
			DTC143ECA	3.29	4.7		6.11
			DTC144ECA	32.9	47		61.1
			DTC115ECA	70	100		130
Resistance Ratio	R <sub>2</sub> /R <sub>1</sub>	-	0.8	1	1.2		
Gain-Bandwidth Product	f <sub>T</sub>	V <sub>CE</sub> =10V, I <sub>E</sub> =-5mA, f=100MHz	-	250	-	MHz	

Note 1: The data tested by surface mounted on a 15mm \* 15mm \* 1mm FR4-epoxy P.C.B

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TYPICAL CHARACTERISTICS @ Ta=25°C unless otherwise specified

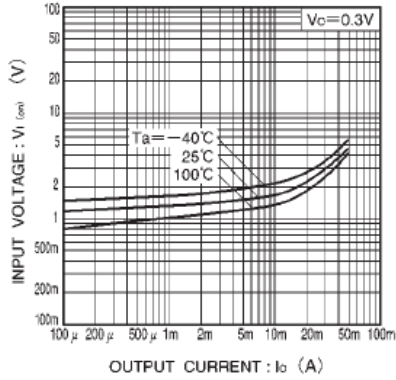


Fig.1 Input voltage vs. output current (ON characteristics)

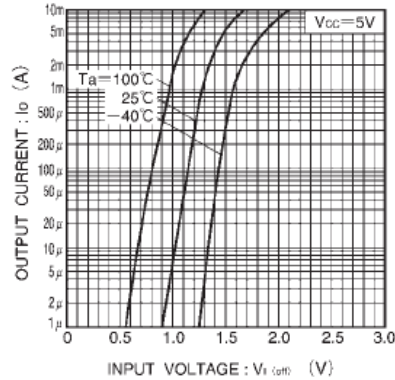


Fig.2 Output current vs. input voltage (OFF characteristics)

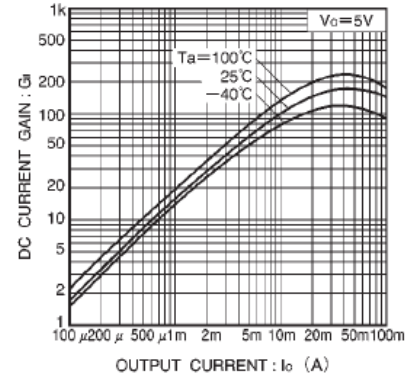


Fig.3 DC current gain vs. output current

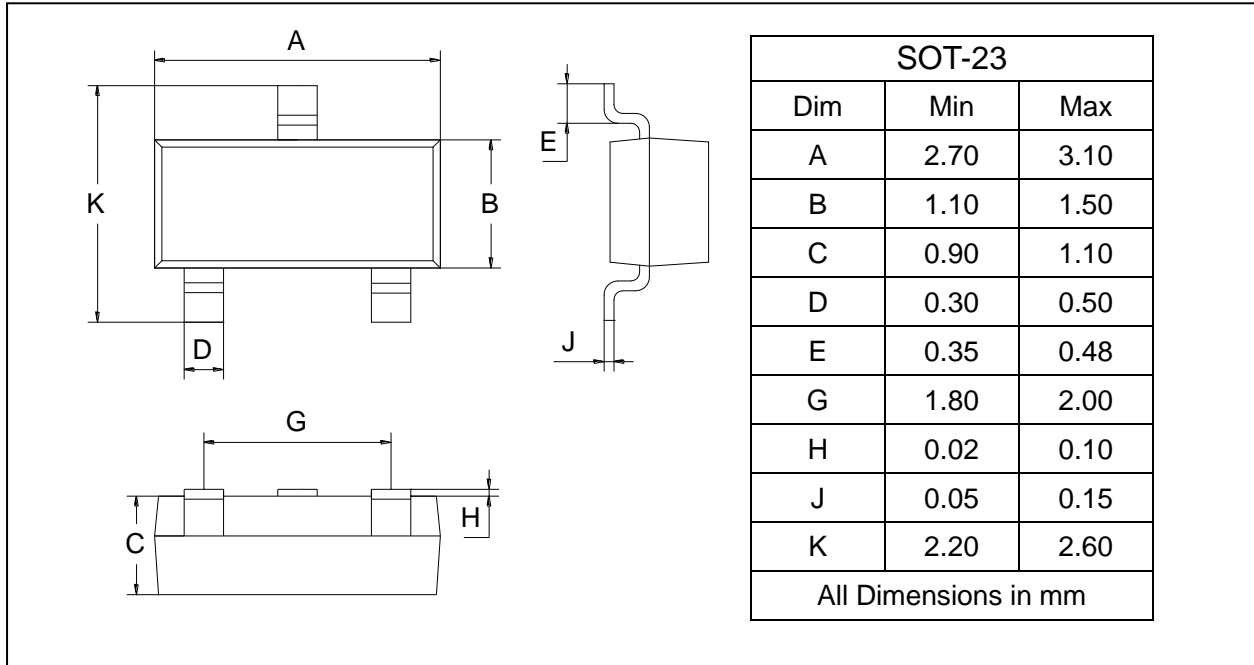
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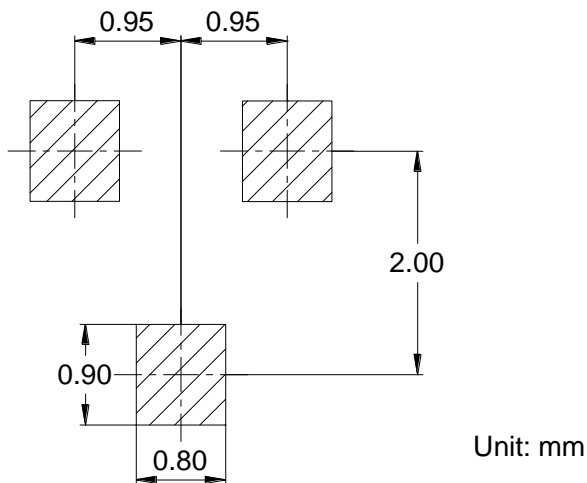
### PACKAGE OUTLINE

Plastic surface mounted package

SOT-23



### SOLDERING FOOTPRINT



### PACKAGE INFORMATION

Device	Package	Shipping
DTC114ECA/124ECA/143ECA/144ECA/115ECA	SOT-23	3000 pcs / Tape & Reel