# Power management (dual digital transistors)

## EMC2 / UMC2N / FMC2A

### ●Features

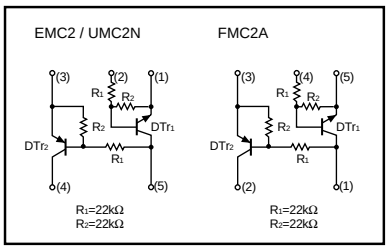
1) Includes a DTA124E and DTC124E transistor in a EMT or UMT or SMT package.
2) Ideal for power switch circuits.
3) Mounting cost and area can be cut in half.

### ●Structure

Epitaxial planar type
A PNP and a NPN digital transistor
(each with two built in resistors)

The following characteristics apply to both $DTr_1$ and $DTr_2$, however, the "-" sign on $DTr_2$, values for the PNP type have been omitted.

### ●Equivalent circuit

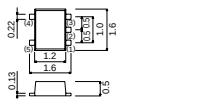



### ●Packaging specifications

| | Packaging | Taping | | |
|---|---|---|---|---|
| | Code | T2R | TR | T148 |
| Type | Basic ordering unit (pieces) | 8000 | 3000 | 3000 |
| EMC2 | | ○ | – | – |
| UMC2N | | – | ○ | – |
| FMC2A | | – | – | ○ |

### ●External dimensions (Units : mm)

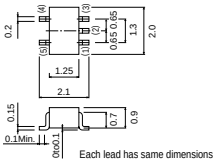
EMC2




ROHM : EMT5

Abbreviated symbol: C2

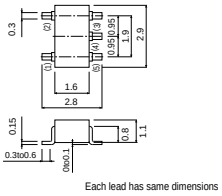
UMC2N




ROHM : UMT5
EIAJ : SC-88A

Abbreviated symbol: C2

FMC2A




ROHM : SMT5
EIAJ : SC-74A

Abbreviated symbol: C2

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

| Parameter | | Symbol | Limits | Unit |
|---|---|---|---|---|
| Supply voltage | | $V_{CC}$ | 50 | V |
| Input current | | $V_{IN}$ | 40 | V |
| | | | −10 | |
| Output current | | $I_O$ | 30 | mA |
| | | $I_{C\ (Max.)}$ | 100 | |
| Power dissipation | EMC2,UMC2N | Pd | 150 (TOTAL) | mW ∗1 |
| | FMC2A | | 300 (TOTAL) | mW ∗2 |
| Junction temperature | | Tj | 150 | °C |
| Storage temperature | | Tstg | −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, $I_O$=100µA |
| | $V_{I\ (on)}$ | 3 | − | − | | $V_O$=0.2V, $I_O$=5mA |
| Output voltage | $V_{O\ (on)}$ | − | 0.1 | 0.3 | V | $I_O/I_I$=10mA/0.5mA |
| Input current | $I_I$ | − | − | 0.36 | mA | $V_I$=5V |
| Output current | $I_{O\ (off)}$ | − | − | 0.5 | µA | $V_{CC}$=50V, $V_I$=0V |
| DC current gain | $G_I$ | 56 | − | − | − | $V_O$=5V, $I_O$=5mA |
| Transition frequency | $f_T$ | − | 250 | − | MHz | $V_{CE}$=10mA, $I_E$=−5mA, f=100MHz ∗ |
| Input resistance | $R_1$ | 15.4 | 22 | 28.6 | kΩ | − |
| Resistance ratio | $R_2/R_1$ | 0.8 | 1 | 1.2 | − | − |

∗ Transition frequency of the device

## ●Electrical characteristic curves

DTr1

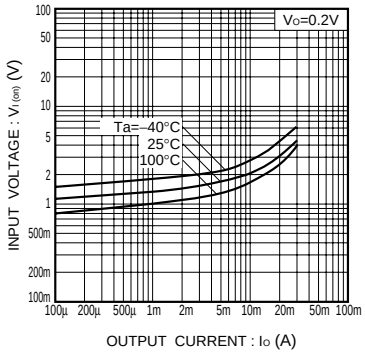



Fig.1 Input voltage vs. output current (ON characteristics)

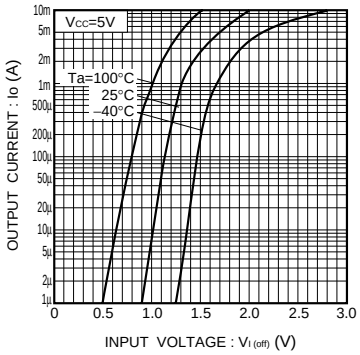



Fig.2 Output current vs. input voltage (OFF characteristics)

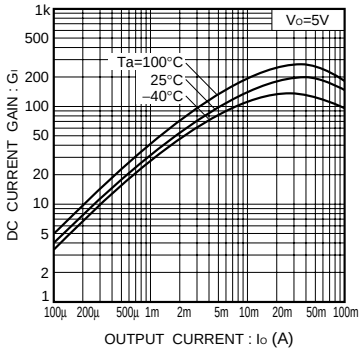



Fig.3 DC current gain vs. output current

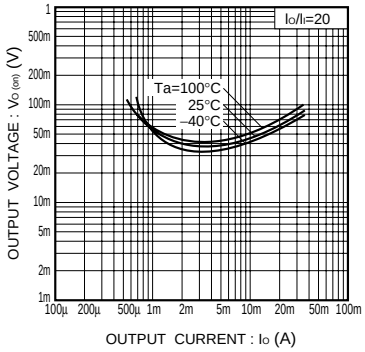



Fig.4 Output voltage vs. output current

DTr2

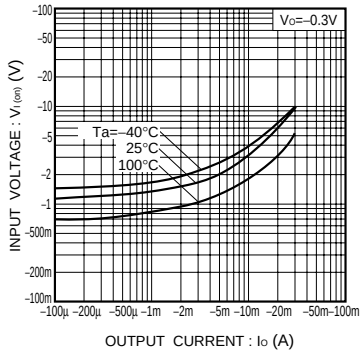



Fig.5 Input voltage vs. output current (ON characteristics)

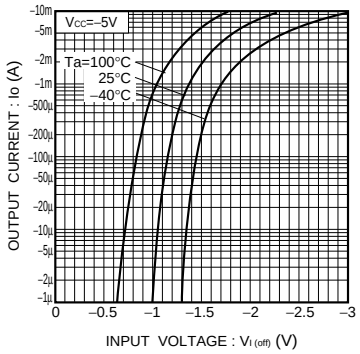



Fig.6 Output current vs. input voltage (OFF characteristics)

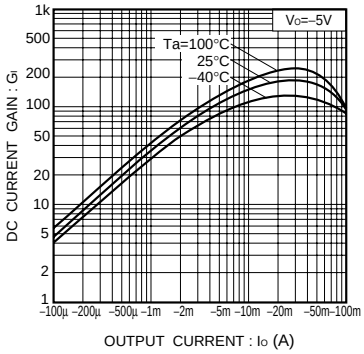



Fig.7 DC current gain vs. output current

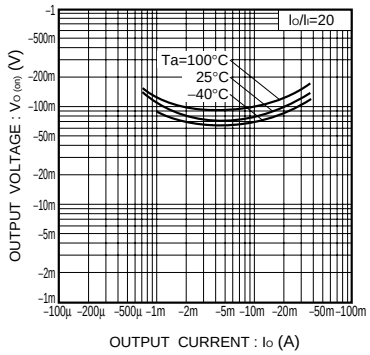



Fig.8 Output voltage vs. output current