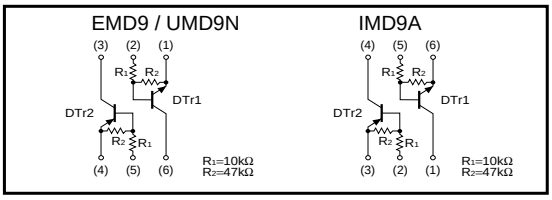
# Digital Transistor
# (Dual Digital Transistors for Inverter Drive)

## EMD9 / UMD9N / IMD9A

### ●Features

1) DTA114Y and DTC114Y transistors are built-in a EMT or UMT or SMT package.

### ●Equivalent circuit




### ●Package, marking, and packaging specifications

| Type | EMD9 | UMD9N | IMD9A |
|---|---|---|---|
| Package | EMT6 | UMT6 | SMT6 |
| Marking | D9 | D9 | D9 |
| Code | T2R | TR | T108 |
| Basic ordering unit (pieces) | 8000 | 3000 | 3000 |

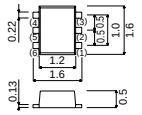
### ●Absolute maximum ratings (Ta=25°C)

| Parameter | | Symbol | Limits | Unit | |
|---|---|---|---|---|---|
| Supply voltage | | $V_{CC}$ | 50 | V | |
| Input voltage | | $V_{IN}$ | −6 to +40 | V | |
| Output current | | $I_O$ | 70 | mA | |
| Collector current | | $I_{C\ (Max.)}$ | 100 | mA | |
| Power dissipation | EMD9, UMD9N | Pd | 150(TOTAL) | mW | ∗1 |
| | IMD9A | | 300(TOTAL) | mW | ∗2 |
| Junction temperature | | Tj | 150 | °C | |
| Storage temperature | | Tstg | −55 to +150 | °C | |

∗1 120mW per element must not be exceeded. PNP type negative symbols have been omitted.
∗2 200mW per element must not be exceeded. PNP type negative symbols have been omitted.

### ●External dimensions (Unit : mm)

EMD9

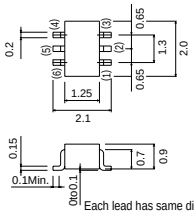



Each lead has same dimensions

ROHM : EMT6

Abbreviated symbol : D9

UMD9N

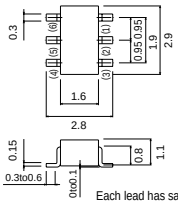



Each lead has same dimensions

ROHM : UMT6
EIAJ : SC-88

Abbreviated symbol : D9

IMD9A




Each lead has same dimensions

ROHM : SMT6
EIAJ : SC-74

Abbreviated symbol : D9

### ●Electrical characteristics (Ta=25°C)

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Conditions |
|---|---|---|---|---|---|---|
| Input voltage | $V_{I(off)}$ | – | – | 0.3 | V | $V_{CC}$=5V , $I_O$=100mA |
| | $V_{I(on)}$ | 1.4 | – | – | | $V_O$=0.3V , $I_I$=1mA |
| Output voltage | $V_{O(on)}$ | – | 0.1 | 0.3 | V | $I_O$=5mA , $I_I$=0.25mA |
| Input current | $I_I$ | – | – | 0.88 | mA | $V_I$=5V |
| Output current | $I_{O(off)}$ | – | – | 0.5 | mA | $V_{CC}$=50V , $V_I$=0V |
| DC current gain | $G_I$ | 68 | – | – | – | $I_O$=5mA , $V_O$=5V |
| Transition frequency ∗ | $f_T$ | – | 250 | – | MHz | $V_{CE}$=10V , $I_E$= −5mA , f=100MHz |
| Input resistance | $R_1$ | 7 | 10 | 13 | kW | – |
| Resistance ratio | $R_2/R_1$ | 3.7 | 4.7 | 5.7 | – | – |

PNP type negative symbols have been omitted.
∗ Characteristics of built-in transistor.

●**Electrical characteristics curves DTr1 (DTC114Y)**

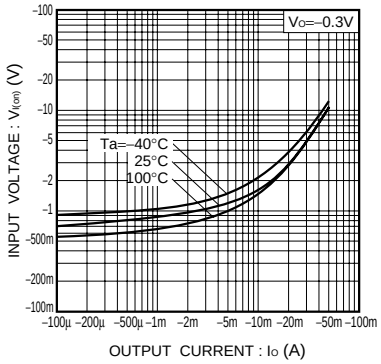



Fig.1 Input voltage vs. output current (ON characteristics)

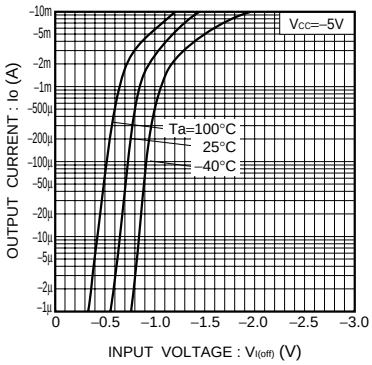



Fig.2 Output current vs. input voltage (OFF characteristics)

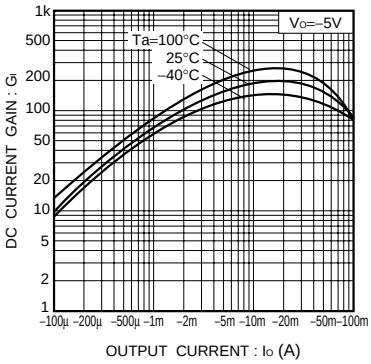



Fig.3 DC current gain vs. output current

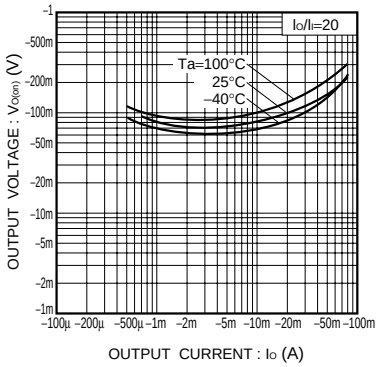



Fig.4 Output voltage vs. output current

**●Electrical characteristics curves DTr2 (DTA114Y)**

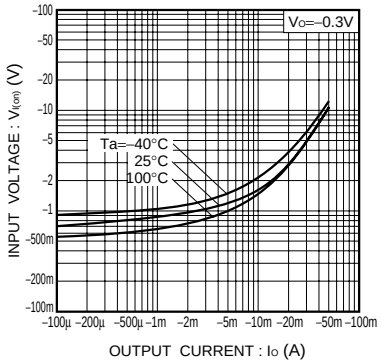



Fig.1 Input voltage vs. output current (ON characteristics)

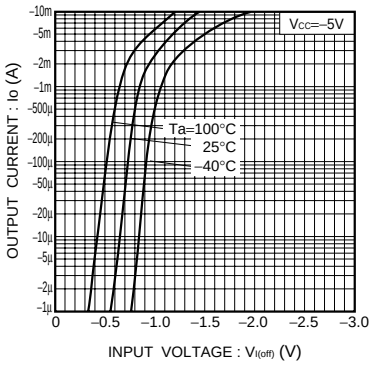



Fig.2 Output current vs. input voltage (OFF characteristics)

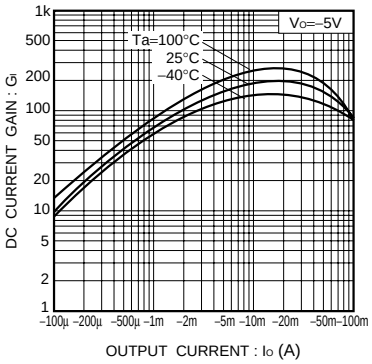



Fig.3 DC current gain vs. output current

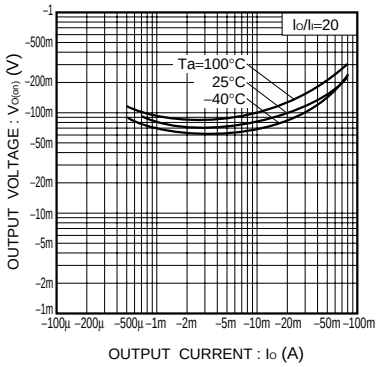



Fig.4 Output voltage vs. output current

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