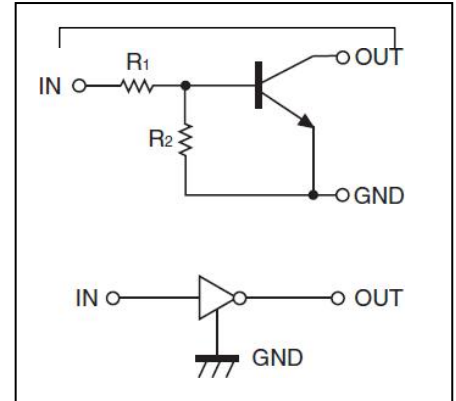


Digital Transistors (Built-in Resistors)

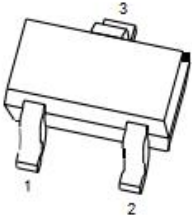
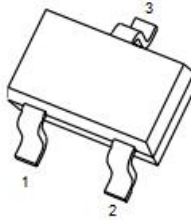
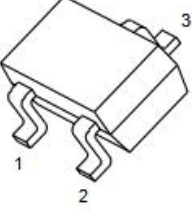
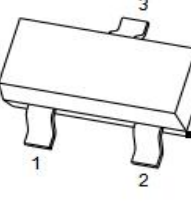
• Equivalent Circuit DIGITAL TRANSISTOR (NPN)

FEATURES

- Built-in bias resistors enable the configuration of an inverter circuit without connecting external input resistors(see equivalent circuit)
- The bias resistors consist of thin-film resistors with complete isolation to allow negative biasing of the input.They also have the advantage of almost completely eliminating parasitic effects
- Only the on/off conditions need to be set for operation, making device design easy



PIN CONNENCTIONS

| | |
|--|--|
| <p>DTC143ZE</p>  <p>SOT-523</p> <p>1. IN 2. GND 3. OUT</p> | <p>DTC143ZUA</p>  <p>SOT-323</p> <p>1. IN 2. GND 3. OUT</p> |
| <p>DTC143ZKA</p>  <p>SOT-23-3L</p> <p>1. IN 2. GND 3. OUT</p> | <p>DTC143ZCA</p>  <p>SOT-23</p> <p>1. IN 2. GND 3. OUT</p> |

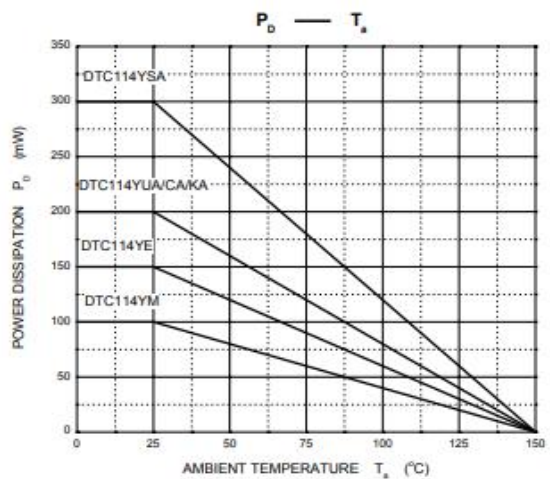
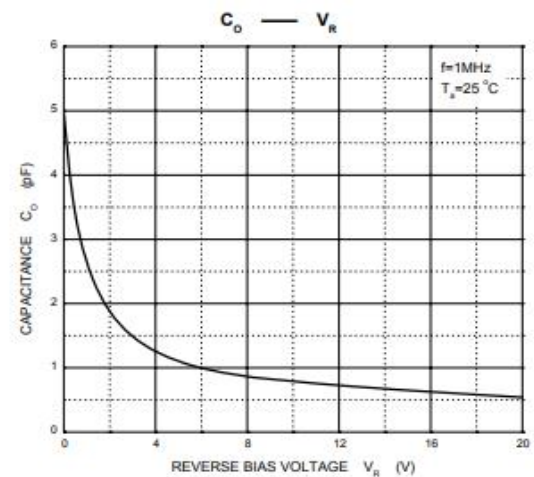
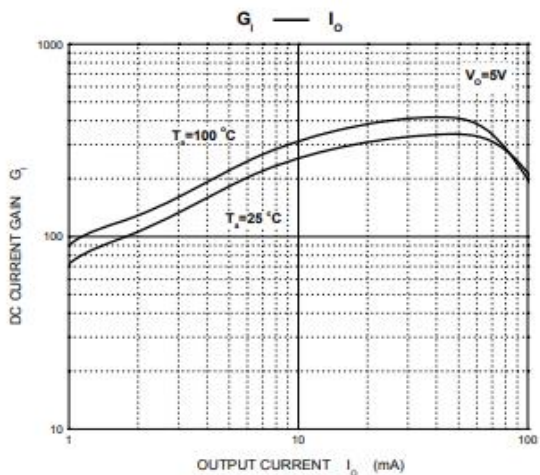
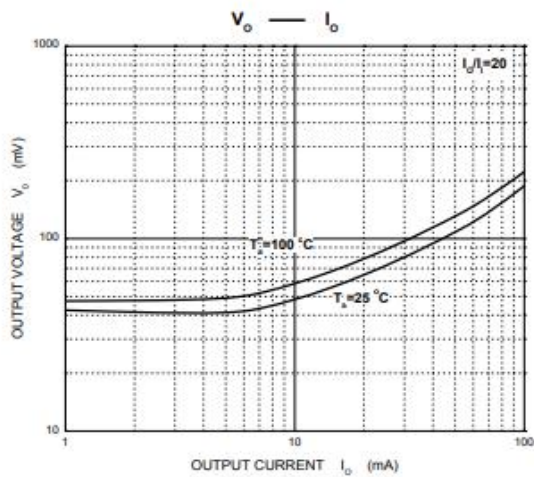
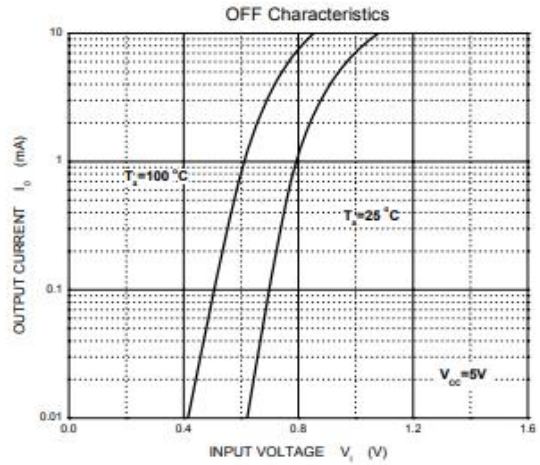
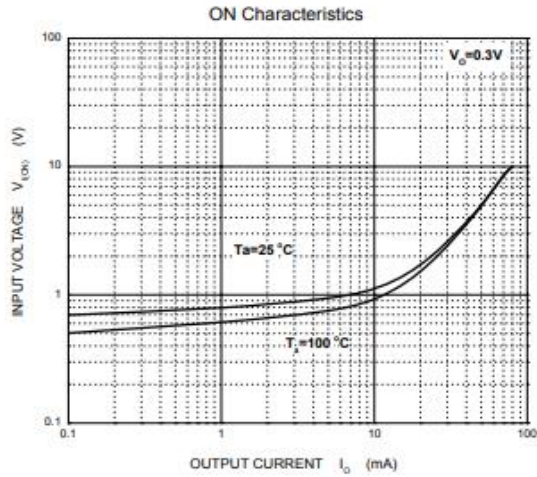
MAXIMUM RATINGS(Ta=25°C unless otherwise noted)

| Symbol | Parameter | Limits(DTC143Z□) | | | | | | Unit |
|-----------------------------------|--|------------------|-----|-----|-----|-----|-----|------|
| | | M | E | UA | CA | KA | SA | |
| V _{CC} | Supply Voltage | 50 | | | | | | V |
| V _{IN} | Input Voltage | -5~+30 | | | | | | V |
| I _o | Output Current | 100 | | | | | | mA |
| P _D | Power Dissipation | 100 | 150 | 200 | 200 | 200 | 300 | mW |
| T _J , T _{stg} | Operation Junction and Storage Temperature Range | -55~+150 | | | | | | °C |

ELECTRICAL CHARACTERISTICS (Ta=25°C unless otherwise specified)

| Parameter | Symbol | Conditions | Min | Typ | Max | Unit |
|----------------------|--------------------------------|--|------|-----|------|------|
| Input voltage | V _{I(off)} | V _{CC} =5V, I _o =100μA | 0.5 | | | V |
| | V _{I(on)} | V _o =0.3V, I _o =5mA | | | 1.3 | V |
| Output voltage | V _{O(on)} | I _o /I _i =5mA/0.25mA | | 0.1 | 0.3 | V |
| Input current | I _i | V _i =5V | | | 1.8 | mA |
| Output current | I _{o(off)} | V _{CC} =50V, V _i =0 | | | 0.5 | μA |
| DC current gain | G ₁ | V _o =5V, I _o =10mA | 80 | | | |
| Input resistance | R ₁ | | 3.29 | 4.7 | 6.11 | kΩ |
| Resistance ratio | R ₂ /R ₁ | | 8 | 10 | 12 | |
| Transition frequency | f _T | V _o =10V, I _o =5mA, f=100MHz | | 250 | | MHz |

Typical Characteristics

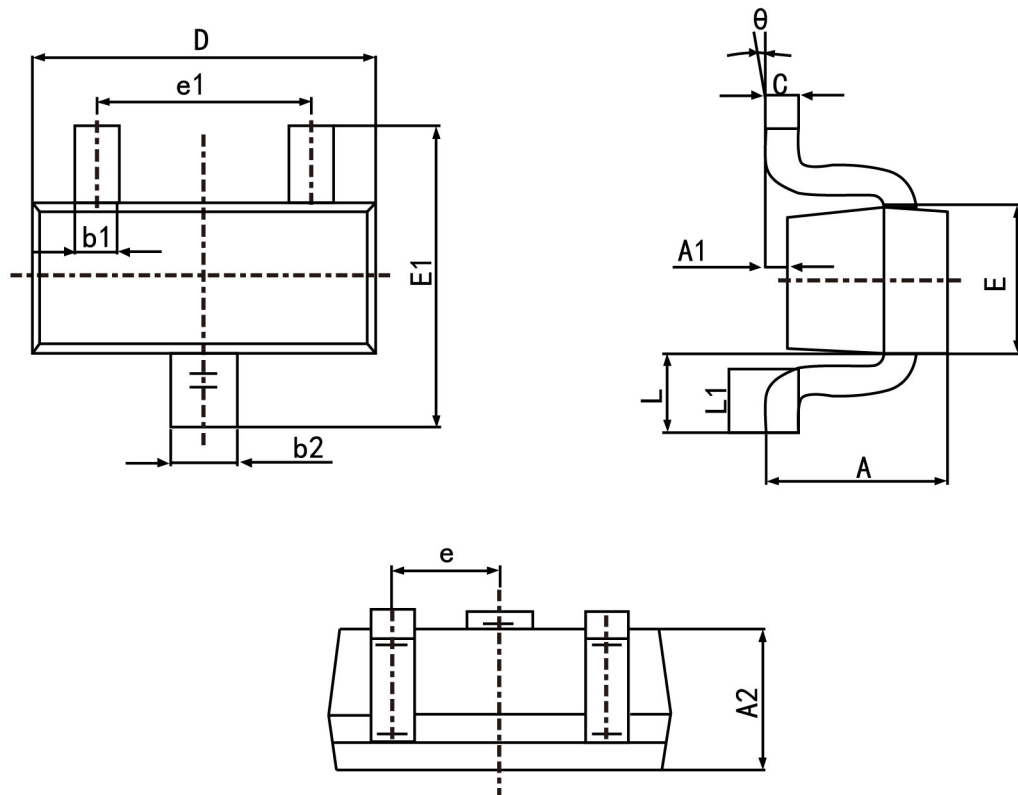


REVERSE VOLTAGE V_R (V) AMBIENT TEMPERATURE T_A ($^\circ\text{C}$)

PACKAGE OUTLINE

Plastic surface mounted package; 3 leads

SOT-523

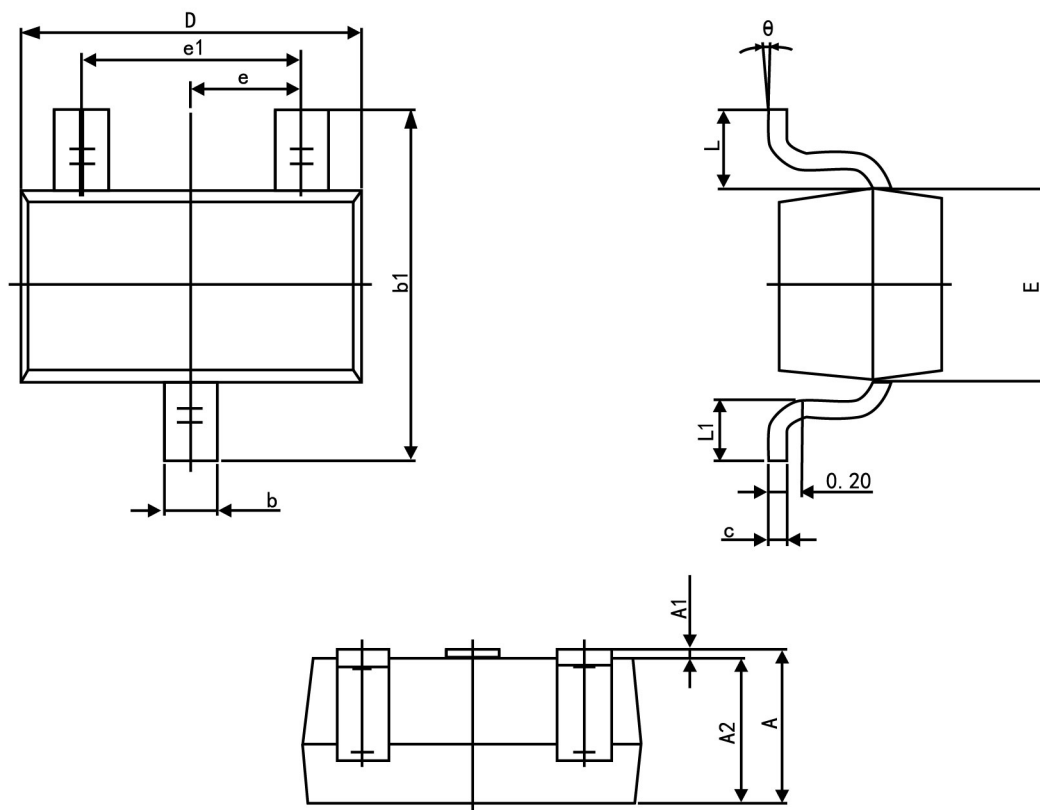


| Symbol | Dimension in Millimeters | |
|----------|--------------------------|-------|
| | Min | Max |
| A | 0.700 | 0.900 |
| A1 | 0.000 | 0.100 |
| A2 | 0.700 | 0.800 |
| b1 | 0.150 | 0.250 |
| b2 | 0.250 | 0.350 |
| c | 0.100 | 0.200 |
| D | 1.500 | 1.700 |
| E | 0.700 | 0.900 |
| E1 | 1.450 | 1.750 |
| e | 0.500 | TYP. |
| e1 | 0.900 | 1.100 |
| L | 0.400 REF. | |
| L1 | 0.260 | 0.460 |
| θ | 0° | 8° |

PACKAGE OUTLINE

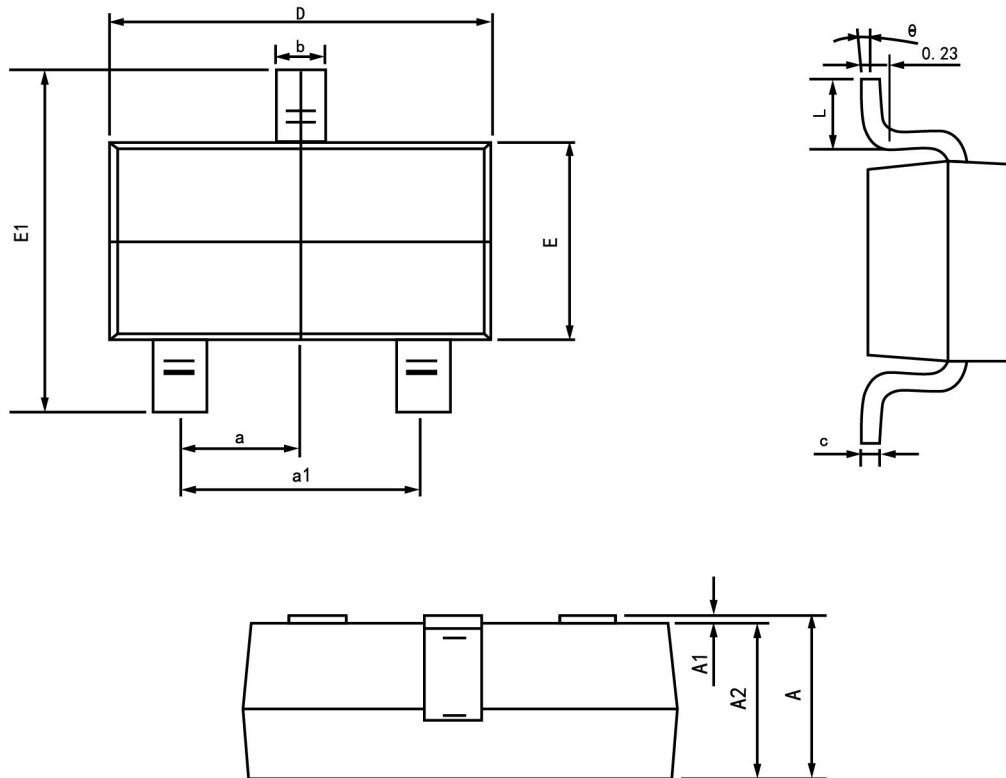
Plastic surface mounted package; 3 leads

SOT-323



| Symbol | Dimension in Millimeters | |
|--------|--------------------------|-------|
| | Min | Max |
| A | 0.900 | 1.100 |
| A1 | 0.000 | 0.100 |
| A2 | 0.900 | 1.000 |
| b | 0.200 | 0.400 |
| c | 0.080 | 0.150 |
| D | 2.000 | 2.200 |
| E | 1.150 | 1.350 |
| E1 | 2.150 | 2.450 |
| e | 0.650 TYP. | |
| e1 | 1.200 | 1.400 |
| L | 0.525 REF. | |
| L1 | 0.260 | 0.460 |
| θ | 0° | 8° |

Package outline dimensions SOT23-3L

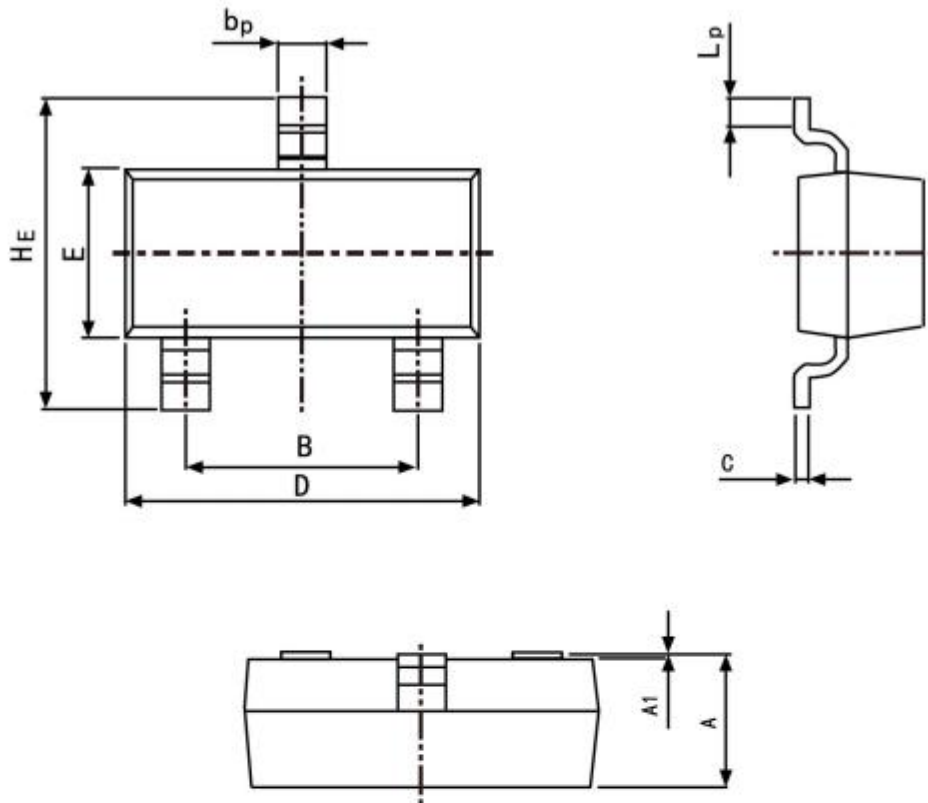


| Symbol | Dimension in Millimeters | |
|----------|--------------------------|-------|
| | Min | Max |
| A | 1.050 | 1.250 |
| A1 | 0.000 | 0.100 |
| A2 | 1.050 | 1.150 |
| b | 0.300 | 0.500 |
| c | 0.100 | 0.200 |
| D | 2.820 | 3.020 |
| E | 1.500 | 1.700 |
| E1 | 2.650 | 2.950 |
| e | 0.950 (Basic) | |
| e1 | 1.800 | 2.000 |
| L | 0.300 | 0.600 |
| θ | 0° | 8° |

PACKAGE OUTLINE

Plastic surface mounted package; 3 leads

SOT-23



| Symbol | Dimension in Millimeters | |
|--------|--------------------------|-------|
| | Min | Max |
| A | 0.95 | 1.40 |
| B | 1.78 | 2.04 |
| b_p | 0.35 | 0.50 |
| C | 0.08 | 0.19 |
| D | 2.70 | 3.10 |
| E | 1.20 | 1.65 |
| HE | 2.20 | 3.00 |
| A_1 | 0.100 | 0.013 |
| L_p | 0.20 | 0.50 |