

# General purpose (dual digital transistors)

## EMD6 / UMD6N / IMD6A

### ●Features

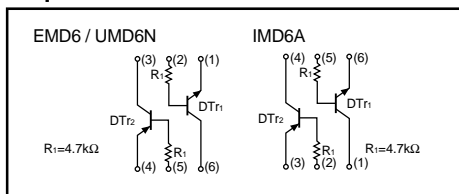
- 1) Both the DTA143T chip and DTC143T chip in an EMT or UMT or SMT package.
- 2) Mounting possible with EMT3 or UMT3 or SMT3 automatic mounting machines.
- 3) Transistor elements are independent, eliminating interference.
- 4) Mounting cost and area can be cut in half.

### ●Structure

A PNP and NPN digital transistor  
(each with a single built in resistor)

The following characteristics apply to both the DTr1 and DTr2, however, the “-” sign on DTr2 values for the PNP type have been omitted.

### ●Equivalent circuit

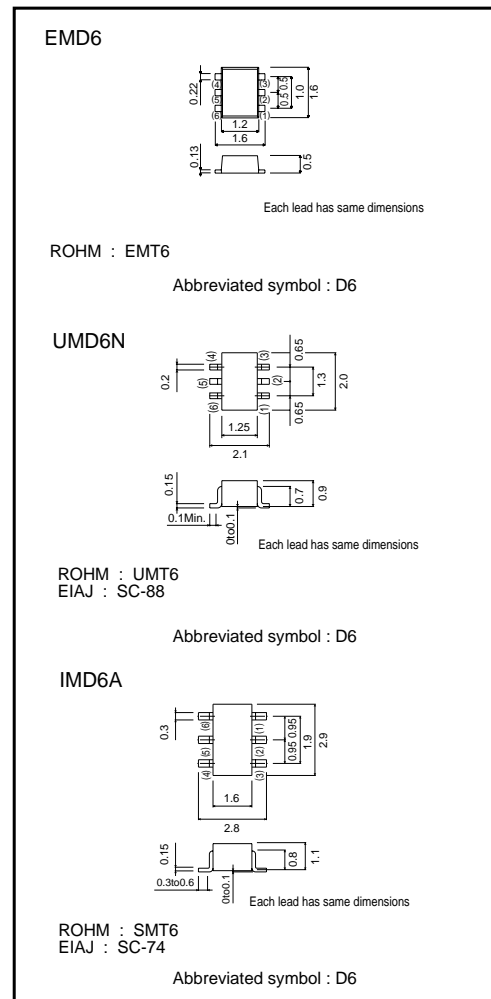


### ●Absolute maximum ratings (Ta = 25°C)

| Parameter                   | Symbol      | Limits      | Unit  |
|-----------------------------|-------------|-------------|-------|
| Collector-base voltage      | $V_{CBO}$   | 50          | V     |
| Collector-emitter voltage   | $V_{CEO}$   | 50          | V     |
| Emitter-base voltage        | $V_{EBO}$   | 5           | V     |
| Collector current           | $I_C$       | 100         | mA    |
| Collector power dissipation | EMD6, UMD6N | 150 (TOTAL) | mW *1 |
|                             | IMD6A       | 300 (TOTAL) |       |
| Junction temperature        | $T_j$       | 150         | °C    |
| Storage temperature         | $T_{stg}$   | -55--+150   | °C    |

\*1 120mW per element must not be exceeded.  
\*2 200mW per element must not be exceeded.

### ●External dimensions (Units : mm)



Transistors

●Electrical characteristics (Ta = 25°C)

| Parameter                            | Symbol               | Min. | Typ. | Max. | Unit | Conditions   |
|--------------------------------------|----------------------|------|------|------|------|--|
| Collector-base breakdown voltage     | BV <sub>CB0</sub>    | 50   | –    | –    | V    | I <sub>c</sub> =50μA                                   |
| Collector-emitter breakdown voltage  | BV <sub>CE0</sub>    | 50   | –    | –    | V    | I <sub>c</sub> =1mA                                    |
| Emitter-base breakdown voltage       | BV <sub>EB0</sub>    | 5    | –    | –    | V    | I <sub>E</sub> =50μA                                   |
| Collector cutoff current             | I <sub>CB0</sub>     | –    | –    | 0.5  | μA   | V <sub>CB</sub> =50V                                   |
| Emitter cutoff current               | I <sub>EB0</sub>     | –    | –    | 0.5  | μA   | V <sub>EB</sub> =4V                                    |
| Collector-emitter saturation voltage | V <sub>CE(sat)</sub> | –    | –    | 0.3  | V    | I <sub>c</sub> /I <sub>B</sub> =5mA/0.25mA             |
| DC current transfer ratio            | h <sub>FE</sub>      | 100  | 250  | 600  | –    | V <sub>CE</sub> =5V, I <sub>c</sub> =1mA               |
| Transition frequency                 | f <sub>T</sub>       | –    | 250  | –    | MHz  | V <sub>CE</sub> =10V, I <sub>E</sub> =-5mA, f=100MHz * |
| Input resistance                     | R <sub>1</sub>       | 3.29 | 4.7  | 6.11 | kΩ   | –  |

\* Transition frequency of the transistor

●Packaging specifications

| Type  | Package                      | Taping |      |      |
|-------|------------------------------|--------|------|------|
|       | Code                         | T2R    | TR   | T108 |
|       | Basic ordering unit (pieces) | 8000   | 3000 | 3000 |
| EMD6  | ○                            | —      | —    | —    |
| UMD6N | —                            | ○      | —    | —    |
| IMD6A | —                            | —      | —    | ○    |

●Electrical characteristic curves

DTr1 (NPN)

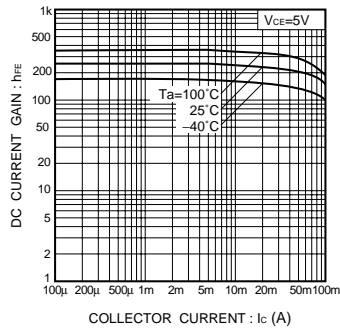


Fig.1 DC current gain vs. collector current

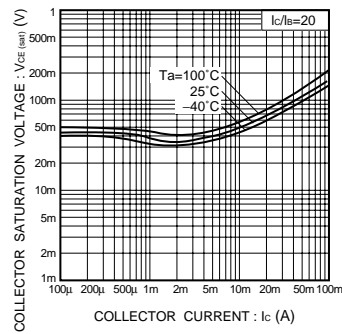


Fig.2 Collector-emitter saturation voltage vs. collector current

DTr2 (PNP)

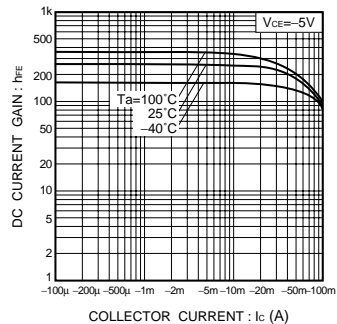


Fig.3 DC current gain vs. collector current

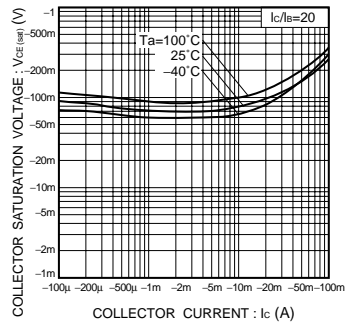


Fig.4 Collector-emitter saturation voltage vs. collector current

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