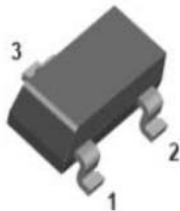
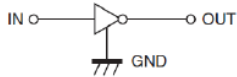
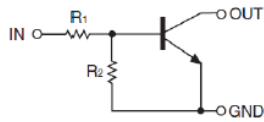


## NPN Digital Transistors (Built-in Resistors)



1. IN  
2. GND  
3. OUT

**SOT-23**

### Features

- Moisture sensitivity level 1
- Halogen free and RoHS compliant
- Surface mount package ideally suited for automatic insertion

### Application

- Signal amplification
- Switching circuit

### Mechanical data

- **Package:** SOT-23
- **Terminals:** Tin plated leads, solderable per J-STD-002 and JESD22-B102

### ■ Maximum Ratings ( $T_a=25^\circ\text{C}$ Unless otherwise specified)

Item	Symbol	Unit	Conditions	Value
Device marking code				45
Supply voltage	$V_{CC}$	V		50
Input voltage	$V_{IN}$	V		-10 to +40
Output current	$I_o$	mA		100
Power dissipation	$P_D$	mW		200
Junction temperature	$T_J$	$^\circ\text{C}$		-55 to +150
Storage temperature	$T_{STG}$	$^\circ\text{C}$		-55 to +150



# DTC124XCA

RoHS  
COMPLIANT

## ■ Electrical Characteristics (T<sub>a</sub>=25°C Unless otherwise specified)

Item	Symbol	Unit	Conditions	Min	Typ	Max
Input voltage	V <sub>I(off)</sub>	V	V <sub>CC</sub> =5V, I <sub>O</sub> =100uA	0.4		
	V <sub>I(on)</sub>	V	V <sub>O</sub> =0.3V, I <sub>O</sub> =2mA			2.5
Output voltage	V <sub>O(on)</sub>	V	I <sub>O</sub> / I <sub>I</sub> = 10mA / 0.5 mA			0.3
Input current	I <sub>I</sub>	uA	V <sub>I</sub> =5V			360
Output current	I <sub>O(off)</sub>	uA	V <sub>CC</sub> =50V, V <sub>I</sub> =0			0.1
DC current gain	G <sub>I</sub>		V <sub>O</sub> =5V, I <sub>O</sub> =5mA	56		
Input resistance	R <sub>1</sub>	kΩ		15.4	22	28.6
Resistance ratio	R <sub>2</sub> /R <sub>1</sub>			1.7	2.1	2.6
Transition frequency	f <sub>T</sub>	MHz	V <sub>O</sub> =10V, I <sub>O</sub> =5mA, f=100MHz		250	

## ■ Thermal Characteristics

Parameter	Symbol	Unit	Value
Thermal resistance, junction-to-ambient	R <sub>θJ-A</sub> <sup>(1)</sup>	°C/W	625
Thermal resistance, junction-to-case	R <sub>θJ-C</sub> <sup>(1)</sup>	°C/W	500

### Note:

(1) Device mounted on PCB, single-sided copper, with standard footprint



■ Characteristics

Fig 1: Input Voltage (On) Characteristics

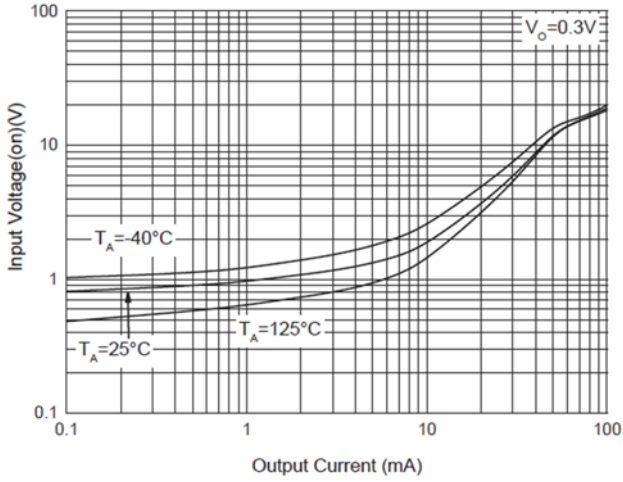


Fig 2: Input Voltage (Off) Characteristic

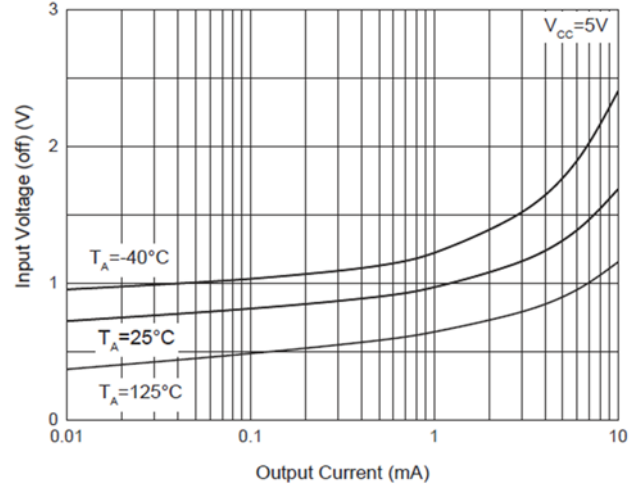


Fig 3: DC Current Gain Characteristics

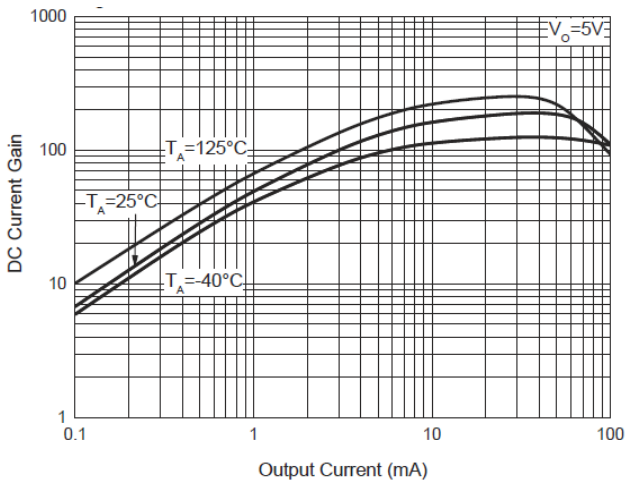


Fig 4: Output Voltage Characteristics

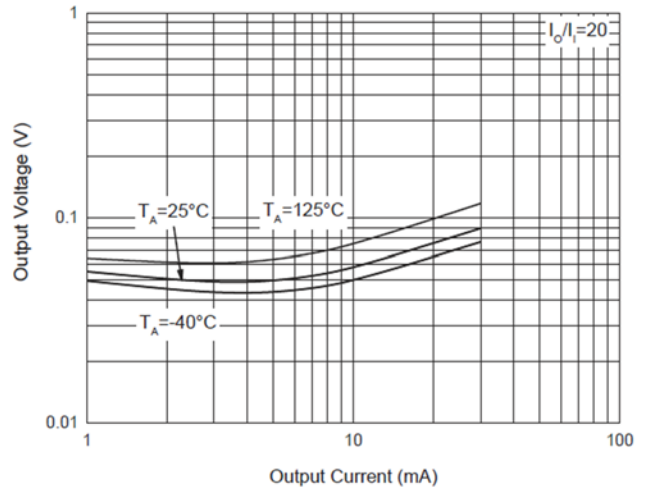
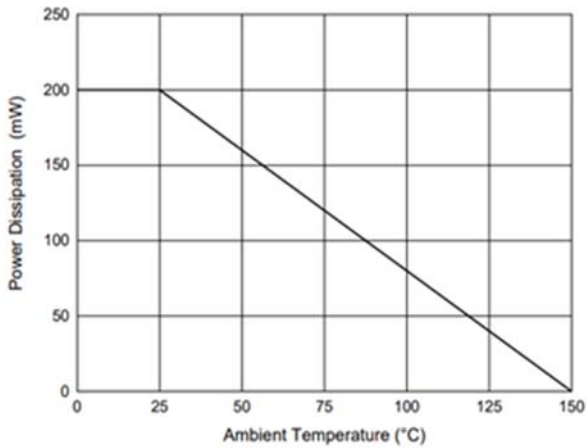


Fig 5: P<sub>D</sub>-T<sub>a</sub> Curve





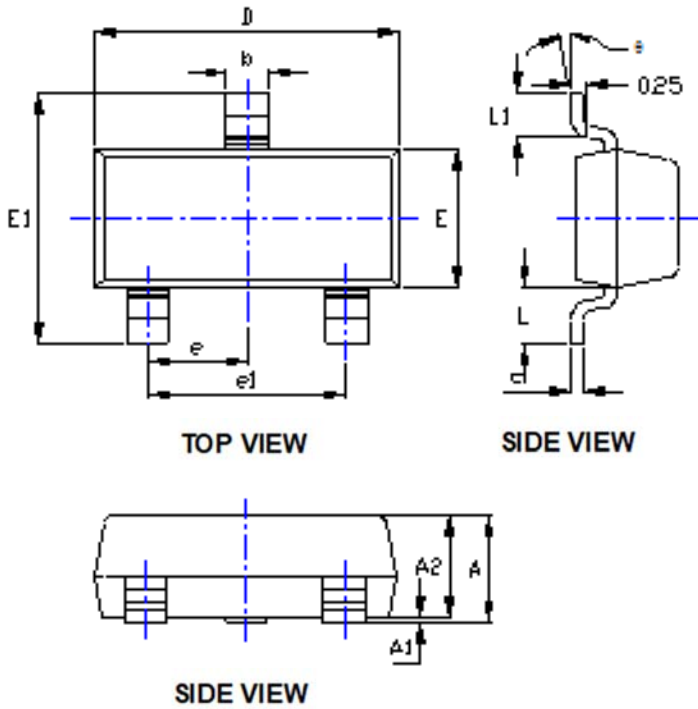
# DTC124XCA

RoHS  
COMPLIANT

## Ordering Information

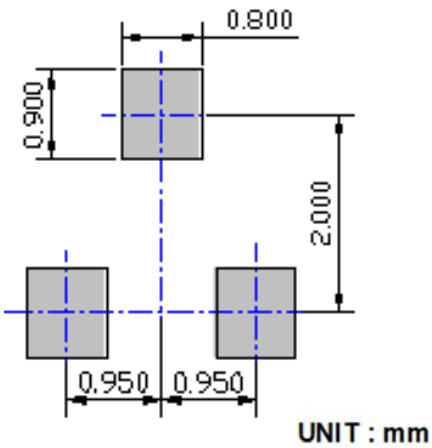
Preferred P/N	Packing code	Unit weight(g)	Minimum package(pcs)	Inner box quantity(pcs)	Outer carton quantity(pcs)	Delivery mode
DTC124XCA	F2	Approximate 0.009	3000	30000	120000	7" reel
DTC124XCA	F4	Approximate 0.009	10000	/	210000	13" reel

## Outline Dimensions



SYMBOL	DIMENSIONS			
	INCHES		Millimeter	
	MIN.	MAX.	MIN.	MAX.
A	0.035	0.045	0.900	1.150
A1	0.000	0.004	0.000	0.100
A2	0.035	0.041	0.900	1.050
b	0.012	0.020	0.300	0.500
c	0.004	0.008	0.100	0.200
D	0.110	0.118	2.800	3.000
E	0.047	0.055	1.200	1.400
E1	0.089	0.100	2.250	2.550
e	0.037TYP		0.950TYP	
e1	0.071	0.079	1.800	2.000
L	0.022REF		0.550REF	
L1	0.012	0.020	0.300	0.500
θ	0°	8°	0°	8°

## Suggested Pad Layout





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