

# -100mA/-50V Digital transistors(with built-in resistors)

## DTA043TM / DTA043TEB / DTA043TUB

### ●Features

- 1) Built-in input resistor enables the direct control of base terminal by input voltage without external resistor.  
(See Inner circuit)
- 2) The bias resistors consist of thin-film resistors with complete isolation to allow positive biasing of the input.  
They also have the advantage of almost completely eliminating parasitic effects.
- 3) Only the on/off conditions need to be set for operation, making the device design easy.

### ●Structure

PNP epitaxial planar silicon transistor  
(Resistor built-in type)

### ●Applications

Inverter, Interface, Driver

### ●Packaging specifications

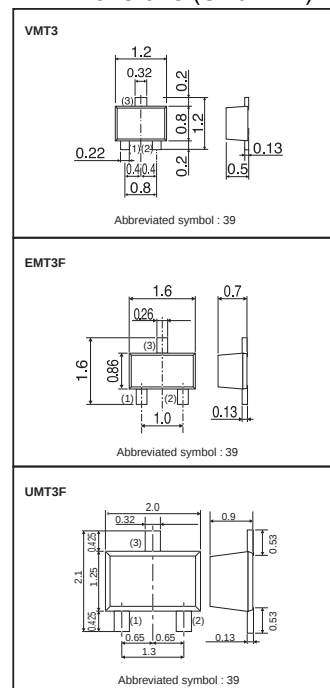
| Type      | Package                      | VMT3   | EMT3F  | UMT3F  |
|-----------|------------------------------|--------|--------|--------|
|           | Packaging Type               | Taping | Taping | Taping |
|           | Code                         | T2L    | TL     | TL     |
|           | Basic ordering unit (pieces) | 8000   | 3000   | 3000   |
| DTA043TM  |                              | ○      | -      | -      |
| DTA043TEB |                              | -      | ○      | -      |
| DTA043TUB |                              | -      | -      | ○      |

### ●Absolute maximum (Ta=25°C)

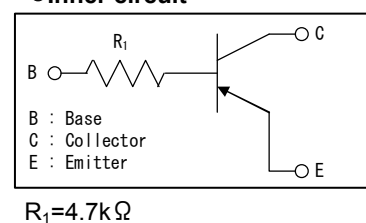
| Parameter                    | Symbol       | Limits(DTA043T□) |    |     | Unit |
|------------------------------|--------------|------------------|----|-----|------|
|                              |              | M                | EB | UB  |      |
| Collector-base voltage       | $V_{CBO}$    | -50              |    |     | V    |
| Collector-emitter voltage    | $V_{CEO}$    | -50              |    |     | V    |
| Emitter-base voltage         | $V_{EBO}$    | -5               |    |     | mV   |
| Collector current            | $I_{C(max)}$ | -100             |    |     | mA   |
| Power dissipation            | $P_D$        | 150              |    | 200 | mW * |
| Junction temperature         | $T_j$        | 150              |    |     | °C   |
| Range of storage temperature | $T_{stg}$    | -55 to +150      |    |     | °C   |

\* Each terminal mounted on a recommended land

### ●Dimensions (Unit : mm)



### ●Inner circuit



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

| Parameter                            | Symbol        | Min. | Typ.  | Max.  | Unit       | Test Conditions                              |
|--------------------------------------|---------------|------|-------|-------|------------|----------------------------------------------|
| Collector-Base breakdown voltage     | $BV_{CBO}$    | -50  | -     | -     | V          | $I_C = -50\mu A$                             |
| Collector-Emitter breakdown voltage  | $BV_{CEO}$    | -50  | -     | -     | V          | $I_C = -1mA$                                 |
| Emitter-Base breakdown voltage       | $BV_{EBO}$    | -5   | -     | -     | V          | $I_E = -50\mu A$                             |
| Collector cut-off current            | $I_{CBO}$     | -    | -     | -500  | nA         | $V_{CB} = -50V$                              |
| Emitter cut-off current              | $I_{EBO}$     | -    | -     | -500  | nA         | $V_{EB} = -4V$                               |
| Collector-Emitter saturation voltage | $V_{CE(sat)}$ | -    | -0.07 | -0.15 | V          | $I_C = -5mA / I_B = -0.5mA$                  |
| DC current gain                      | $h_{FE}$      | 100  | -     | 600   | -          | $V_{CE} = -10V / I_C = -0.5mA$               |
| Transition frequency *               | $f_T$         | -    | 250   | -     | MHz        | $V_{CE} = -10V / I_C = -5mA$<br>$f = 100MHz$ |
| Input resistance                     | $R_1$         | 3.29 | 4.7   | 6.11  | k $\Omega$ |                                              |

\* Characteristics of built-in transistor

## ●Electrical characteristics curves

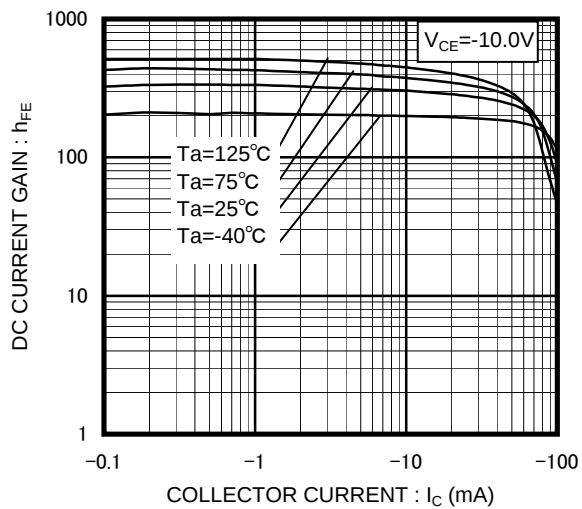


Fig.1 DC Current Gain vs. Collector Current

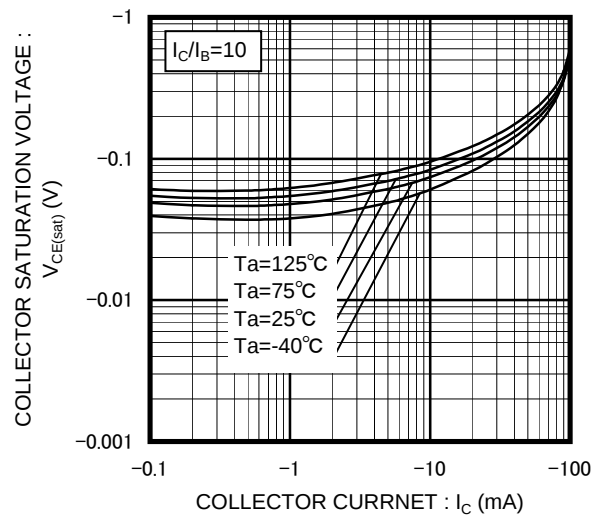


Fig.2 Collector Saturation Voltage vs. Collector Current

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