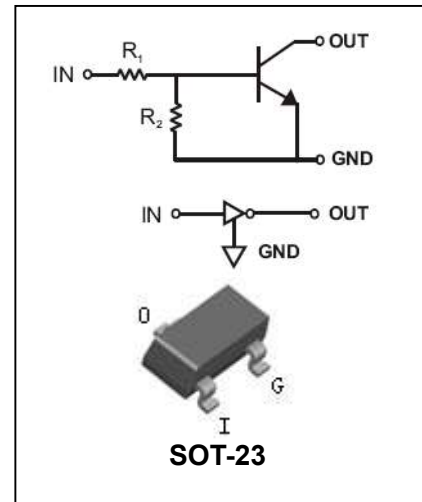


## Digital Transistor

## 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.



### APPLICATIONS

- The NPN style digital transistor.

### ORDERING INFORMATION

Type No.	Marking	Package Code
DTC113ZCA□	E21	SOT-23
DTC114WCA□	84	SOT-23
DTC114YCA□	64	SOT-23
DTC123JCA□	E42	SOT-23
DTC123YCA□	62	SOT-23
DTC143XCA□	43●	SOT-23
DTC143ZCA□	E23	SOT-23
DTC124XCA□	N18	SOT-23

□: none is for Lead Free package;

“G” is for Halogen Free package.

### 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	DTC113ZCA	-5 to+10
		DTC114WCA	-10 to+30
		DTC114YCA	-6 to +40
		DTC123JCA	-5 to+12
		DTC123YCA	-5 to+12
		DTC143XCA	-7 to+20
		DTC143ZCA	-5 to+30
		DTC124XCA	-10 to+40
I <sub>O</sub>	Output Current	DTC113ZCA	100
		DTC114WCA	100
		DTC114YCA	70
		DTC123JCA	100
		DTC123YCA	100

Digital Transistor

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

		DTC143XCA DTC143ZCA DTC124XCA	100 100 50	mA
I <sub>C</sub> (Max.)	Output current	ALL	100	mA
P <sub>D</sub>	Power Dissipation		200	mW
<b>Symbol</b>	<b>Parameter</b>		<b>Value</b>	<b>Units</b>
R <sub>θJA</sub>	Thermal Resistance, Junction to Ambient Air		625	°C/W
T <sub>J</sub> , T <sub>stg</sub>	Operating and Storage and Temperature Range		-55 to +150	°C

ELECTRICAL CHARACTERISTICS @ Ta=25°C unless otherwise specified

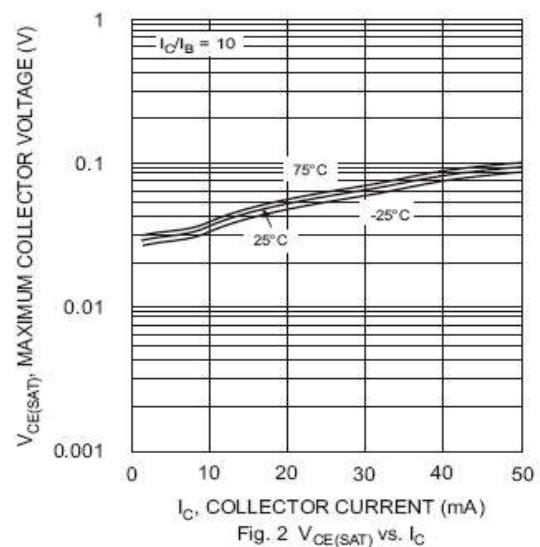
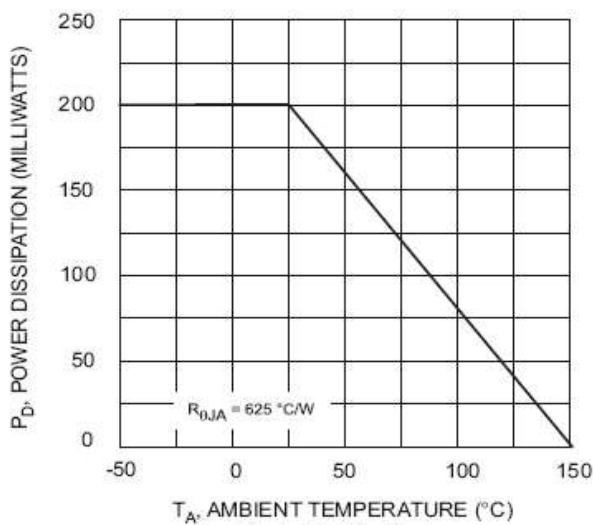
Parameter	Symbol	Test conditions	MIN	TYP	MAX	UNIT
Input Voltage	DTC113ZCA DTC114WCA DTC114YCA DTC123JCA DTC123YCA DTC143XCA DTC143ZCA DTC124XCA	V <sub>I(off)</sub> V <sub>CC</sub> =5V, I <sub>O</sub> =100μA	0.3 0.8 0.3 0.5 0.3 0.3 0.5 0.4	-	-	V
Input Voltage	DTC113ZCA DTC114WCA DTC114YCA DTC123JCA DTC123YCA DTC143XCA DTC143ZCA DTC124XCA	V <sub>I(on)</sub> V <sub>O</sub> =0.3V, I <sub>O</sub> =20mA V <sub>O</sub> =0.3V, I <sub>O</sub> =2mA V <sub>O</sub> =0.3V, I <sub>O</sub> =1mA V <sub>O</sub> =0.3V, I <sub>O</sub> =5mA V <sub>O</sub> =0.3V, I <sub>O</sub> =20mA V <sub>O</sub> =0.3V, I <sub>O</sub> =20mA V <sub>O</sub> =0.3V, I <sub>O</sub> =5mA V <sub>O</sub> =0.3V, I <sub>O</sub> =5mA V <sub>O</sub> =0.3V, I <sub>O</sub> =2mA	-	-	3.0 3.0 1.4 1.1 3.0 2.5 1.3 2.5	V
Output Voltage	DTC123JCA DTC143ZCA DTC114YCA ALL Others	V <sub>O(on)</sub> I <sub>O</sub> /I <sub>I</sub> =5mA/0.25mA  I <sub>O</sub> /I <sub>I</sub> =10mA/0.5mA	-	0.1	0.3	V
Input Current	DTC113ZCA DTC114WCA DTC114YCA DTC123JCA DTC123YCA DTC143XCA DTC143ZCA DTC124XCA	I <sub>I</sub> V <sub>I</sub> =5V	-	-	7.2 0.88 0.88 3.6 3.8 1.8 1.8 0.36	mA

## Digital Transistor

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

Output Current		$I_{O(off)}$	$V_{CC}=50V, V_I=0V$	-	-	0.5	$\mu A$
DC Current Gain	DTC113ZCA DTC114WCA DTC114YCA DTC123JCA DTC123YCA DTC143XCA DTC143ZCA DTC124XCA	$G_I$	$V_O=5V, I_O=10mA$	33 24 68 80 33 30 80 68	-	-	
<b>Parameter</b>		<b>Symbol</b>	<b>Test conditions</b>	<b>MIN</b>	<b>TYP</b>	<b>MAX</b>	<b>UNIT</b>
Input Resistor	DTC113ZCA DTC114WCA DTC114YCA DTC123JCA DTC123YCA DTC143XCA DTC143ZCA DTC124XCA	$R_1(R_2)$		0.7 7 7 1.54 1.54 3.29 3.29 15.4	1(10) 10(4.7) 10(47) 2.2(47) 2.2(10) 4.7(10) 4.7(47) 22(47)	1.3 13 13 2.86 2.86 6.11 6.11 28.6	$k\Omega$
Input Resistor ( $R_1$ ) Tolerance		$\Delta R_1$	-	-30		+30	%
Resistance Ratio Tolerance		$\Delta R_2/R_1$	-	-20		+20	%
Gain-Bandwidth Product		$f_T$	$V_{CE}=10V, I_E=5mA,$ $f=100MHz$	-	250	-	MHz

### TYPICAL CHARACTERISTICS @ $T_a=25^\circ C$ unless otherwise specified



## Digital Transistor

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

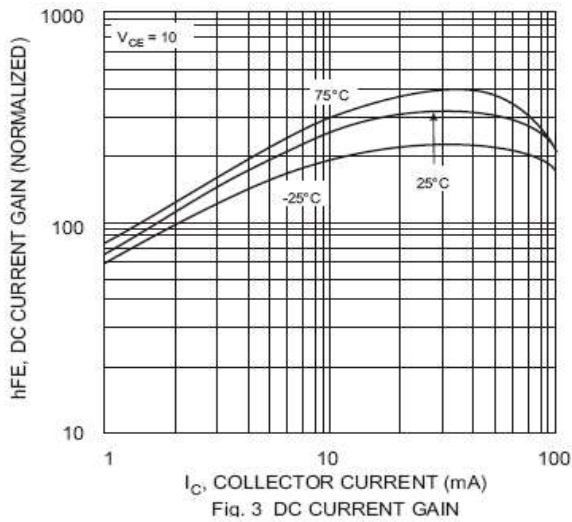


Fig. 3 DC Current Gain

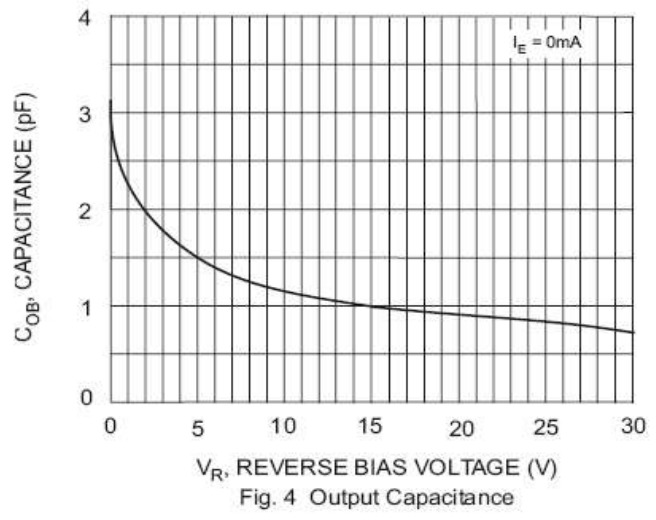


Fig. 4 Output Capacitance

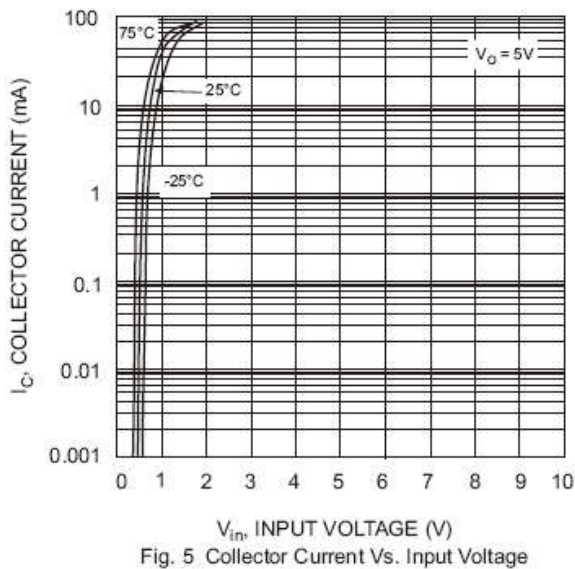


Fig. 5 Collector Current Vs. Input Voltage

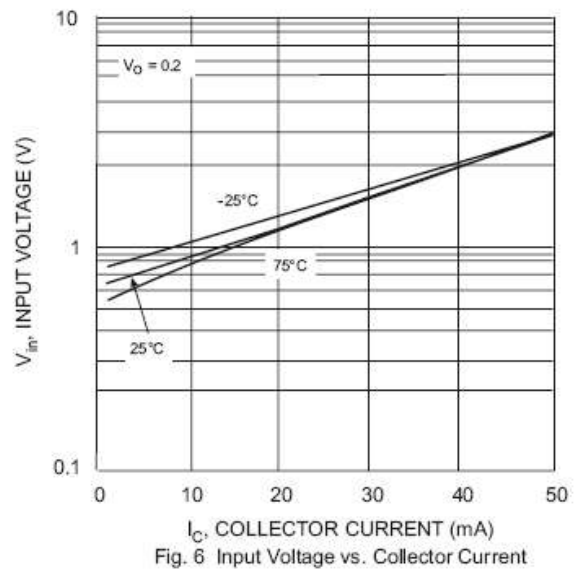


Fig. 6 Input Voltage vs. Collector Current

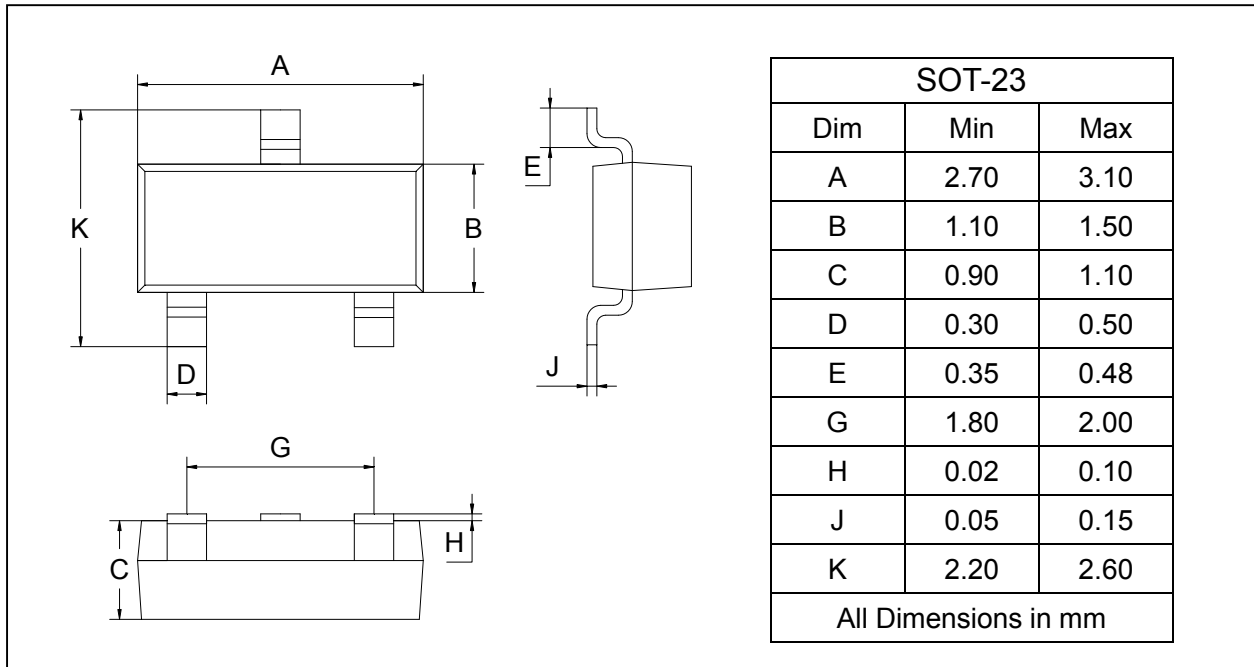
## Digital Transistor

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

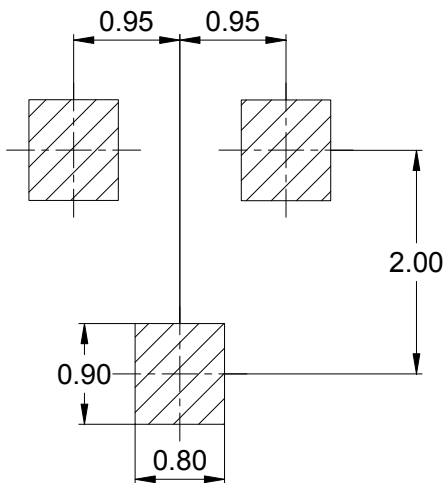
### PACKAGE OUTLINE

Plastic surface mounted package

SOT-23



### SOLDERING FOOTPRINT



### PACKAGE INFORMATION

Device	Package	Shipping
DTCXXXXCA	SOT-23	3000/Tape&Reel