# TPDTC144ET
# Digital Transistor

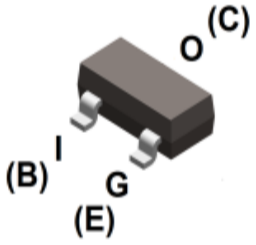
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## Features

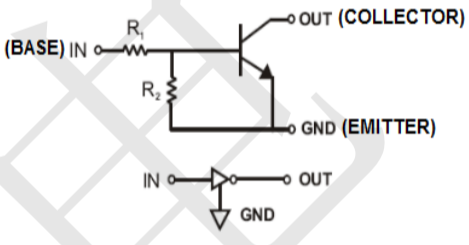
- Epitaxial planar die construction
- Built-in biasing resistors ($R_1$: 47kΩ, $R_2$: 47kΩ)
- Also available in lead free version
- RoHS compliant with Halogen-free

## Mechanical Data

- Case: SOT-23
- Molding Compound: UL Flammability Classification Rating 94V-0
- Terminals: Matte tin-plated leads; solderability-per MIL-STD-202, Method 208




SOT-23




## Ordering Information

| Part Number | Package | Shipping Quantity |
|---|---|---|
| TPDTC144ET | SOT-23 | 3000 pcs / Tape & Reel |

## Maximum Ratings (@ $T_A$ = 25°C unless otherwise specified)

| Parameter | Symbol | Value | Unit |
|---|---|---|---|
| | | SOT-23 | |
| Supply Voltage | $V_{CC}$ | 50 | V |
| Input Voltage | $V_I$ | -10 to +40 | V |
| Output Current | $I_O$ | 30 | mA |
| Collector Current | $I_{C(Max)}$ | 100 | mA |
| Power Dissipation | $P_D$ | 200 | mW |
| Junction Temperature Range | $T_J$ | -55 ~ +150 | °C |
| Storage Temperature Range | $T_{STG}$ | -55 ~ +150 | °C |

## Electrical Characteristics (@ $T_A$ = 25°C unless otherwise specified)

| Parameter | Symbol | Test Condition | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| Input Voltage | $V_{I(OFF)}$ | $V_{CC}$ = 5V, $I_O$ = 100μA | 0.5 | - | - | V |
| Input Voltage | $V_{I(ON)}$ | $V_O$ = 0.3V, $I_O$ = 2mA | - | - | 3 | V |
| Output Voltage | $V_{O(on)}$ | $I_o$ = 10mA, $I_I$ = 0.5mA | - | - | 0.3 | V |
| Input Current | $I_I$ | $V_I$ = 5V | - | - | 0.18 | mA |
| Output Current | $I_{O(off)}$ | $V_{CC}$ = 50V, $V_I$ = 0V | - | - | 0.5 | μA |
| DC Current Gain | $G_I$ | $V_O$ = 5V, $I_O$ = 5mA | 68 | - | - | - |
| Input Resistor | $R_1$ | | 32.9 | 47 | 61.1 | kΩ |
| Resistance ratio | $R_2/R_1$ | | 0.8 | 1.0 | 1.2 | - |
| Gain-Bandwidth Product | $f_T$ | $V_{CE}$ = 10V, $I_E$ = 5mA<br>f = 100MHz | - | 250 | - | MHz |

## Ratings and Characteristic Curves (@ $T_A$ = 25°C unless otherwise specified)

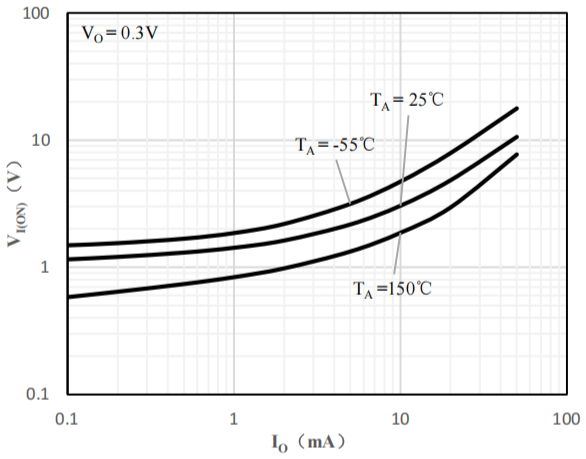



Fig 1 Input Voltage vs Output Current

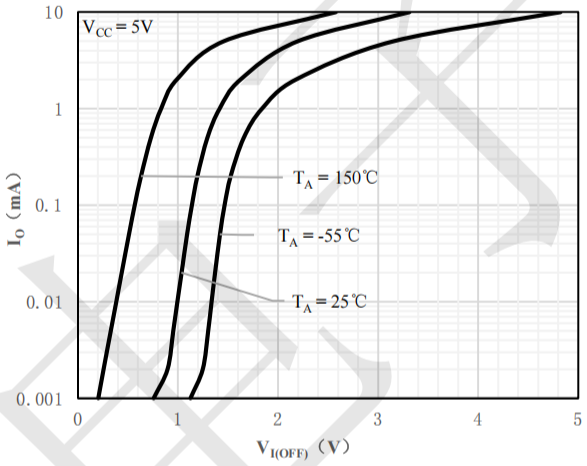



Fig 2 Output Current vs Input Voltage

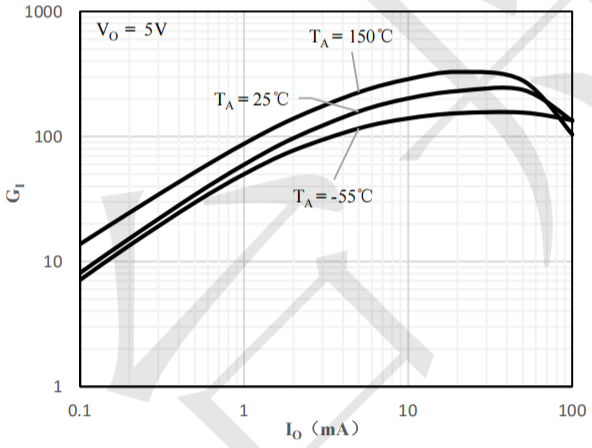



Fig 3 DC Current Gain vs Output Current

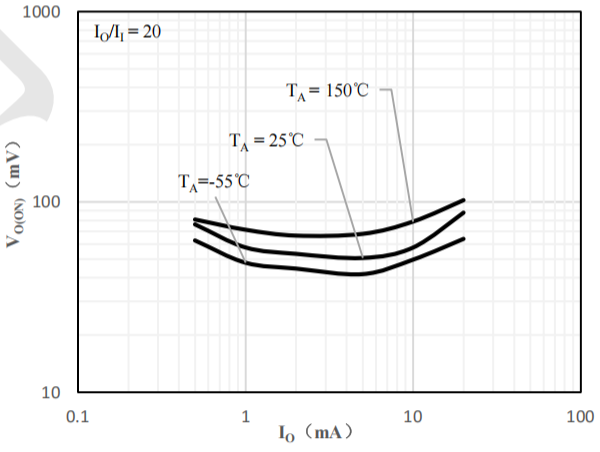
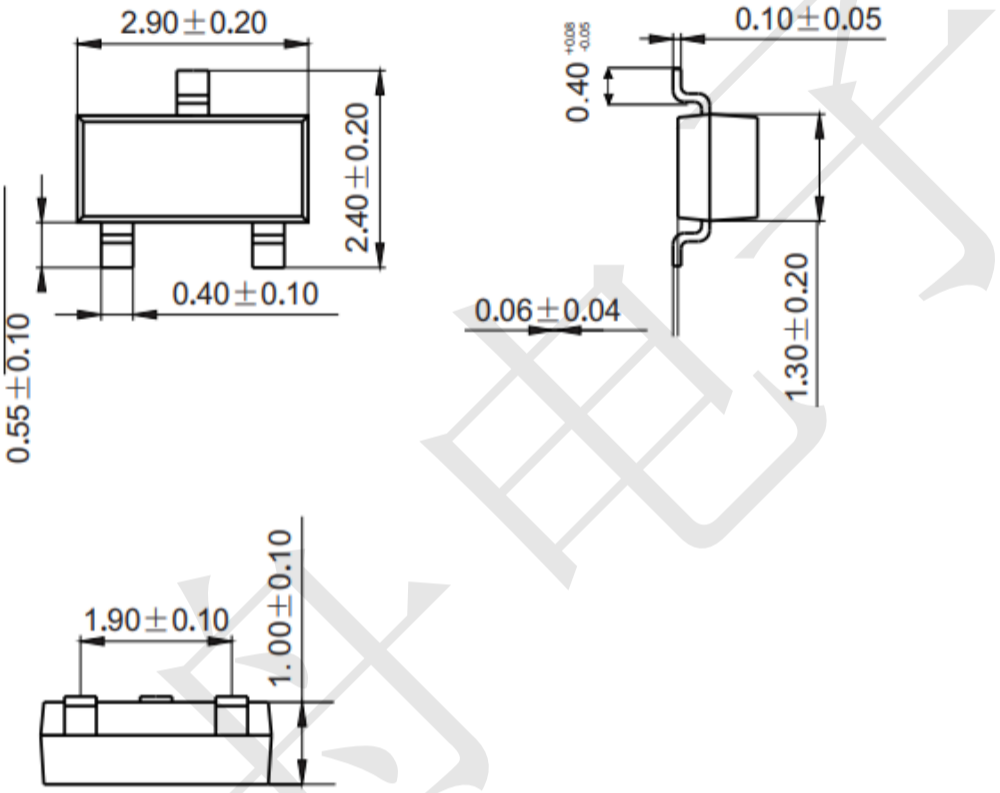



Fig 4 Output Voltage vs Output Current

## Package information (Unit: mm)

SOT-23




## Mounting Pad Layout (Unit: mm

