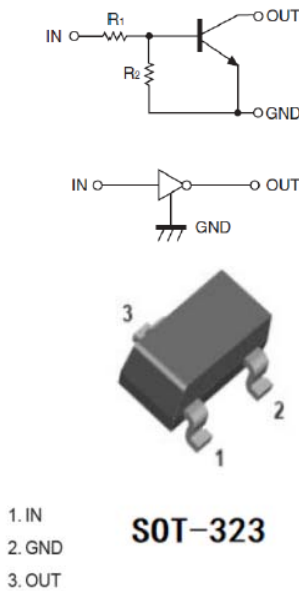


## NPN Digital Transistors (Built-in Resistors)



### 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-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				N61
Collector-base voltage	$V_{CC}$	V		50
Collector-emitter voltage	$V_{IN}$	V		-10 to +12
Collector current	$I_o$	mA		500
Power dissipation	$P_D$	mW		200
Operation junction temperature	$T_J$	$^\circ\text{C}$		-55 to +150
Storage temperature	$T_{STG}$	$^\circ\text{C}$		-55 to +150



# DDTC123EUA

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	0.5		
	V <sub>I(on)</sub>	V	V <sub>O</sub> =0.3V, I <sub>O</sub> =20mA			3
Output voltage	V <sub>O(on)</sub>	V	I <sub>O</sub> / I <sub>I</sub> = 50mA / 2.5 mA			0.3
Input current	I <sub>I</sub>	mA	V <sub>I</sub> =5V			3.8
Output current	I <sub>O(off)</sub>	uA	V <sub>CC</sub> =50V, V <sub>I</sub> =0			0.5
DC current gain	G <sub>I</sub>		V <sub>O</sub> =5V, I <sub>O</sub> =50mA	50		
Input resistance	R <sub>1</sub>	kΩ		1.5	2.2	2.9
Resistance ratio	R <sub>2</sub> /R <sub>1</sub>			0.8	1	1.2
Transition frequency	f <sub>T</sub>	MHz	V <sub>O</sub> =10V, I <sub>O</sub> =50mA, f=100MHz		200	

## ■ 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

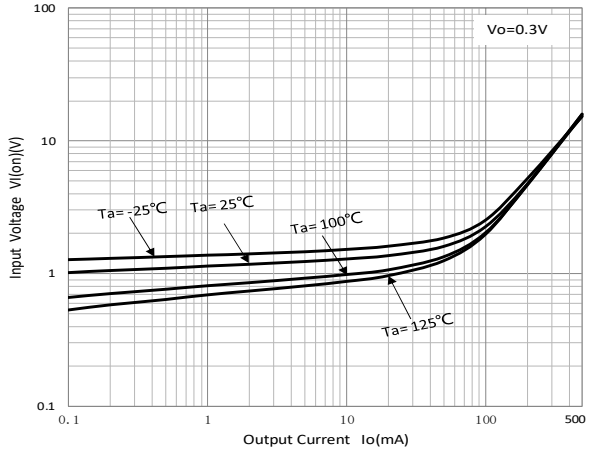


Fig 2: Input Voltage (Off) Characteristic

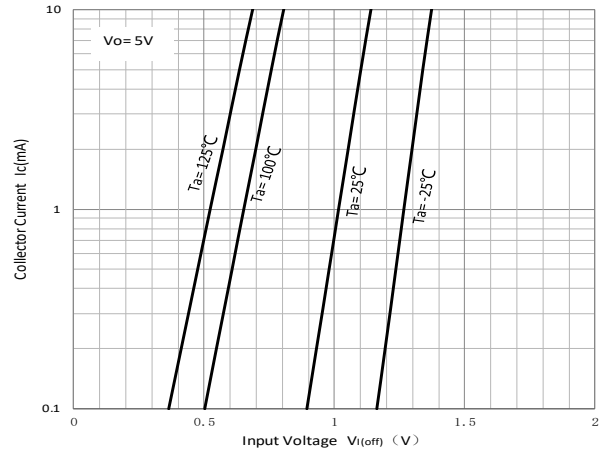


Fig 3: DC Current Gain Characteristics

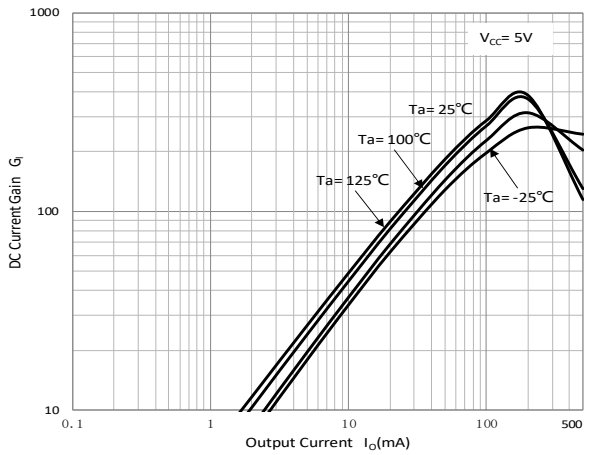


Fig 4: Output Voltage Characteristics

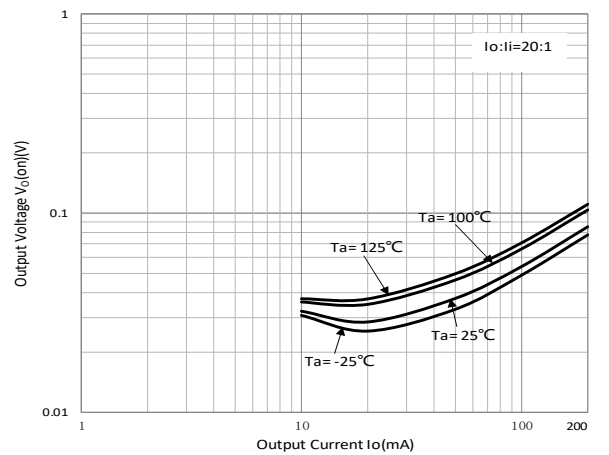
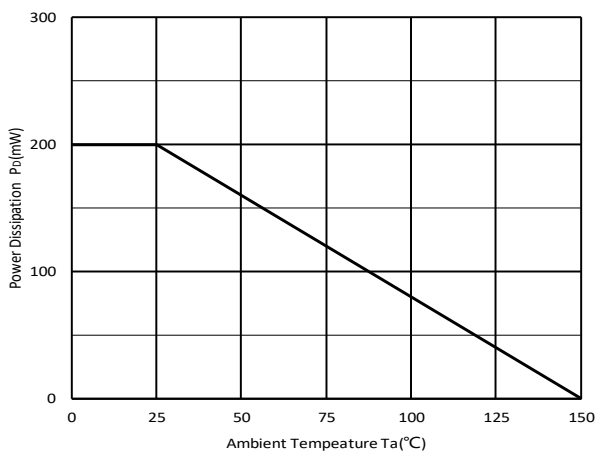


Fig 5:  $P_D$ - $T_a$  Curve





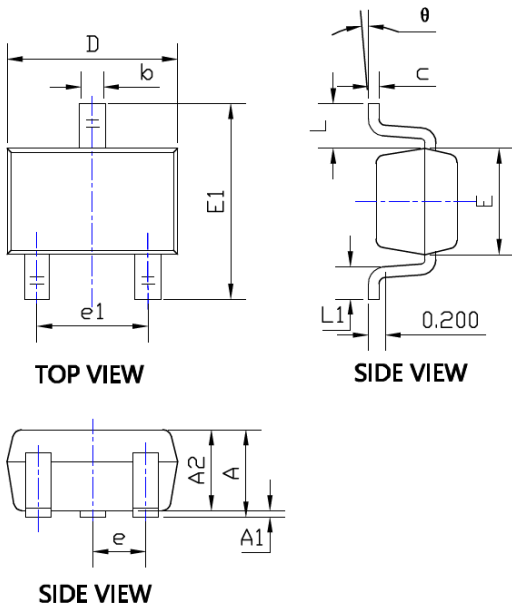
# DDTC123EUA

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## Ordering Information

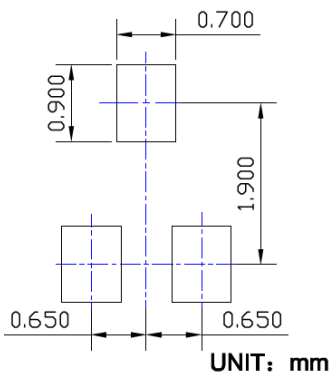
Preferred P/N	Packing code	Unit weight(g)	Minimum package(pcs)	Inner box quantity(pcs)	Outer carton quantity(pcs)	Delivery mode
DDTC123EUA	F2	Approximate 0.005	3000	30000	120000	7" reel

## 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
$\theta$	0°	8°	0°	8°

## Suggested Pad Layout





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