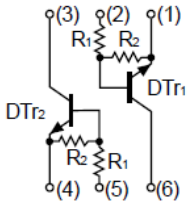
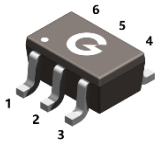
# Dual Digital Transistor
# UMH10N

## Features

HF

- Two DTC123J transistors are built-in a package
- Built-in biasing resistors ($R_1$: 2.2kΩ, $R_2$: 47kΩ)
- Transistor elements are independent, eliminating interference
- Mounting cost and area can be cut in half
- RoHS compliant with Halogen-free




SOT-363

## Mechanical Data

- Case: SOT-363
- Molding Compound: UL Flammability Classification Rating 94V-0
- Terminals: Matte tin-plated leads; solderability-per MIL-STD-202, Method 208

## Ordering Information

| Part Number | Package | Shipping Quantity | Marking Code |
|---|---|---|---|
| UMH10N | SOT-363 | 3000 pcs / Tape & Reel | H10 |

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

| Symbol | Parameter | Value | Unit |
|---|---|---|---|
| $V_{CC}$ | Supply Voltage | 50 | V |
| $V_I$ | Input Voltage | -5 to +12 | V |
| $I_O$ | Output Current | 100 | mA |
| $I_{C(Max)}$ | Collector Current | 100 | mA |

## Thermal Characteristics

| Parameter | Symbol | Value | Unit |
|---|---|---|---|
| Power Dissipation | $P_D$ | 150 | mW |
| Thermal Resistance Junction-to-Air *1 | $R_{\theta JA}$ | 413 | °C/W |
| Thermal Resistance Junction-to-Case *1 | $R_{\theta JC}$ | 257 | °C/W |
| Thermal Resistance Junction-to-Lead *1 | $R_{\theta JL}$ | 315 | °C/W |
| Operating Junction Temperature Range | $T_J$ | -55 ~ +150 | °C |
| Storage Temperature Range | $T_{STG}$ | -55 ~ +150 | °C |

Note 1: The data tested by surface mounted on a 21mm * 17mm * 1mm FR4-epoxy P.C.B

## 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, $I_O$ = 5mA | - | - | 1.1 | V |
| Output Voltage | $V_{O(on)}$ | $I_o$ = 5mA, $I_I$ = 0.25mA | - | - | 0.3 | V |
| Input Current | $I_I$ | $V_I$ = 5V | - | - | 3.6 | mA |
| Output Current | $I_{O(off)}$ | $V_{CC}$ = 50V, $V_I$ = 0V | - | - | 0.5 | μA |
| DC Current Gain | $G_I$ | $V_O$ = 5V, $I_O$ = 10mA | 80 | - | - | - |
| Input Resistor | $R_1$ | | 1.54 | 2.2 | 2.86 | kΩ |
| Resistance ratio | $R_2/R_1$ | | 17 | 21 | 26 | - |
| 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)

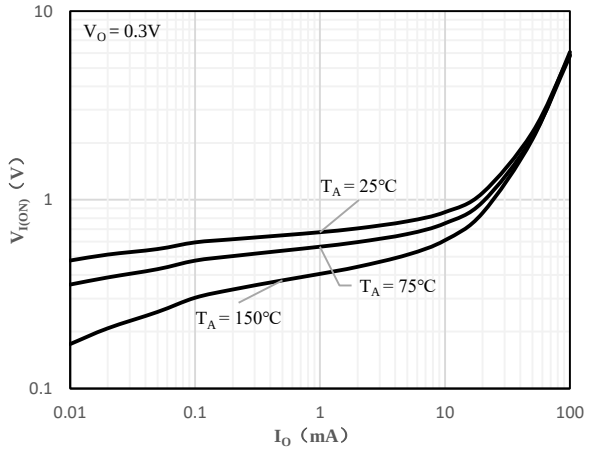



Fig 1 Input Voltage vs Output Current

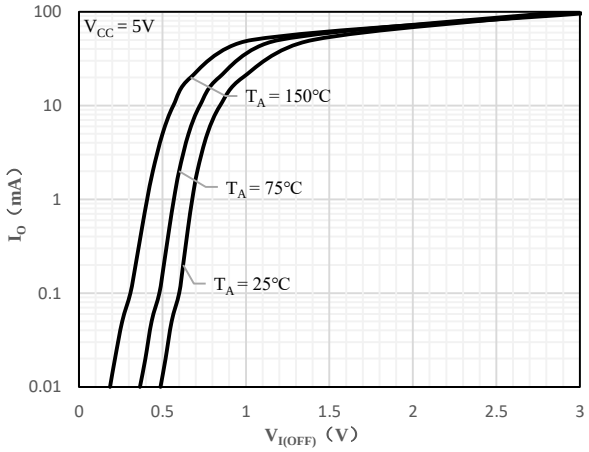



Fig 2 Output Current vs Input Voltage

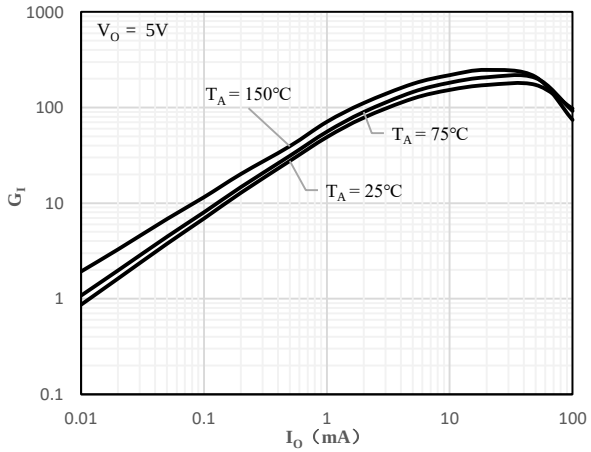



Fig 3 DC Current Gain vs Output Current

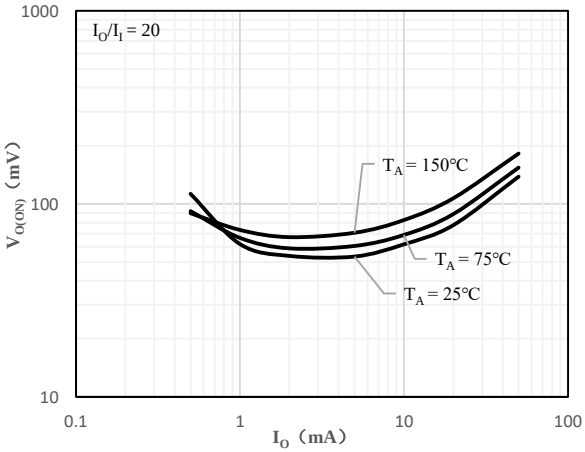
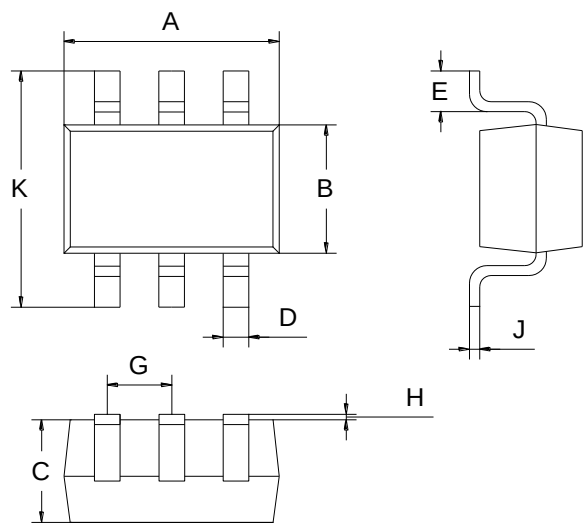



Fig 4 Output Voltage vs Output Current

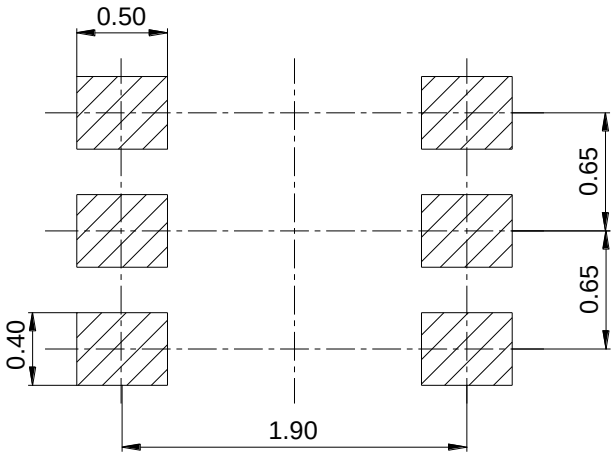
## Package Outline Dimensions (Unit: mm)




| SOT-363 | | |
|---|---|---|
| **Dimension** | **Min.** | **Max.** |
| A | 2.00 | 2.20 |
| B | 1.15 | 1.35 |
| C | 0.85 | 1.05 |
| D | 0.15 | 0.35 |
| E | 0.25 | 0.40 |
| G | 0.60 | 0.70 |
| H | 0.02 | 0.10 |
| J | 0.05 | 0.15 |
| K | 2.20 | 2.40 |

## Mounting Pad Layout (Unit: mm)

### SOT-363




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