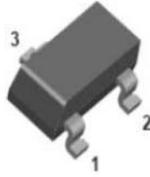
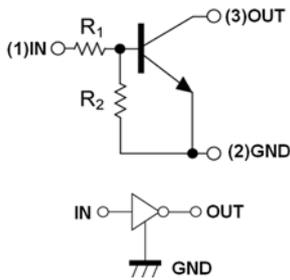


## NPN Digital Transistors (Built-in Resistors)



1. IN  
2. GND  
3. OUT

**SOT-323**



### Features

- Moisture sensitivity level 1
- General switching and amplification
- Surface mount package ideally suited for automatic insertion

### Application

- Signal amplification
- Switching circuit

### Mechanical data

- **Package:** SOT-323
- **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



# DTC124XUA

## ■ 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>I</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

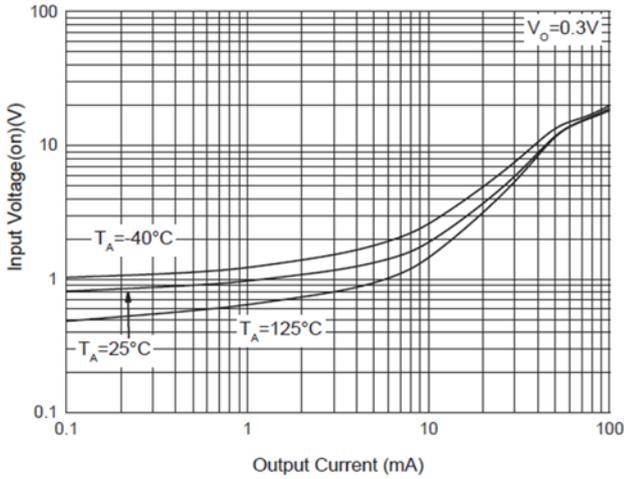
## ■ Ordering Information

Preferred P/N	Packing code	Unit weight(g)	Minimum package(pcs)	Inner box quantity(pcs)	Outer carton quantity(pcs)	Delivery mode
DTC124XUA	F2	Approximate 0.005	3000	30000	120000	7" reel

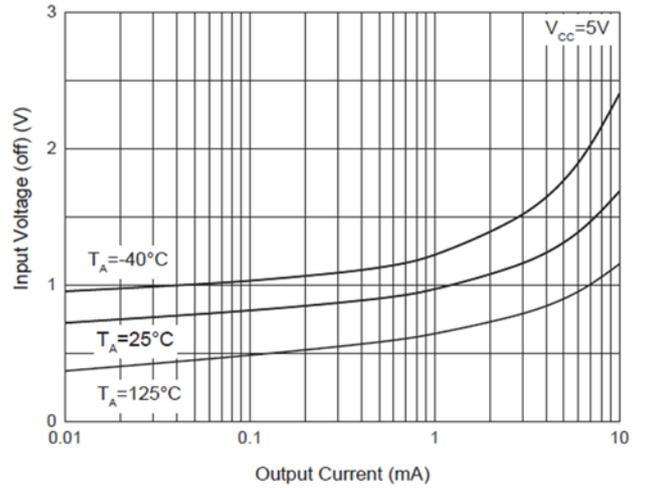


## ■ Characteristics

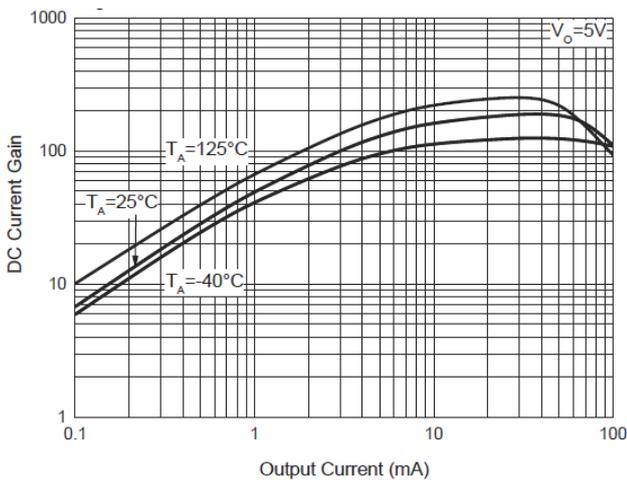
**Fig 1 : Input Voltage (On) Characteristics**



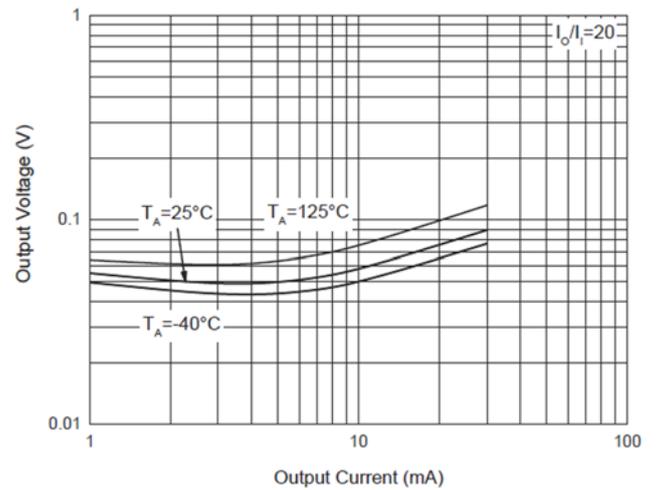
**Fig 2 : Input Voltage (Off) Characteristic**



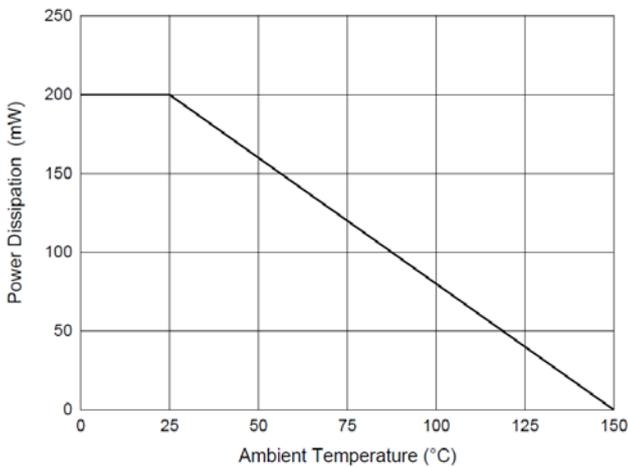
**Fig 3 : DC Current Gain Characteristics**



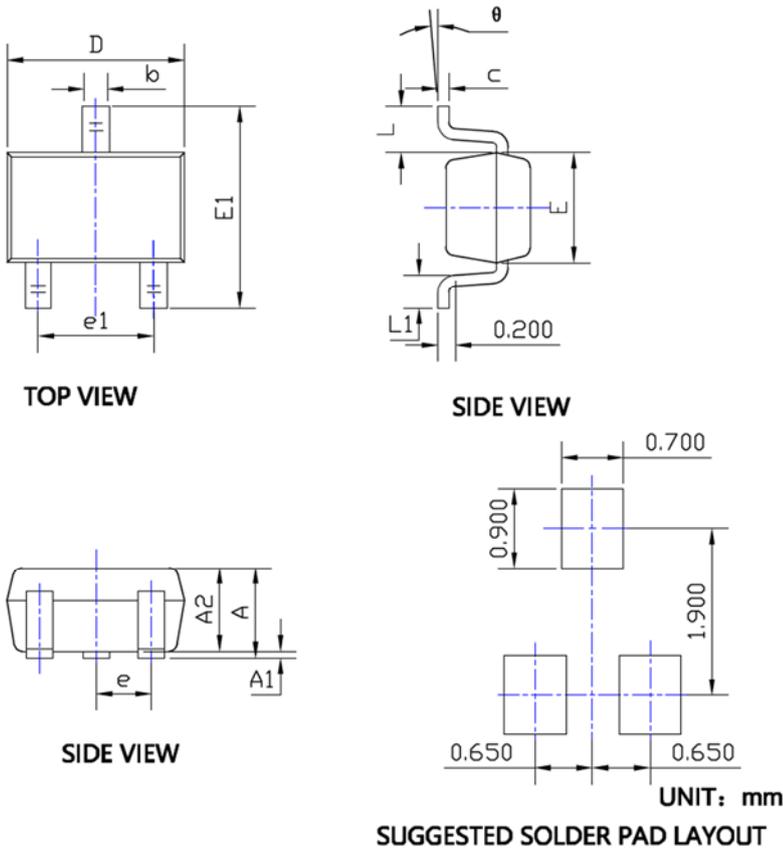
**Fig 4 : Output Voltage Characteristics**



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



## ■ Outline Dimensions



SYMBOL	DIMENSIONS			
	INCHES		Millimeter	
	MIN.	MAX.	MIN.	MAX.
A	0.035	0.043	0.900	1.100
A1	0.000	0.004	0.000	0.100
A2	0.035	0.039	0.900	1.000
b	0.006	0.016	0.150	0.400
c	0.004	0.010	0.100	0.250
D	0.071	0.087	1.800	2.200
E	0.045	0.053	1.150	1.350
E1	0.085	0.096	2.150	2.450
e	0.026TYP		0.650TYP	
e1	0.047	0.055	1.200	1.400
L	0.021REF		0.525REF	
L1	0.010	0.018	0.260	0.460
θ	0°	8°	0°	8°

- NOTE:**
- 1.PACKAGE BODY SIZES EXCLUDE MOLD FLASH AND GATE BURRS.
  - 2.TOLERANCE 0.1mm UNLESS OTHERWISE SPECIFIED.
  - 3.THE PAD LAYOUT IS FOR REFERENCE PURPOSES ONLY.

Note:

1. All dimensions are in millimeters (mm) unless otherwise specified.  
[所有尺寸均以毫米为单位，除非另有说明]
2. General tolerances:  $\pm 0.10\text{mm}$  unless otherwise specified.  
[通用公差为 $\pm 0.10\text{mm}$ ，除非另有说明]
3. Dimensions and tolerances per ASME Y14.5M-2018.  
[尺寸和公差遵循 ASME Y14.5M-2018 标准]
4. All dimensions shown are exclusive of burrs and gate residues.  
Burrs and gate vestiges shall not exceed 0.15 mm in maximum.  
[所有尺寸均不包括毛刺和浇口残留。毛刺与浇口残留的尺寸最大不得超过 0.15mm]
5. Dimension b does not include dambar protrusion of max 0.100 mm per side.  
[尺寸b不包括单边最大0.100 MM的中筋凸出部分]
6. Dimensions D and E are the overall extreme outer dimensions of the mold compound. These dimensions exclude mold flash, lead flash, protrusions and burrs but include the maximum allowable mold mismatch.  
[D和E是塑封体的外部极限尺寸，不包括包封溢料、内引线溢料、凸出部分以及胶体毛刺，但是包含了包封错位的最大尺寸]
7. Formed leads shall be planar with respect to one another within a maximum of 0.076 mm relative to the seating plane.  
[成型的管脚应为同一平面，共面性最大为0.1mm]
8. ★It is the key size.  
[★ 标记为关键尺寸]



## DTC124XUA

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