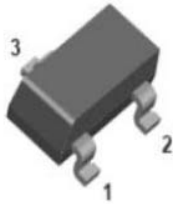
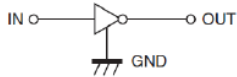
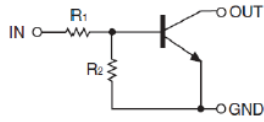


NPN Digital Transistors (Built-in Resistors)



1. IN
2. GND
3. OUT

SOT-323

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°C Unless otherwise specified)

| Item | Symbol | Unit | Conditions | Value |
|----------------------|------------------|------|------------|-------------|
| Device marking code | | | | N13 |
| Supply voltage | V _{CC} | V | | 50 |
| Input voltage | V _{IN} | V | | -10 to +40 |
| Output current | I _O | mA | | 500 |
| Power dissipation | P _D | mW | | 200 |
| Junction temperature | T _J | °C | | -55 to +150 |
| Storage temperature | T _{STG} | °C | | -55 to +150 |



DDTC114EUA

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 _O =100uA | 0.5 | | |
| | V _{I(on)} | V | V _O =0.3V, I _O =10mA | | | 3 |
| Output voltage | V _{O(on)} | V | I _O / I _I = 50mA / 2.5 mA | | | 0.3 |
| Input current | I _I | mA | V _I =5V | | | 0.88 |
| Output current | I _{O(off)} | uA | V _{CC} =50V, V _I =0 | | | 0.5 |
| DC current gain | G _I | | V _O =5V, I _O =50mA | 56 | | |
| Input resistance | R ₁ | kΩ | | 7 | 10 | 13 |
| Resistance ratio | R ₂ /R ₁ | | | 0.8 | 1 | 1.2 |
| Transition frequency | f _T | MHz | V _{CE} =10V, I _E =-50mA, f=100MHz | | 200 | |

■ 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

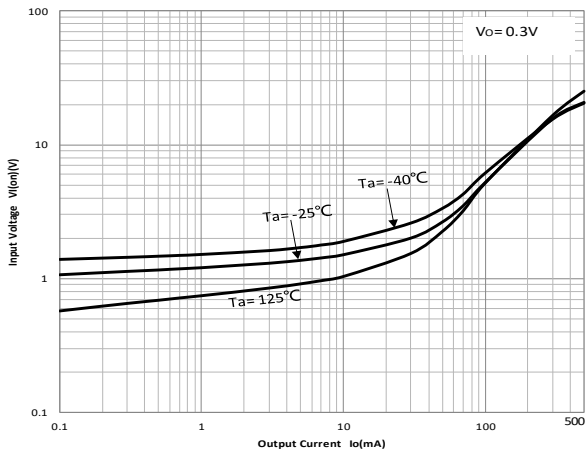


Fig 2: Input Voltage (Off) Characteristic

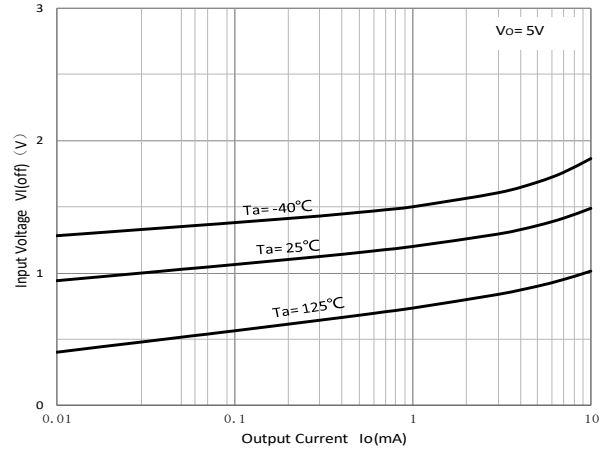


Fig 3: DC Current Gain Characteristics

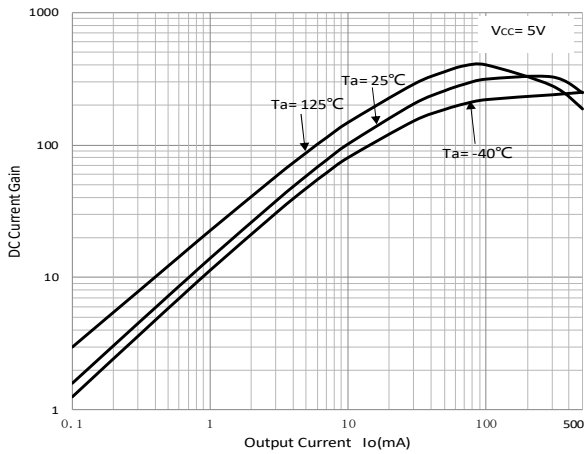


Fig 4: Output Voltage Characteristics

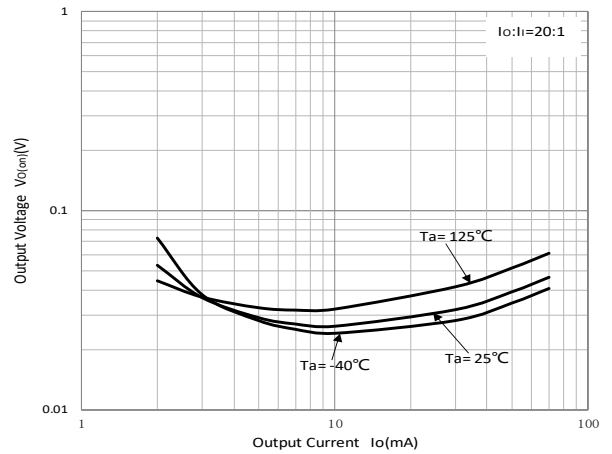
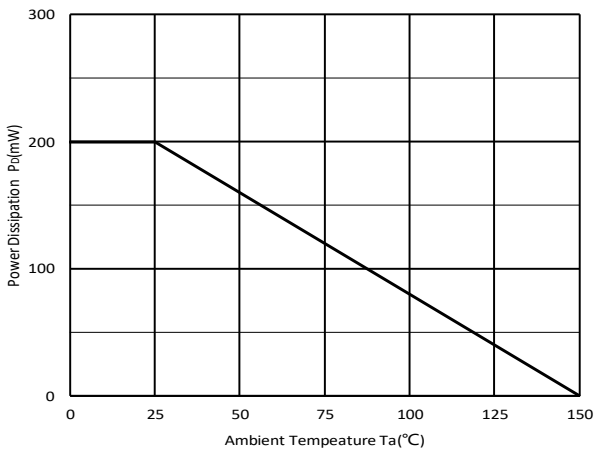


Fig 5: P_D - T_a Curve





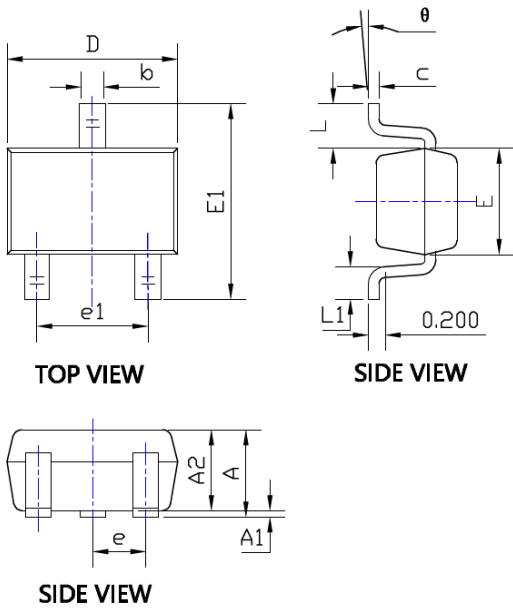
DDTC114EUA

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Ordering Information

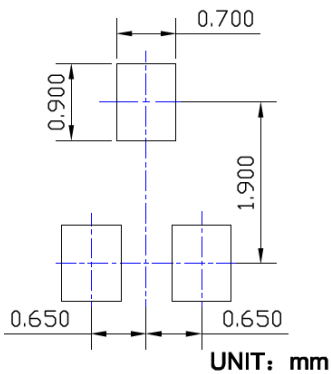
| Preferred P/N | Packing code | Unit weight(g) | Minimum package(pcs) | Inner box quantity(pcs) | Outer carton quantity(pcs) | Delivery mode |
|---------------|--------------|-------------------|----------------------|-------------------------|----------------------------|---------------|
| DDTC114EUA | 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 |
| θ | 0° | 8° | 0° | 8° |

Suggested Pad Layout





Disclaimer

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