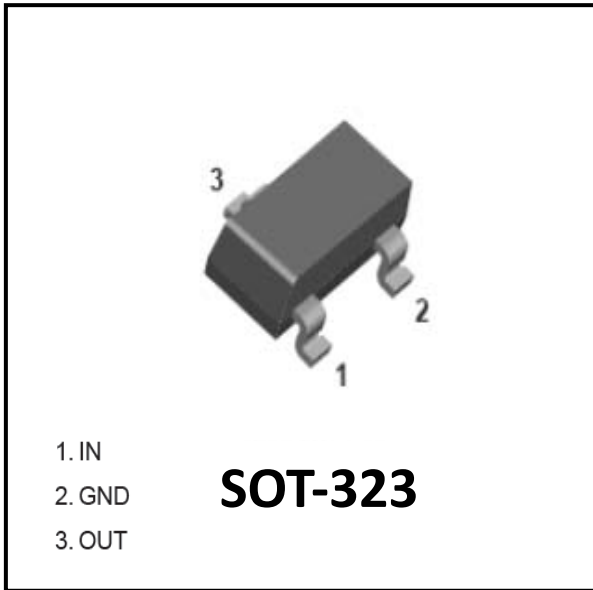


Digital Transistors (Built-in Resistors)



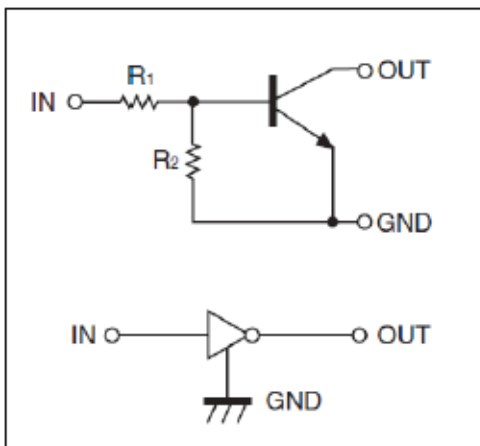
Features

- Epoxy meets UL-94 V-0 flammability rating
- Moisture Sensitivity Level 1
- Built-in bias resistors enable the configuration of an inverter circuit without connecting external input resistors
- Surface mount package ideally Suited for Automatic Insertion
- NPN

Mechanical Data

- **Package:** SOT-323
- **Terminals:** Tin plated leads, solderable per J-STD-002 and JESD22-B102
- **Marking:** E42

■Equivalent circuit



■Maximum Ratings (Ta=25°C Unless otherwise specified)

| ITEM | SYMBOL | UNIT | CONDITIONS | VALUE |
|---|-----------------|------|------------|-------------|
| Supply Voltage | V_{CC} | V | | 50 |
| Input Voltage | V_{IN} | V | | -5 to +12 |
| Collector Current | I_C | mA | | 100 |
| Power Dissipation | P_D | mW | | 200 |
| Thermal Resistance From Junction To Ambient | $R_{\theta JA}$ | °C/W | | 625 |
| Junction Temperature | T_J | °C | | 150 |
| Storage Temperature | T_{stg} | °C | | -55 to +150 |



DTC123JUA

■ Electrical Characteristics (Ta=25°C unless otherwise specified)

| ITEM | SYMBOL | UNIT | CONDITIONS | MIN | TYP | MAX |
|----------------------|--------------------------------|------|--|------|-----|------|
| Input voltage | $V_{I(off)}$ | V | VCC=5V, I _o =100uA | 0.5 | | |
| | $V_{I(on)}$ | V | V _o =0.3V, I _o =5mA | | | 1.1 |
| Output voltage | $V_{O(on)}$ | V | I _o / I _i = 5mA / 0.25 mA | | | 0.3 |
| Input current | I _i | mA | V _i =5V | | | 3.6 |
| Output current | I _{o(off)} | uA | VCC=50V, V _i =0 | | | 0.5 |
| DC current gain | G _i | | V _o =5V, I _o = 10mA | 80 | | |
| Input resistance | R ₁ | kΩ | | 1.54 | 2.2 | 2.86 |
| Resistance ratio | R ₂ /R ₁ | | | 17 | 21 | 26 |
| Transition frequency | f _T | MHz | V _o =10V, I _o =5mA, f=100MHz | | 250 | |

■ Ordering Information (Example)

| PREFERRED P/N | PACKING CODE | UNIT WEIGHT(g) | MINIMUM PACKAGE(pcs) | INNER BOX QUANTITY(pcs) | OUTER CARTON QUANTITY(pcs) | DELIVERY MODE |
|---------------|--------------|-------------------|----------------------|-------------------------|----------------------------|---------------|
| DTC123JUA | F2 | Approximate 0.005 | 3000 | 30000 | 120000 | 7" reel |

■ Characteristics (Typical)

Fig. 1 - DC Current Gain Characteristics

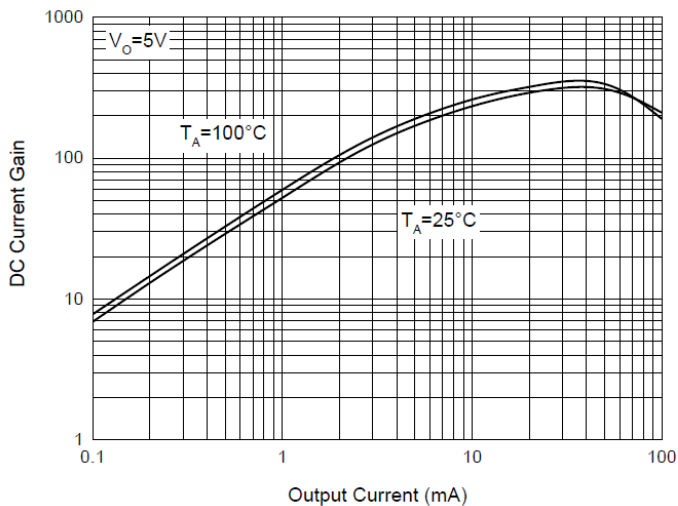


Fig. 2 - Input Voltage (on) Characteristics

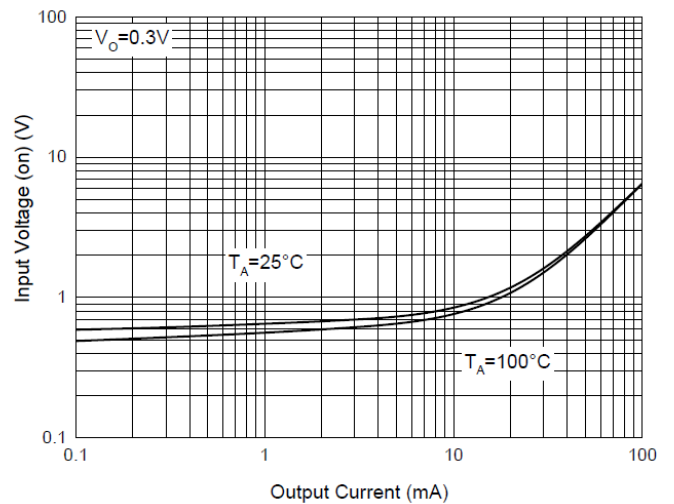




Fig. 3 - Input Voltage (off) Characteristics

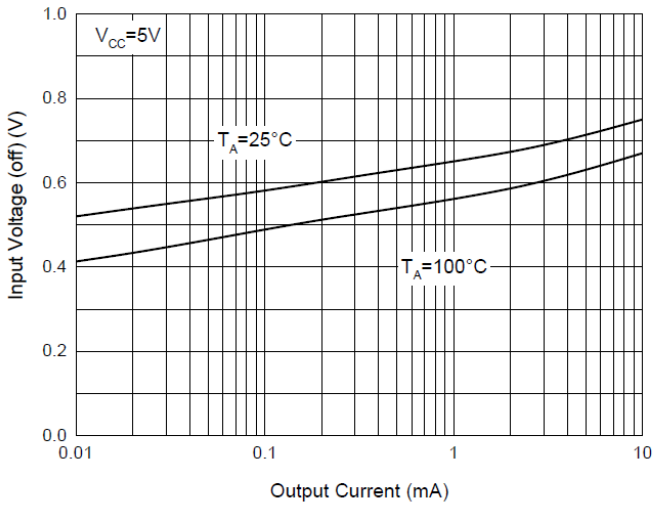


Fig. 4 - Output Voltage Characteristics

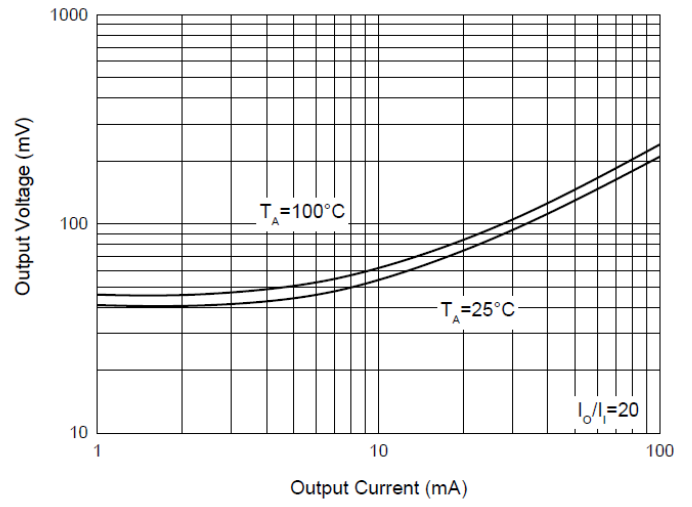
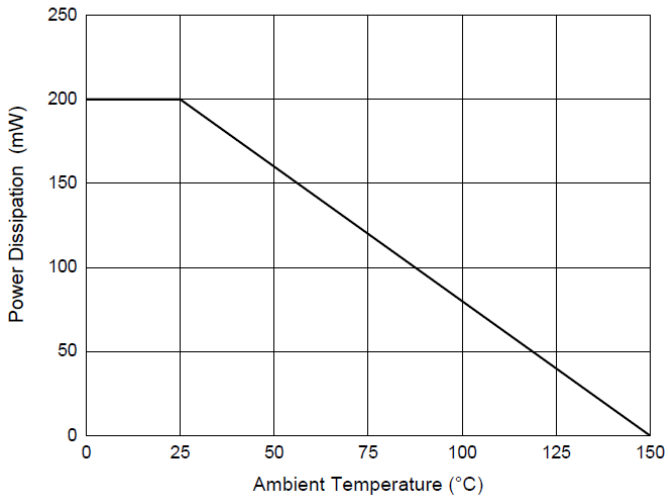


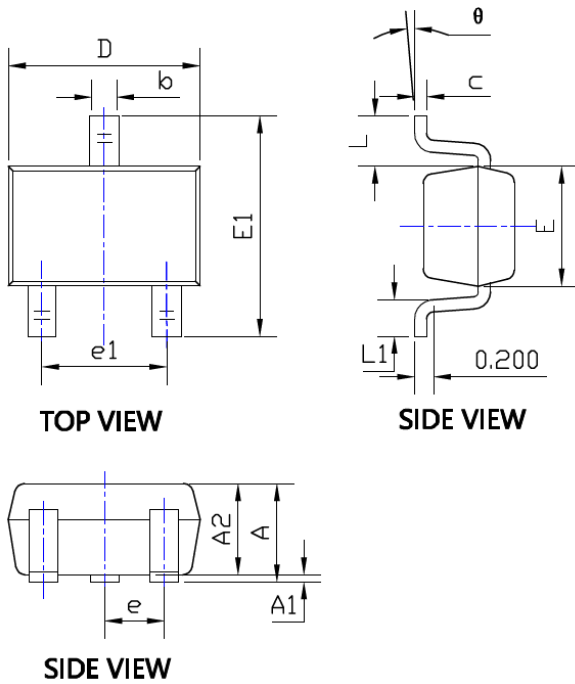
Fig. 5 - Power Derating Curve





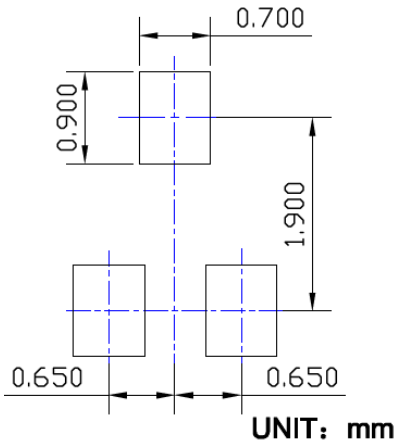
DTC123JUA

■ SOT-323 Package 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° |

■ SOT-323 Soldering Footprint





Disclaimer

The information presented in this document is for reference only. Yangzhou Yangjie Electronic Technology Co., Ltd. reserves the right to make changes without notice for the specification of the products displayed herein to improve reliability, function or design or otherwise.

The product listed herein is designed to be used with ordinary electronic equipment or devices, and not designed to be used with equipment or devices which require high level of reliability and the malfunction of which would directly endanger human life (such as medical instruments, transportation equipment, aerospace machinery, nuclear-reactor controllers, fuel controllers and other safety devices), Yangjie or anyone on its behalf, assumes no responsibility or liability for any damages resulting from such improper use of sale.

This publication supersedes & replaces all information previously supplied. For additional information, please visit our website [http:// www.21yangjie.com](http://www.21yangjie.com) , or consult your nearest Yangjie's sales office for further assistance.