

# Emitter common (dual digital transistors)

## EMA11 / UMA11N / FMA11A

### ●Features

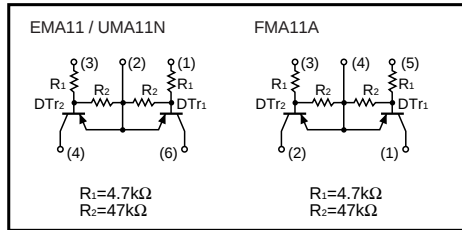
- 1) Two DTA143Z chips in a EMT or UMT or SMT package.
- 2) Mounting cost and area can be cut in half.

### ●Structure

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

The following characteristics apply to both DTr<sub>1</sub> and DTr<sub>2</sub>.

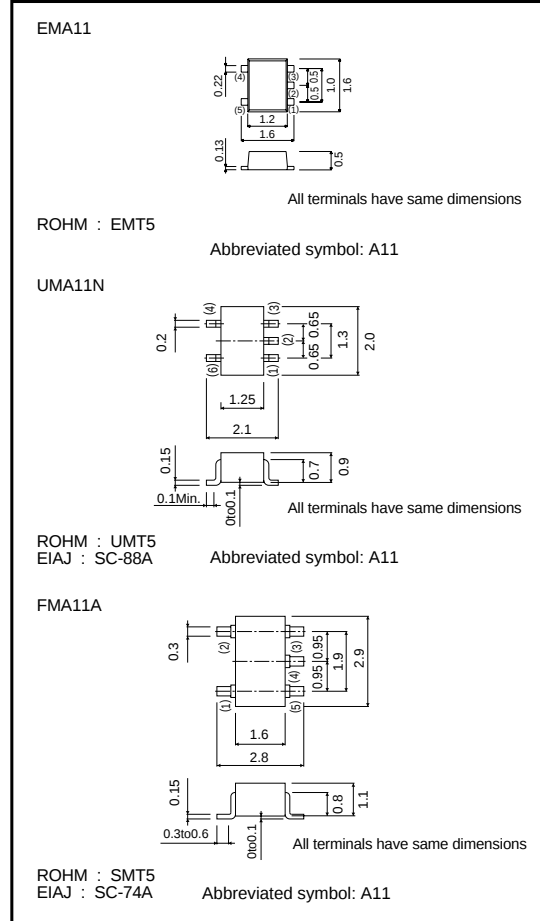
### ●Equivalent circuit



### ●Packaging specifications

| Type   | Package                      | Taping |      |      |
|--------|------------------------------|--------|------|------|
|        | Code                         | T2R    | TR   | T148 |
|        | Basic ordering unit (pieces) | 8000   | 3000 | 3000 |
| EMA11  |                              | ○      | —    | —    |
| UMA11N |                              | —      | ○    | —    |
| FMA11A |                              | —      | —    | ○    |

### ●External dimensions (Unit : mm)



## Transistors

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

| Parameter            |                | Symbol                | Limits      | Unit  |
|----------------------|----------------|-----------------------|-------------|-------|
| Supply voltage       |                | V <sub>CC</sub>       | -50         | V     |
| Input voltage        |                | V <sub>IN</sub>       | -30         | V     |
|                      |                |                       | 5           |       |
| Output current       |                | I <sub>O</sub>        | -100        | mA    |
|                      |                | I <sub>C (Max.)</sub> | -100        |       |
| Power dissipation    | EMA11 / UMA11N | P <sub>d</sub>        | 150 (TOTAL) | mW *1 |
|                      | FMA11A         |                       | 300 (TOTAL) | mW *2 |
| Junction temperature |                | T <sub>j</sub>        | 150         | °C    |
| Storage temperature  |                | T <sub>stg</sub>      | -55 to +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 <sub>I (off)</sub>           | —    | —    | -0.5 | V    | V <sub>CC</sub> =-5V, I <sub>O</sub> =-100μA            |
|                      | V <sub>I (on)</sub>            | -1.3 | —    | —    |      | V <sub>O</sub> =-0.3V, I <sub>O</sub> =-5mA             |
| Output voltage       | V <sub>O (on)</sub>            | —    | -0.1 | -0.3 | V    | I <sub>O</sub> /I <sub>I</sub> =-5mA/-0.25mA            |
| Input current        | I <sub>I</sub>                 | —    | —    | -1.8 | mA   | V <sub>I</sub> =-5V                                     |
| Output current       | I <sub>O (off)</sub>           | —    | —    | -0.5 | μA   | V <sub>CC</sub> =-50V, V <sub>I</sub> =0V               |
| DC current gain      | G <sub>I</sub>                 | 80   | —    | —    | —    | V <sub>O</sub> =-5V, I <sub>O</sub> =-10mA              |
| Transition frequency | f <sub>T</sub>                 | —    | 250  | —    | MHz  | V <sub>CE</sub> =10mA, I <sub>E</sub> =-5mA, f=100MHz * |
| Input resistance     | R <sub>I</sub>                 | 3.29 | 4.7  | 6.11 | kΩ   | —                                                       |
| Resistance ratio     | R <sub>2</sub> /R <sub>1</sub> | 8    | 10   | 12   | —    | —                                                       |

\* Transition frequency of the device

## ●Electrical characteristic curves

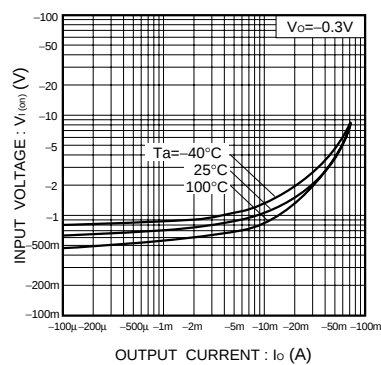


Fig.1 Input voltage vs. output current (ON characteristics)

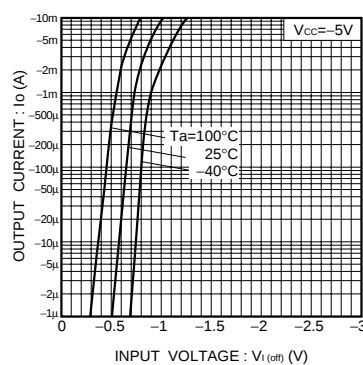


Fig.2 Output current vs. input voltage (OFF characteristics)

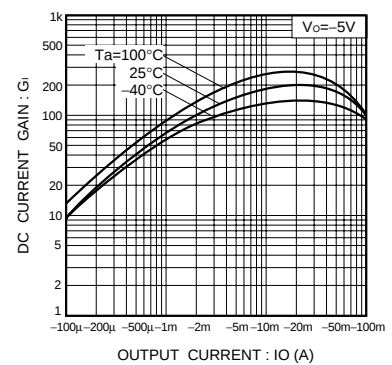


Fig.3 DC current gain vs. output current

## Transistors

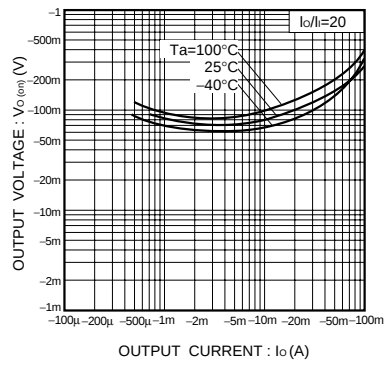


Fig.4 Output voltage vs. output current