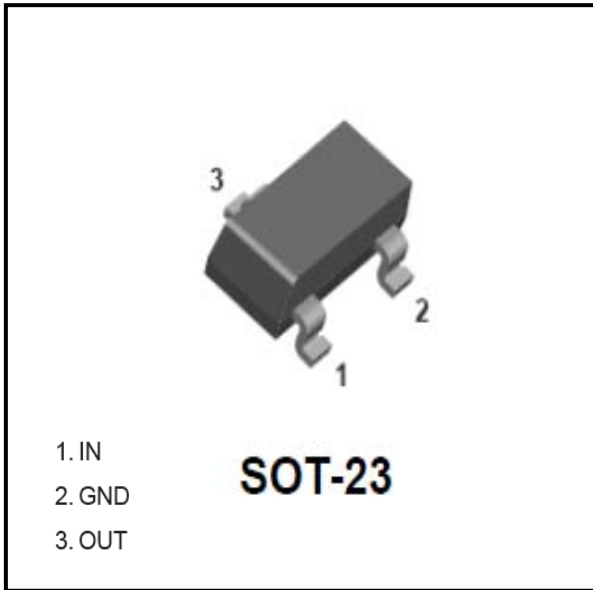


Digital Transistors (Built-in Resistors)



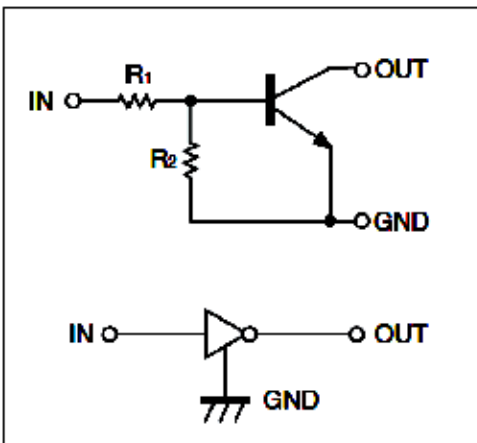
Features

- 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-23
- **Terminals:** Tin plated leads, solderable per J-STD-002 and JESD22-B102
- **Marking:** E21

■Equivalent circuit



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

| ITEM | SYMBOL | UNIT | CONDITIONS | VALUE |
|----------------------|--------|------|------------|-------------|
| Supply Voltage | VCC | V | | 50 |
| Input Voltage | VIN | V | | -5 to +10 |
| Collector Current | IC | mA | | 100 |
| Power Dissipation | PD | mW | | 200 |
| Junction Temperature | Tj | °C | | 150 |
| Storage Temperature | TSTG | °C | | -55 to +150 |



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

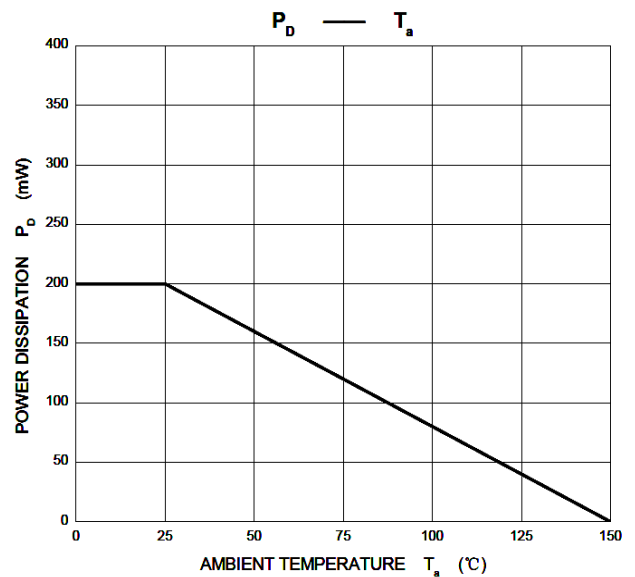
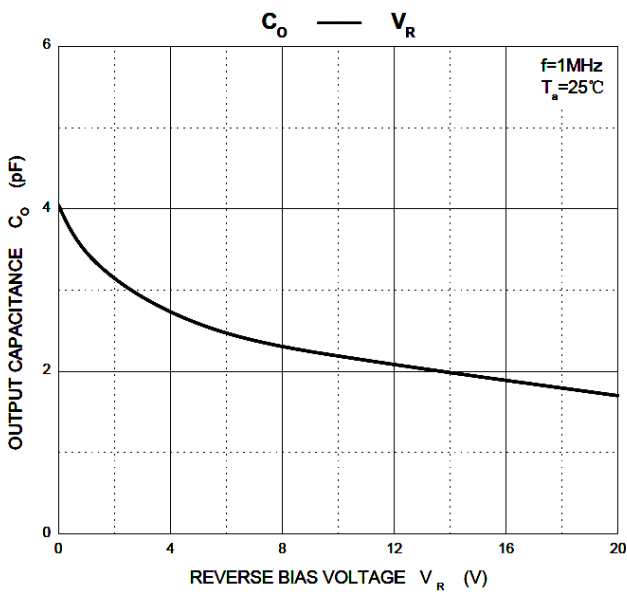
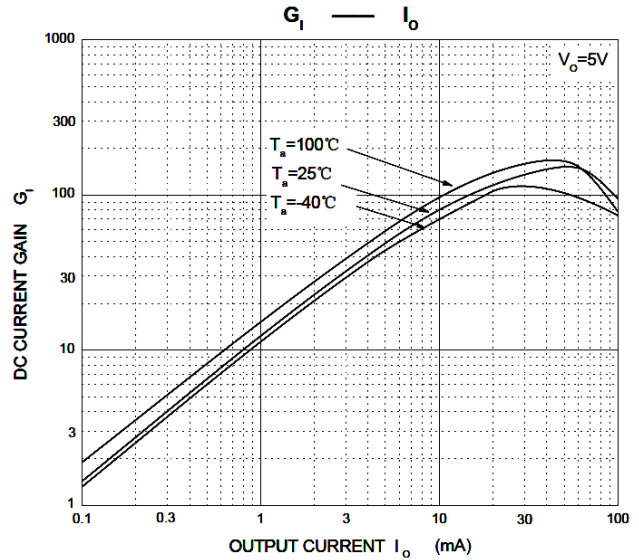
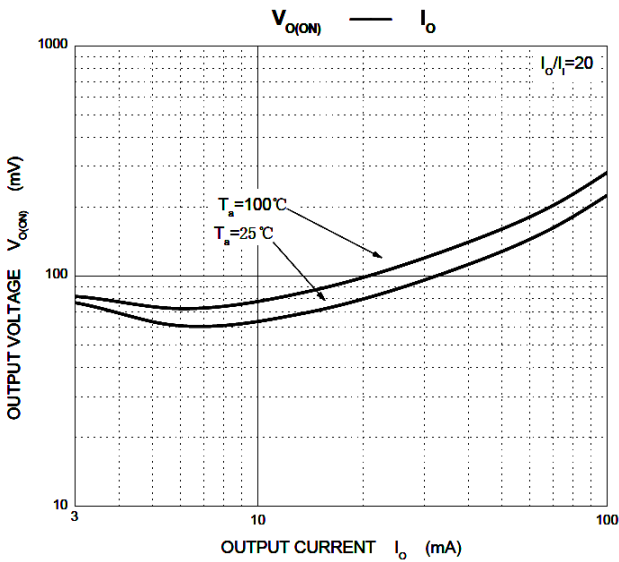
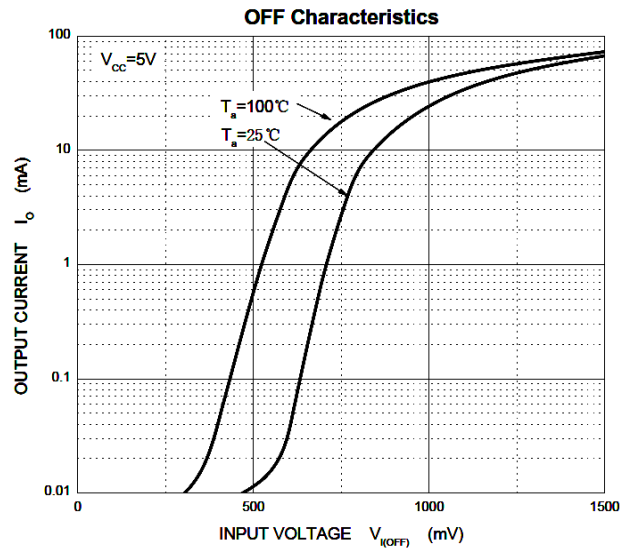
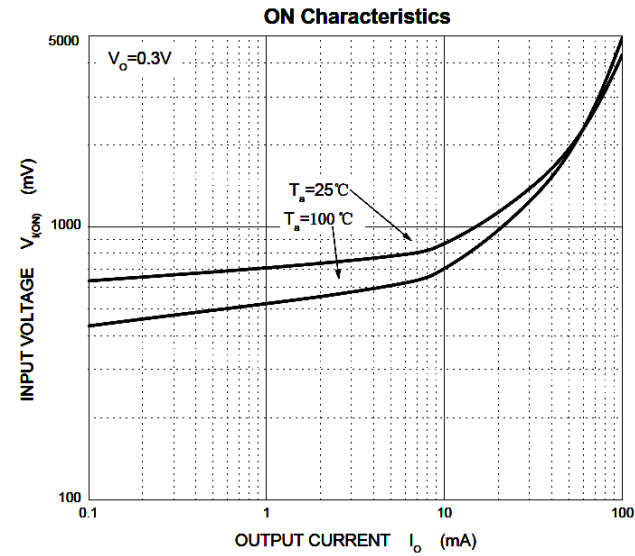
| ITEM | SYMBOL | UNIT | CONDITIONS | MIN | TYP | MAX |
|----------------------|--------------|-----------|------------------------------|-----|-----|-----|
| Input voltage | $V_{I(off)}$ | V | $V_{CC}=5V, I_C=100\mu A$ | 0.3 | | |
| | $V_{I(on)}$ | V | $V_O=0.3V, I_C=10mA$ | | | 3 |
| Output voltage | $V_{O(on)}$ | V | $I_O / I_I = 10mA / 0.5 mA$ | | | 0.3 |
| Output current | $I_{O(off)}$ | μA | $V_{CC}=50V, V_i=0$ | | | 0.5 |
| DC current gain | GI | | $V_O=5V, I_O = 5mA$ | 33 | | |
| Input resistance | R_1 | $k\Omega$ | | 0.7 | 1.0 | 1.3 |
| Resistance ratio | R_2/R_1 | | | 8 | 10 | 12 |
| Transition frequency | fT | 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 |
|---------------|--------------|-------------------|----------------------|-------------------------|----------------------------|---------------|
| DTC113ZCA | F2 | Approximate 0.009 | 3000 | 30000 | 120000 | 7" reel |



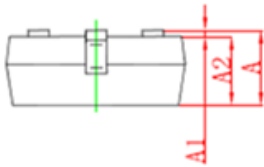
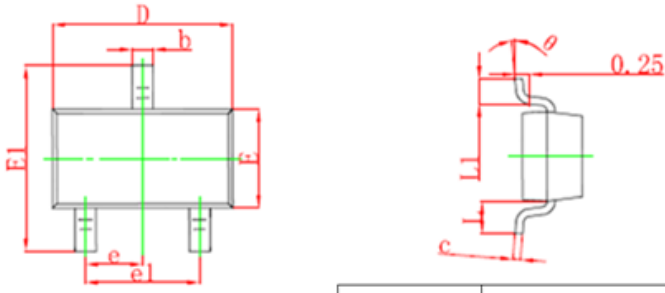
■ Characteristics (Typical)





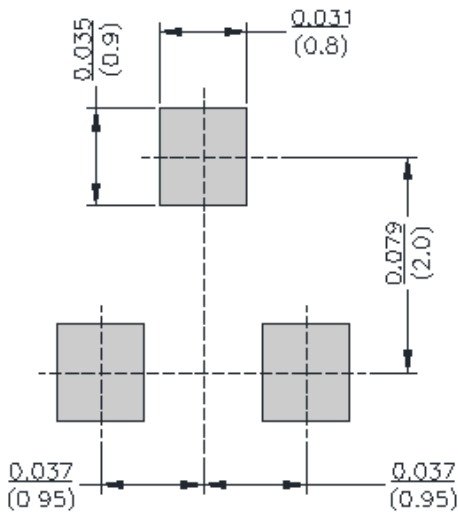
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■SOT-23 Package Outline Dimensions



| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|--------|---------------------------|-------|----------------------|-------|
| | Min | Max | Min | Max |
| A | 0.900 | 1.150 | 0.035 | 0.045 |
| A1 | 0.000 | 0.100 | 0.000 | 0.004 |
| A2 | 0.900 | 1.050 | 0.035 | 0.041 |
| b | 0.300 | 0.500 | 0.012 | 0.020 |
| c | 0.100 | 0.200 | 0.004 | 0.008 |
| D | 2.800 | 3.000 | 0.110 | 0.118 |
| E | 1.200 | 1.400 | 0.047 | 0.055 |
| E1 | 2.250 | 2.550 | 0.089 | 0.100 |
| e | 0.950TYP | | 0.037TYP | |
| e1 | 1.800 | 2.000 | 0.071 | 0.079 |
| L | 0.550REF | | 0.022REF | |
| L1 | 0.300 | 0.500 | 0.012 | 0.020 |
| θ | 0° | 8° | 0° | 8° |

■SOT-23 Suggested Pad Layout





DTC113ZCA

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