
2SD1418

Silicon NPN Epitaxial

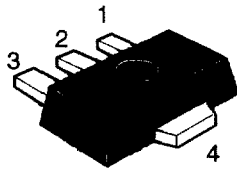
HITACHI

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 | $i_{C(\text{peak})}^{*1}$ | 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)

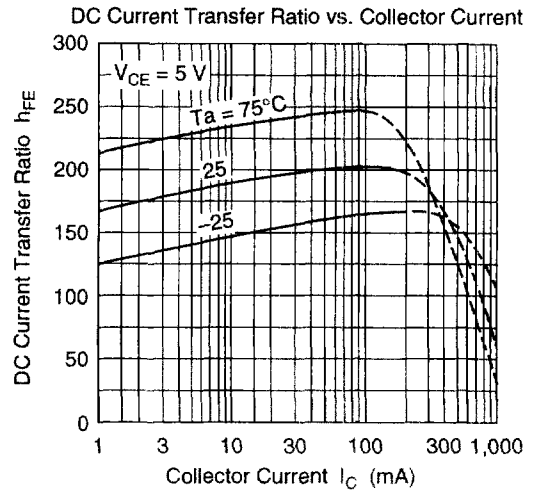
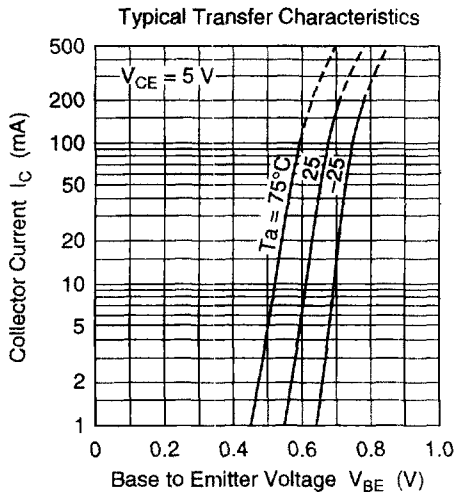
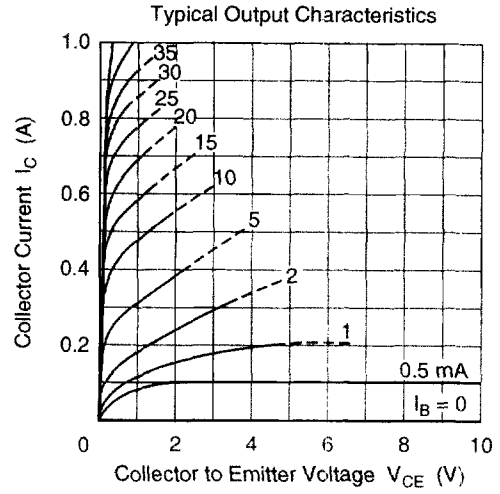
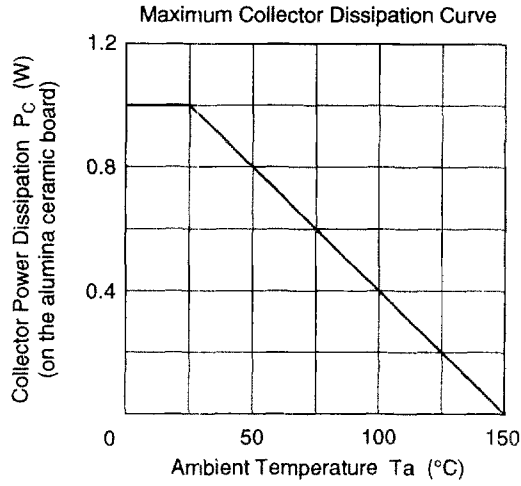
Electrical Characteristics (Ta = 25°C)

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

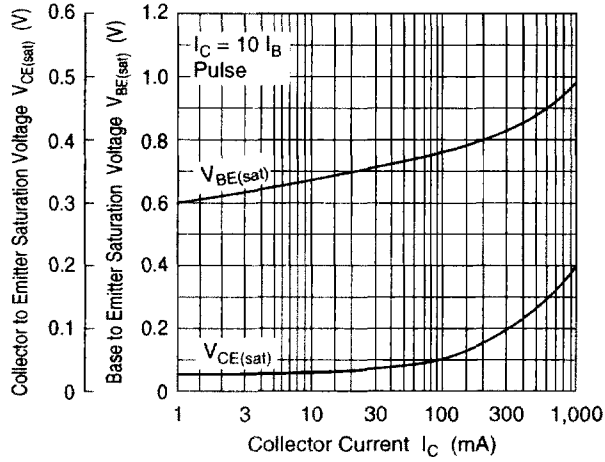
Notes: 1. The 2SD1418 is grouped by h_{FE1} as follows.

2. Pulse test

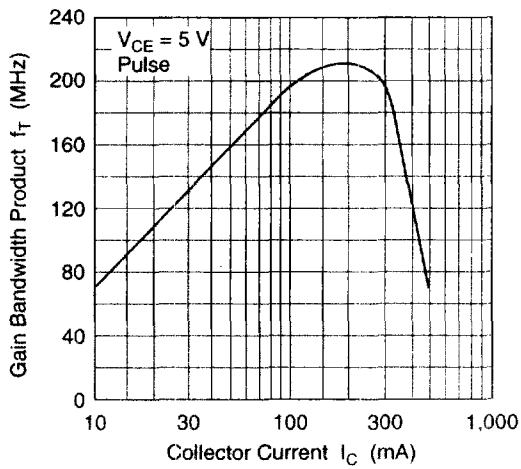
| Mark | DA | DB | DC |
|-----------|-----------|------------|------------|
| h_{FE1} | 60 to 120 | 100 to 200 | 160 to 320 |



Saturation Voltage vs. Collector Current



Gain Bandwidth Product vs. Collector Current



Collector Output Capacitance vs. Collector to Base Voltage

