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# 2SD1418

Silicon NPN Epitaxial

# HITACHI

ADE-208-1149 (Z)

1st. Edition

Mar. 2001

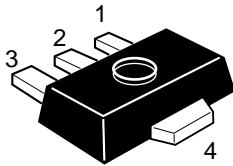
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## Application

- Low frequency power amplifier
- Complementary pair with 2SB1025

## Outline

UPAK



1. Base
2. Collector
3. Emitter
4. Collector (Flange)

# 2SD1418

## Absolute Maximum Ratings (Ta = 25°C)

| Item                         | Symbol             | Ratings     | Unit |
|------------------------------|--------------------|-------------|------|
| Collector to base voltage    | $V_{CBO}$          | 120         | V    |
| Collector to emitter voltage | $V_{CEO}$          | 80          | V    |
| Emitter to base voltage      | $V_{EBO}$          | 5           | V    |
| Collector current            | $I_C$              | 1           | A    |
| Collector peak current       | $i_{C(peak)}^{*1}$ | 2           | A    |
| Collector power dissipation  | $P_C^{*2}$         | 1           | W    |
| Junction temperature         | $T_j$              | 150         | °C   |
| Storage temperature          | $T_{stg}$          | -55 to +150 | °C   |

Notes: 1.  $PW \leq 10$  ms, Duty cycle  $\leq 20\%$

2. Value on the alumina ceramic board (12.5 x 20 x 0.7 mm)

## Electrical Characteristics (Ta = 25°C)

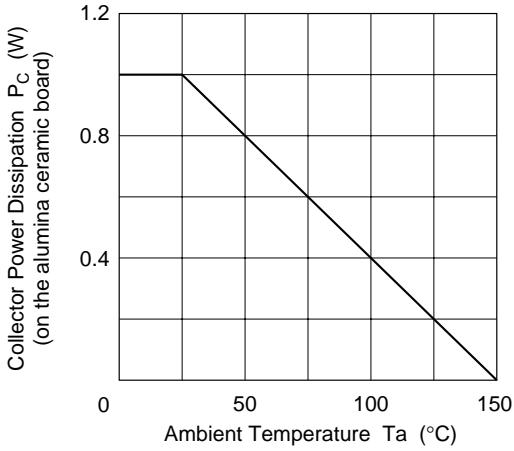
| Item                                    | Symbol         | Min | Typ | Max | Unit    | Test conditions                              |
|---|----------------|-----|-----|-----|---------|--|
| Collector to base breakdown voltage     | $V_{(BR)CBO}$  | 120 | —   | —   | V       | $I_C = 10 \mu A, I_E = 0$                    |
| Collector to emitter breakdown voltage  | $V_{(BR)CEO}$  | 80  | —   | —   | V       | $I_C = 1$ mA, $R_{BE} = \infty$              |
| Emitter to base breakdown voltage       | $V_{(BR)EBO}$  | 5   | —   | —   | V       | $I_E = 10 \mu A, I_C = 0$                    |
| Collector cutoff current                | $I_{CBO}$      | —   | —   | 10  | $\mu A$ | $V_{CB} = 100$ V, $I_E = 0$                  |
| DC current transfer ratio               | $h_{FE1}^{*1}$ | 60  | —   | 320 |         | $V_{EB} = 5$ V, $I_C = 150$ mA <sup>*2</sup> |
|   | $h_{FE2}$      | 30  | —   | —   |         | $V_{CE} = 5$ V, $I_C = 500$ mA <sup>*2</sup> |
| Collector to emitter saturation voltage | $V_{CE(sat)}$  | —   | —   | 1   | V       | $I_C = 500$ mA, $I_B = 50$ mA <sup>*2</sup>  |
| Base to emitter voltage                 | $V_{BE}$       | —   | —   | 1.5 | V       | $V_{CE} = 5$ V, $I_C = 150$ mA <sup>*2</sup> |
| Gain bandwidth product                  | $f_T$          | —   | 140 | —   | MHz     | $V_{CE} = 5$ V, $I_C = 150$ mA <sup>*2</sup> |
| Collector output capacitance            | $C_{ob}$       | —   | 12  | —   | pF      | $V_{CB} = 10$ V, $I_E = 0, f = 1$ MHz        |

Notes: 1. The 2SD1418 is grouped by  $h_{FE1}$  as follows.

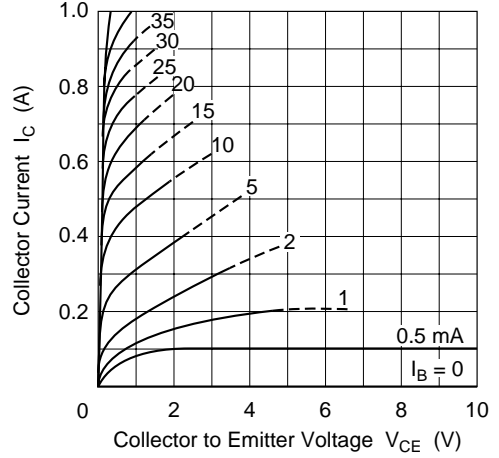
2. Pulse test

| Mark      | DA        | DB         | DC         |
|-----------|-----------|------------|------------|
| $h_{FE1}$ | 60 to 120 | 100 to 200 | 160 to 320 |

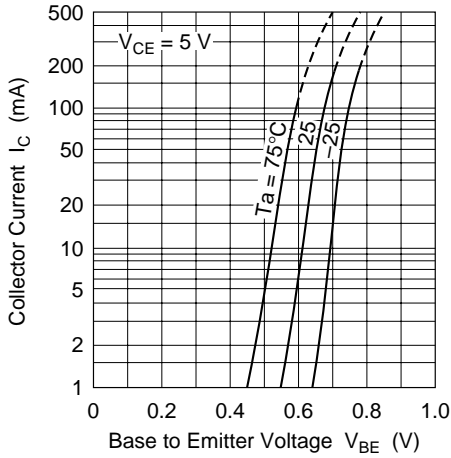
Maximum Collector Dissipation Curve



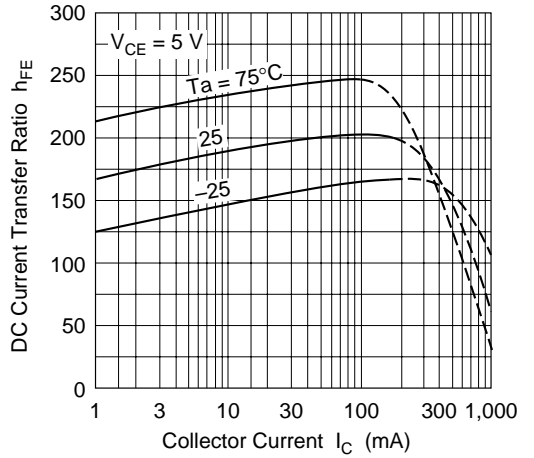
Typical Output Characteristics

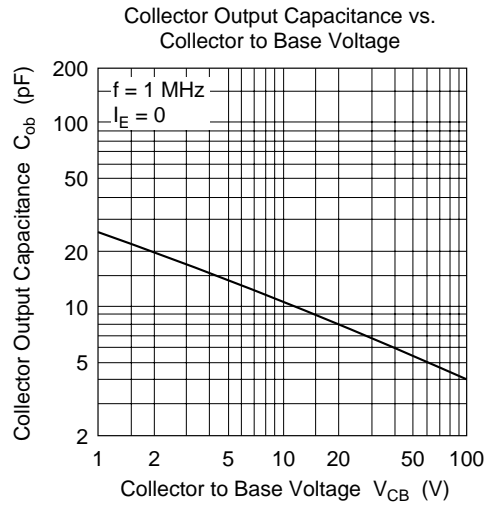
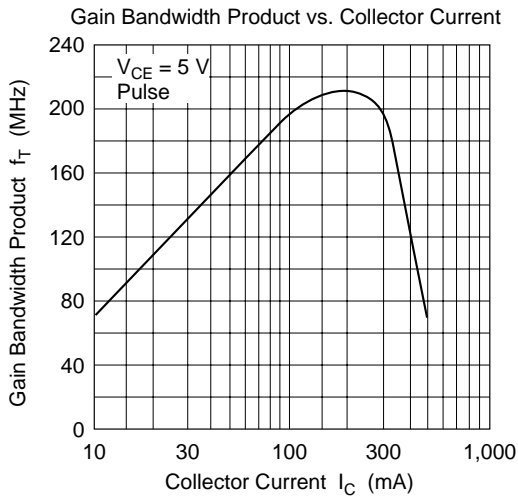
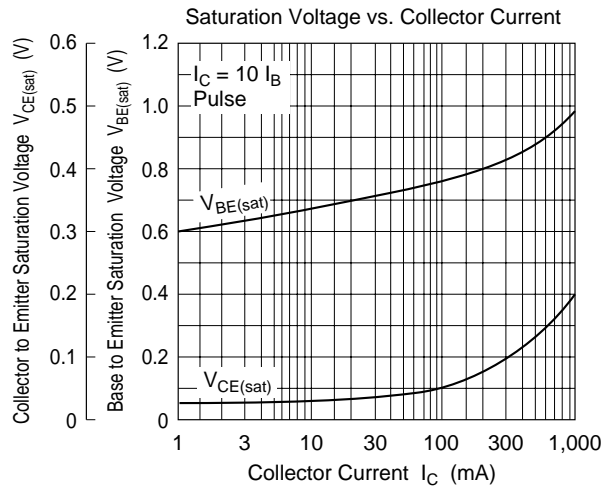


Typical Transfer Characteristics



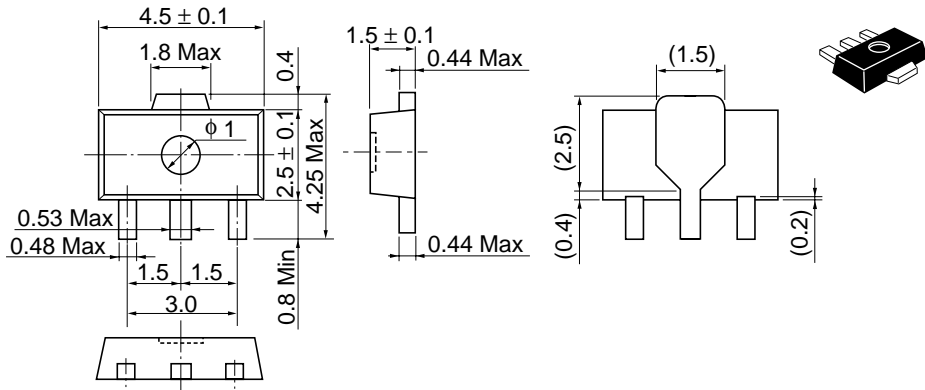
DC Current Transfer Ratio vs. Collector Current





Package Dimensions

As of January, 2001  
Unit: mm



|                        |          |
|------------------------|----------|
| Hitachi Code           | UPAK     |
| JEDEC                  | —        |
| EIAJ                   | Conforms |
| Mass (reference value) | 0.050 g  |

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