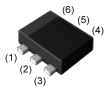
# EMB53

Complex Digital Transistors (Bias Resistor Built-in Transistors) Datasheet

| Parameter | DTr1 and DTr2 |
|---|---|
| $V_{CEO}$ | -50V |
| $I_C$ | -100mA |
| $R_1$ | 4.7kΩ |

## ●Outline

EMT6




EMB53

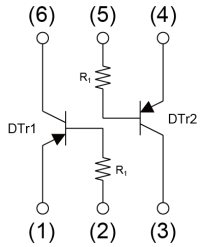
(SC-107C)

## ●Features

1) Two DTA043T chips in a EMT6 package.
2) Transister elements are independent, eliminating interface.
3) Mounting cost and area can be cut in half.
4) Lead Free/RoHS Compliant.

## ●Inner circuit

(1) DTr1 Emitter
(2) DTr1 Base
(3) DTr2 Collector
(4) DTr2 Emitter
(5) DTr2 Base
(6) DTr1 Collector




## ●Application

Switching circuit, Inverter circuit, Interface circuit,
Driver circuit

## ●Packaging specifications

| Part No. | Package | Package size | Taping code | Reel size (mm) | Tape width (mm) | Basic ordering unit.(pcs) | Marking |
|---|---|---|---|---|---|---|---|
| EMB53 | EMT6 | 1616 | T2R | 180 | 8 | 8000 | B53 |


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## ●Absolute maximum ratings ($T_a$ = 25°C)

<For DTr1 and DTr2 in common>

| Parameter | Symbol | Values | 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 |
| Power dissipation | $P_D$*1 *2 | 150 | mW |
| Junction temperature | $T_j$ | 150 | ℃ |
| Range of storage temperature | $T_{stg}$ | -55 to +150 | ℃ |

## ●Electrical characteristics ($T_a$ = 25°C)

<For DTr1 and DTr2 in common>

| Parameter | Symbol | Conditions | Values | | | Unit |
|---|---|---|---|---|---|---|
| | | | Min. | Typ. | Max. | |
| Collector-base breakdown voltage | $BV_{CBO}$ | $I_C$ = -50μA | -50 | - | - | V |
| Collector-emitter breakdown voltage | $BV_{CEO}$ | $I_C$ = -1mA | -50 | - | - | V |
| Emitter-base breakdown voltage | $BV_{EBO}$ | $I_E$ = -50μA | -5 | - | - | V |
| Collector cut-off current | $I_{CBO}$ | $V_{CB}$ = -50V | - | - | -0.5 | μA |
| Emitter cut-off current | $I_{EBO}$ | $V_{EB}$ = -4V | - | - | -0.5 | μA |
| Collector-emitter saturation voltage | $V_{CE(sat)}$ | $I_C$ = -5mA, $I_B$ = -0.5mA | - | -0.07 | -0.15 | V |
| DC current gain | $h_{FE}$ | $V_{CE}$ = -10V, $I_C$ = -5mA | 100 | - | 600 | - |
| Input resistance | $R_1$ | - | 3.29 | 4.7 | 6.11 | kΩ |
| Transition frequency | $f_T$*3 | $V_{CE}$ = -10V, $I_E$ = -10V, f = 100MHz | - | 250 | - | MHz |

*1 terminal mounted on a reference footprint.

*2 120mW per element must not be exceeded.

*3 Characteristics of built-in transistor.


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## ●Electrical characteristic curves($T_a$=25°C)

<For Tr1 and Tr2 in common>

Fig.1 Grounded emitter propagation characteristics

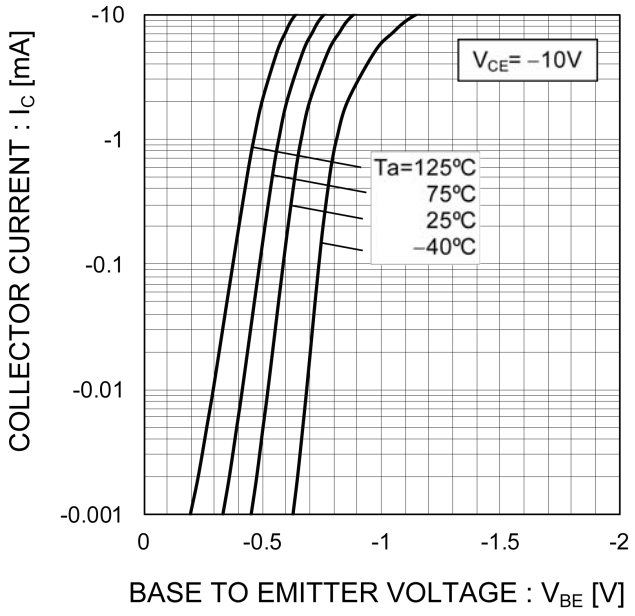



Fig.2 Grounded emitter output characteristics

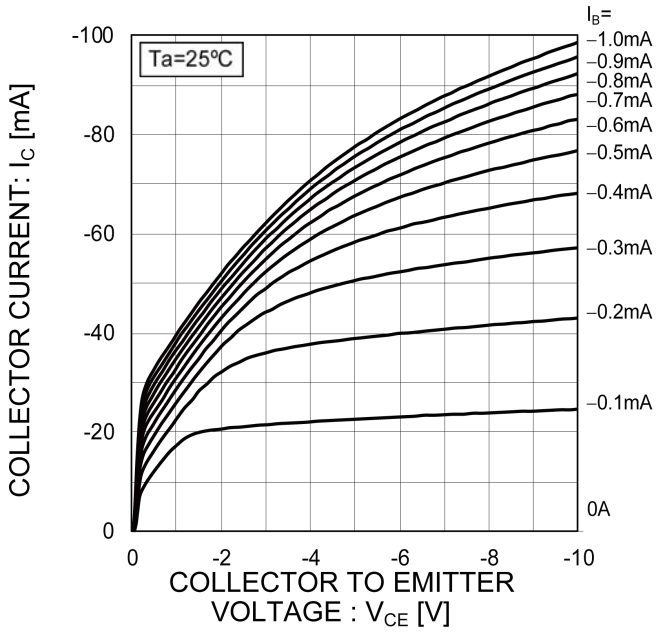



Fig.3 DC Current gain vs. Collector Current

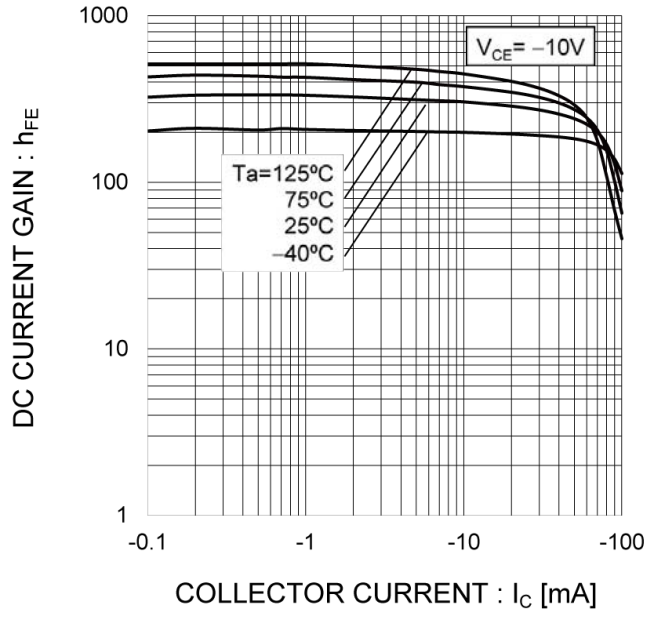
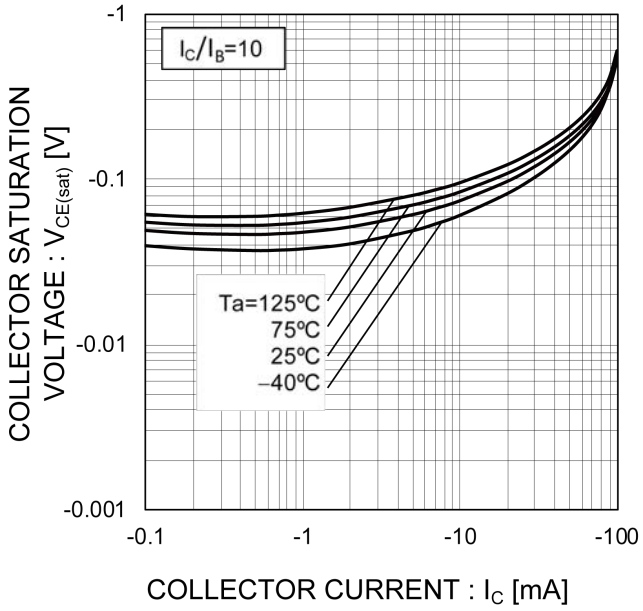



Fig.4 Collector-emitter saturation voltage vs. Collector Current

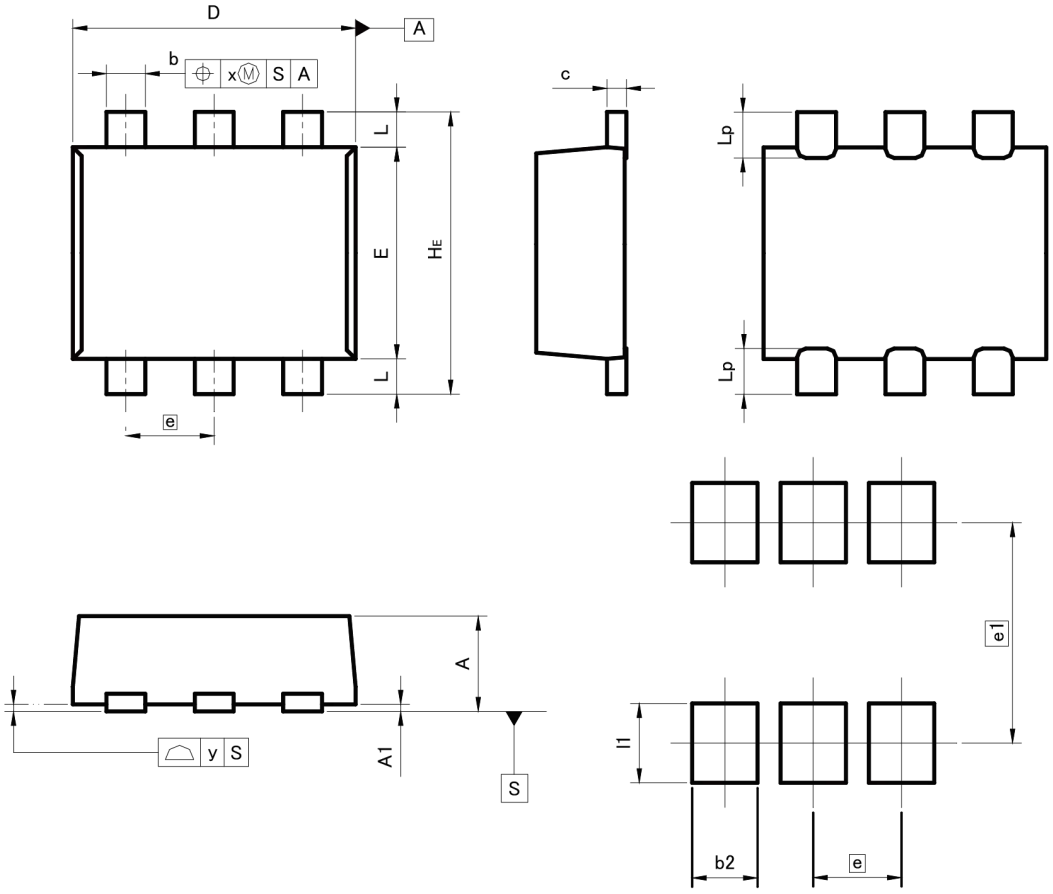




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## ●Dimensions

EMT6




Pattern of terminal position areas
[Not a recommended pattern of soldering pads]

| DIM | MILIMETERS | | INCHES | |
|---|---|---|---|---|
| | MIN | MAX | MIN | MAX |
| A | 0.45 | 0.55 | 0.018 | 0.022 |
| A1 | 0.00 | 0.10 | 0.000 | 0.004 |
| b | 0.17 | 0.27 | 0.007 | 0.011 |
| c | 0.08 | 0.18 | 0.003 | 0.007 |
| D | 1.50 | 1.70 | 0.059 | 0.067 |
| E | 1.10 | 1.30 | 0.043 | 0.051 |
| e | 0.50 | | 0.020 | |
| HE | 1.50 | 1.70 | 0.059 | 0.067 |
| L | 0.10 | 0.30 | 0.004 | 0.012 |
| Lp | – | 0.35 | – | 0.014 |
| x | – | 0.10 | – | 0.004 |
| y | – | 0.10 | – | 0.004 |

| DIM | MILIMETERS | | INCHES | |
|---|---|---|---|---|
| | MIN | MAX | MIN | MAX |
| b2 | – | 0.37 | – | 0.015 |
| e1 | 1.25 | | 0.049 | |
| l1 | – | 0.45 | – | 0.018 |

Dimension in mm/inches


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