

# General purpose (dual digital transistors)

## UMD3N / IMD3A

●Features

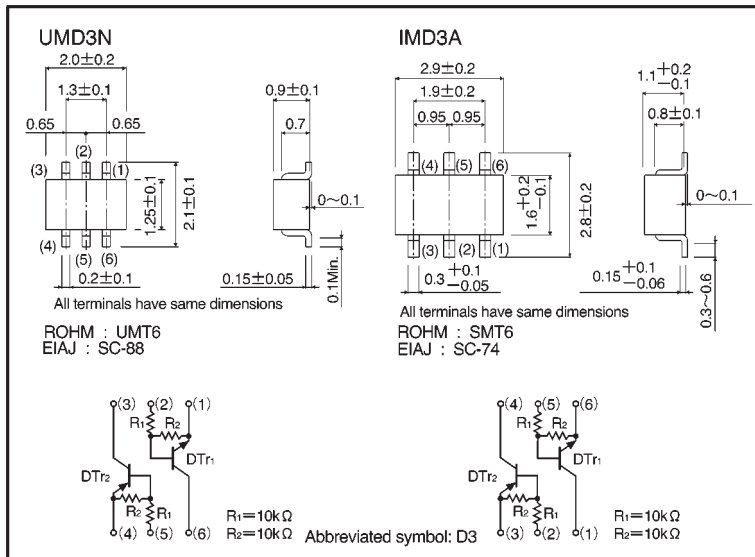
- 1) Both the DTA114E chip and DTC114E chip in a UMT or SMT package.
- 2) Mounting possible with UMT3 or SMT3 automatic mounting machines.
- 3) Transistor elements are independent, eliminating interference.
- 4) Mounting cost and area can be cut in half.

●Structure

Epitaxial planar type  
NPN/PNP silicon transistor  
(Built-in resistor type)

The following characteristics apply to both DT<sub>r1</sub> and DT<sub>r2</sub>, however, the “-” sign on DT<sub>r2</sub> values for the PNP type have been omitted.

●External dimensions (Units: mm)



●Absolute maximum ratings (Ta = 25°C)

| Parameter            | Symbol               | Limits      | Unit  |
|----------------------|----------------------|-------------|-------|
| Supply voltage       | V <sub>CC</sub>      | 50          | V     |
| Input voltage        | V <sub>IN</sub>      | -10         | V     |
|                      |                      | 40          |       |
| Output current       | I <sub>o</sub>       | 50          | mA    |
|                      | I <sub>c(Max.)</sub> | 100         |       |
| Power dissipation    | UMD3N                | 150 (TOTAL) | mW *1 |
|                      | IMD3A                | 300 (TOTAL) | mW *2 |
| Junction temperature | T <sub>j</sub>       | 150         | °C    |
| Storage temperature  | T <sub>stg</sub>     | -55~+150    | °C    |

\*1 120mW per element must not be exceeded.

\*2 200mW per element must not be exceeded.

●Electrical characteristics (Ta = 25°C)

| Parameter            | Symbol       | Min. | Typ. | Max. | Unit       | Conditions                          |
|----------------------|--------------|------|------|------|------------|-------------------------------------|
| Input voltage        | $V_{I(off)}$ | —    | —    | 0.5  | V          | $V_{CC}=5V, I_o=100\mu A$           |
|                      | $V_{I(on)}$  | 3    | —    | —    |            | $V_o=0.3V, I_o=10mA$                |
| Output voltage       | $V_{O(on)}$  | —    | 0.1  | 0.3  | V          | $I_o=10mA, I_i=0.5mA$               |
| Input current        | $I_i$        | —    | —    | 0.88 | mA         | $V_i=5V$                            |
| Output current       | $I_{O(off)}$ | —    | —    | 0.5  | $\mu A$    | $V_{CC}=50V, V_i=0V$                |
| DC current gain      | $G_i$        | 30   | —    | —    | —          | $V_o=5V, I_o=5mA$                   |
| Transition frequency | $f_T$        | —    | 250  | —    | MHz        | $V_{CE}=10mA, I_E=-5mA, f=100MHz *$ |
| Input resistance     | $R_i$        | 7    | 10   | 13   | k $\Omega$ | —                                   |
| Resistance ratio     | $R_2/R_1$    | 0.8  | 1    | 1.2  | —          | —                                   |

\* Transition frequency of the device

●Packaging specifications

| Part No. | Packaging type               | Taping |      |
|----------|------------------------------|--------|------|
|          | Code                         | TR     | T108 |
|          | Basic ordering unit (pieces) | 3000   | 3000 |
| UMD3N    |                              | ○      | —    |
| IMD3A    |                              | —      | ○    |

●Electrical characteristic curves  
DT<sub>T1</sub> (NPN)

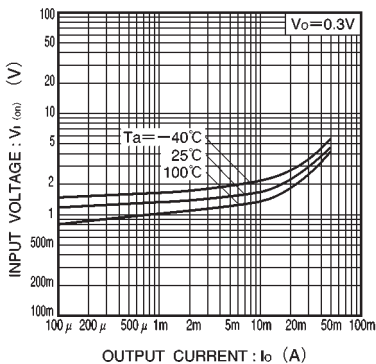


Fig.1 Input voltage vs. output current (ON characteristics)

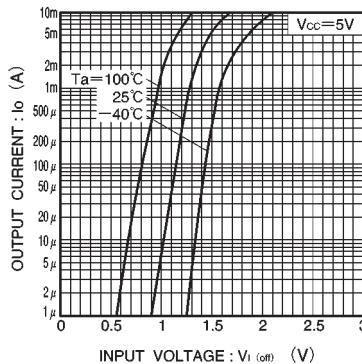


Fig.2 Output current vs. input voltage (OFF characteristics)

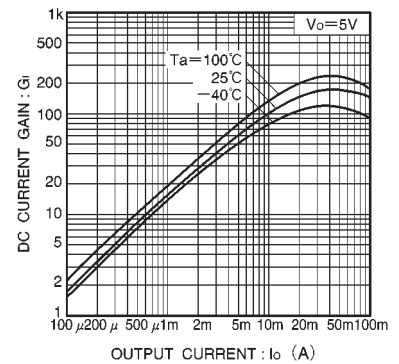


Fig.3 DC current gain vs. output current

DTr<sub>2</sub> (PNP)

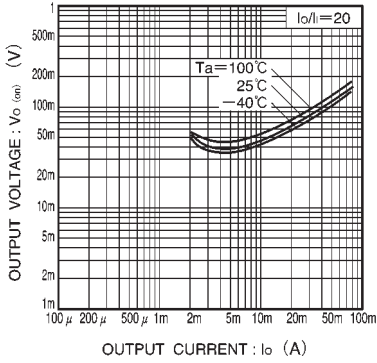


Fig.4 Output voltage vs. output current

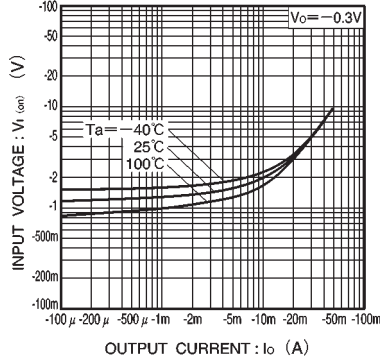


Fig.5 Input voltage vs. output current (ON characteristics)

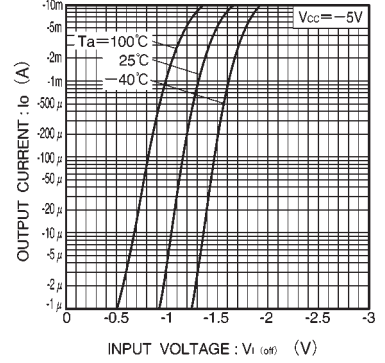


Fig.6 Output current vs. input voltage (OFF characteristics)

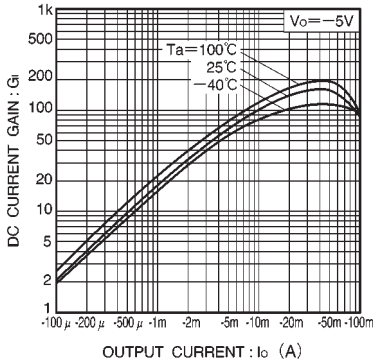


Fig.7 DC current gain vs. output current

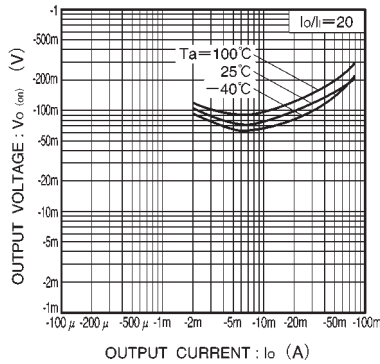


Fig.8 Output voltage vs. output current