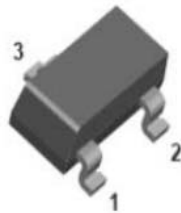
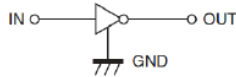
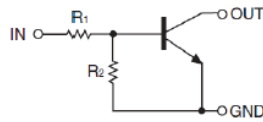


NPN Digital Transistors (Built-in Resistors)



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 | | | | E23 |
| Collector-base voltage | V_{CC} | V | | 50 |
| Collector-emitter voltage | V_{IN} | V | | -5 to +30 |
| Collector 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 |



DTC143ZCA

RoHS
COMPLIANT

■ Electrical Characteristics (T_a=25°C Unless otherwise specified)

| Item | Symbol | Unit | Conditions | Min | Typ | Max |
|----------------------|--------------------------------|------|--|------|-----|------|
| Input voltage | V _{I(off)} | V | V _{CC} =5V, I _c =100uA | 0.5 | | |
| | V _{I(on)} | V | V _O =0.3V, I _c =5mA | | | 1.3 |
| Output voltage | V _{O(on)} | V | I _o / I _i = 10mA / 0.5 mA | | | 0.3 |
| Input current | I _i | mA | V _i =5V | | | 1.8 |
| Output current | I _{O(off)} | uA | V _{CC} =50V, V _i =0 | | | 0.5 |
| DC current gain | G _i | | V _O =5V, I _o = 10mA | 80 | | |
| Input resistance | R ₁ | kΩ | | 3.29 | 4.7 | 6.11 |
| Resistance ratio | R ₂ /R ₁ | | | 8 | 10 | 12 |
| Transition frequency | f _T | MHz | V _O =10V, I _o =5mA, f=100MHz | | 250 | |

■ Thermal Characteristics

| Parameter | Symbol | Unit | Value |
|---|----------------------------------|------|-------|
| Thermal resistance, junction-to-ambient | R _{θJ-A} ⁽¹⁾ | °C/W | 625 |
| Thermal resistance, junction-to-case | R _{θJ-C} ⁽¹⁾ | °C/W | 500 |

Note:

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



■ Characteristics

Fig 1: Input Voltage (On) Characteristics

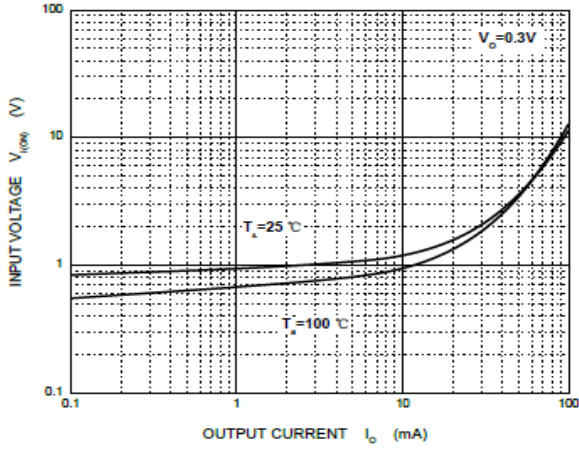


Fig 2: Input Voltage (Off) Characteristic

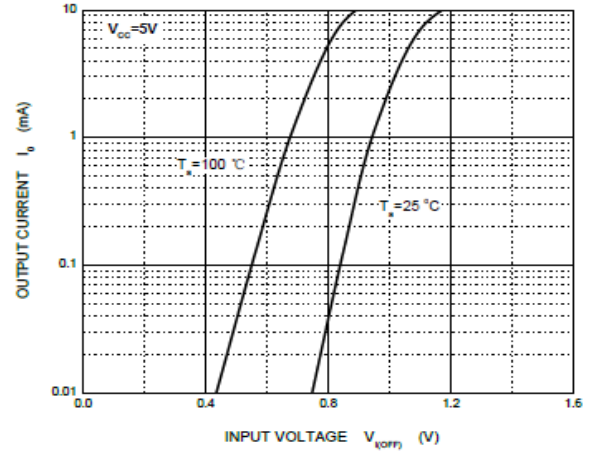


Fig 3: DC Current Gain Characteristics

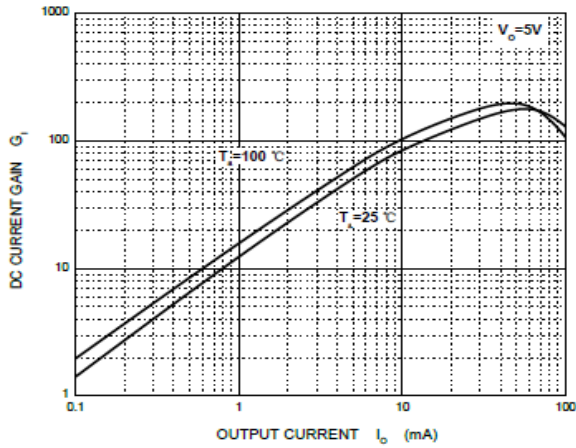


Fig 4: Output Voltage Characteristics

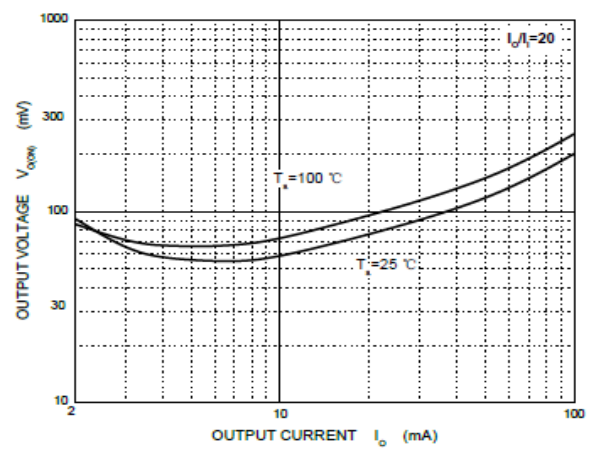
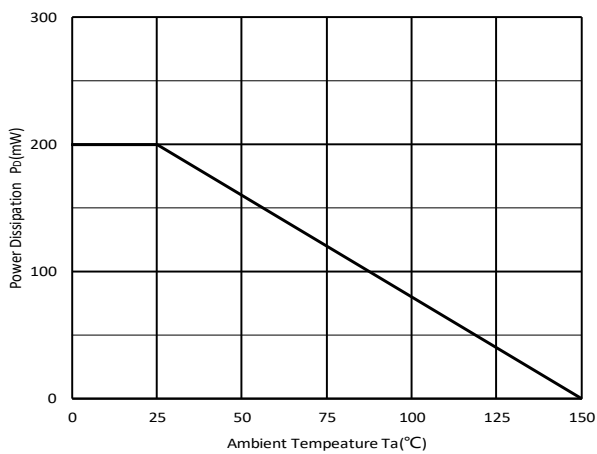


Fig 5: P_D - T_a Curve





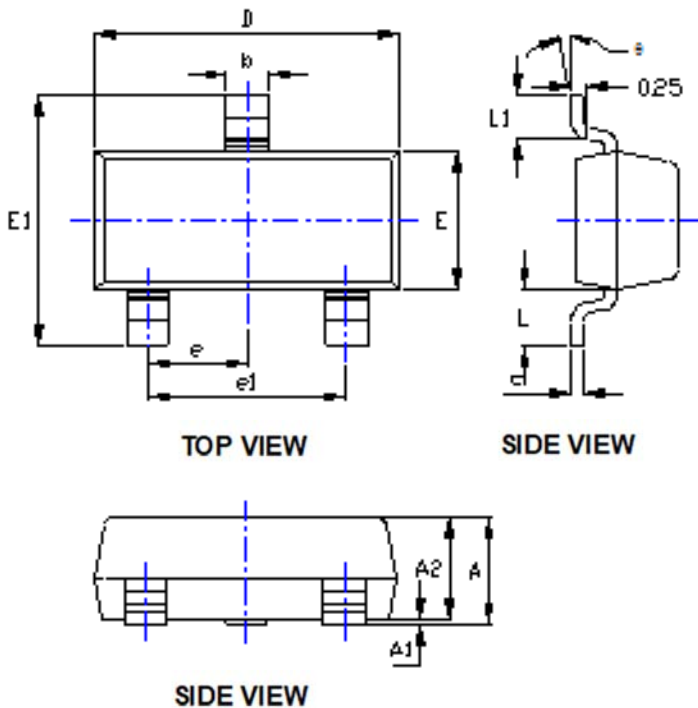
DTC143ZCA

RoHS
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Ordering Information

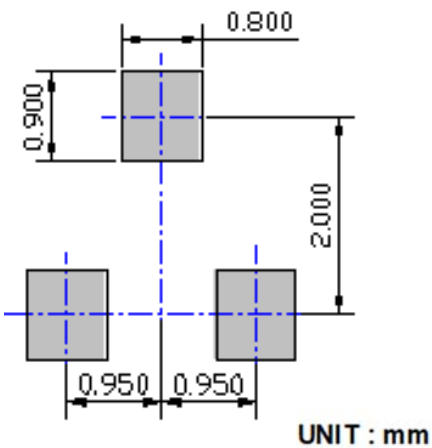
| Preferred P/N | Packing code | Unit weight(g) | Minimum package(pcs) | Inner box quantity(pcs) | Outer carton quantity(pcs) | Delivery mode |
|---------------|--------------|-------------------|----------------------|-------------------------|----------------------------|---------------|
| DTC143ZCA | F2 | Approximate 0.009 | 3000 | 30000 | 120000 | 7" reel |
| DTC143ZCA | F4 | Approximate 0.008 | 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





Disclaimer

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