

# 2SD768(K)

Silicon NPN Epitaxial

# HITACHI

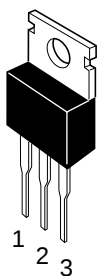
ADE-208-900 (Z)  
1st. Edition  
Sep. 2000

## Application

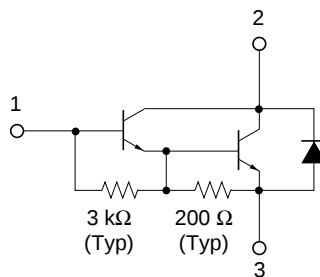
Medium speed and power switching complementary pair with 2SB727(K)

## Outline

TO-220AB



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



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

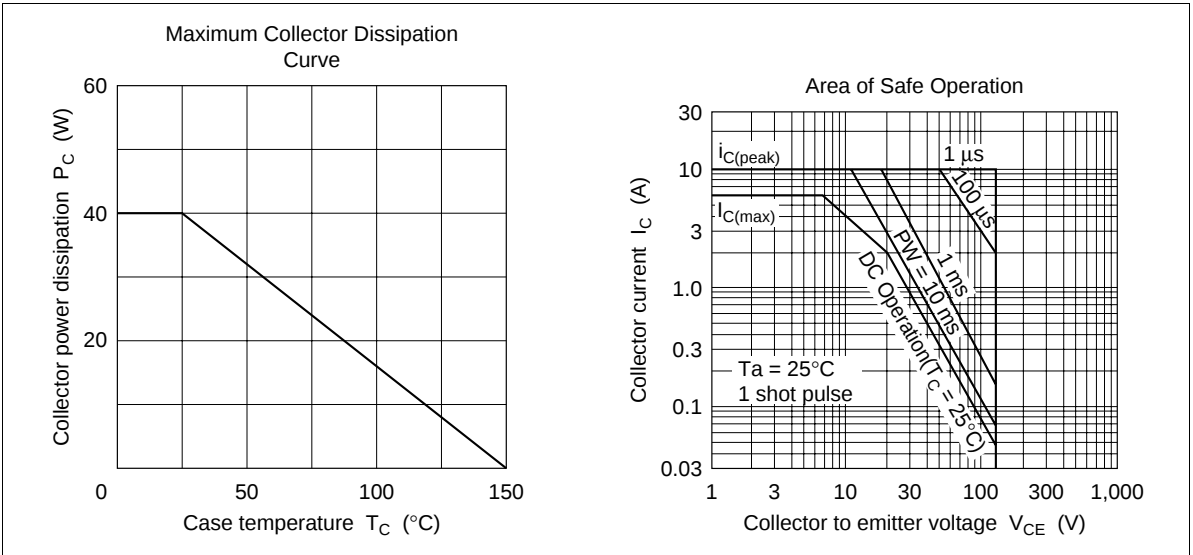
| Item                         | Symbol        | Ratings     | Unit |
|------------------------------|---------------|-------------|------|
| Collector to base voltage    | $V_{CBO}$     | 120         | V    |
| Collector to emitter voltage | $V_{CEO}$     | 120         | V    |
| Emitter to base voltage      | $V_{EBO}$     | 7           | V    |
| Collector current            | $I_C$         | 6           | A    |
| Collector peak current       | $I_{C(peak)}$ | 10          | A    |
| Collector power dissipation  | $P_C^{*1}$    | 40          | W    |
| Junction temperature         | $T_j$         | 150         | °C   |
| Storage temperature          | $T_{stg}$     | -55 to +150 | °C   |

Note: 1. Value at  $T_c = 25^\circ\text{C}$ .

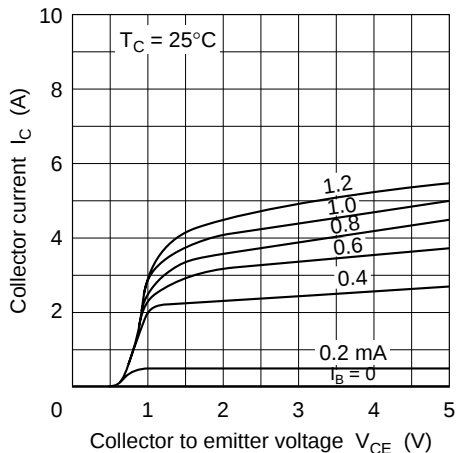
Electrical Characteristics (Ta = 25°C)

| Item                                    | Symbol         | Min  | Typ | Max   | Unit          | Test conditions                                       |
|-----------------------------------------|----------------|------|-----|-------|---------------|-------------------------------------------------------|
| Collector to emitter breakdown voltage  | $V_{(BR)CEO}$  | 120  | —   | —     | V             | $I_C = 25\text{ mA}$ , $R_{BE} = \infty$              |
| Emitter to base breakdown voltage       | $V_{(BR)EBO}$  | 7    | —   | —     | V             | $I_E = 50\text{ mA}$ , $I_C = 0$                      |
| Collector cutoff current                | $I_{CBO}$      | —    | —   | 100   | $\mu\text{A}$ | $V_{CB} = 120\text{ V}$ , $I_E = 0$                   |
|                                         | $I_{CEO}$      | —    | —   | 10    | $\mu\text{A}$ | $V_{CE} = 100\text{ V}$ , $R_{BE} = \infty$           |
| DC current transfer ratio               | $h_{FE}$       | 1000 | —   | 20000 |               | $V_{CE} = 3\text{ V}$ , $I_C = 3\text{ A}^{*1}$       |
| Collector to emitter saturation voltage | $V_{CE(sat)1}$ | —    | —   | 1.5   | V             | $I_C = 3\text{ A}$ , $I_B = 6\text{ mA}^{*1}$         |
|                                         | $V_{CE(sat)2}$ | —    | —   | 3     | V             | $I_C = 6\text{ A}$ , $I_B = 60\text{ mA}^{*1}$        |
| Base to emitter saturation voltage      | $V_{BE(sat)1}$ | —    | —   | 2     | V             | $I_C = 3\text{ A}$ , $I_B = 6\text{ mA}^{*1}$         |
|                                         | $V_{BE(sat)2}$ | —    | —   | 3.5   | V             | $I_C = 6\text{ A}$ , $I_B = 60\text{ mA}^{*1}$        |
| Turn on time                            | $t_{on}$       | —    | 1.0 | —     | $\mu\text{s}$ | $I_C = 3\text{ A}$ , $I_{B1} = -I_{B2} = 6\text{ mA}$ |
| Turn off time                           | $t_{off}$      | —    | 3.0 | —     | $\mu\text{s}$ | $I_C = 3\text{ A}$ , $I_{B1} = -I_{B2} = 6\text{ mA}$ |

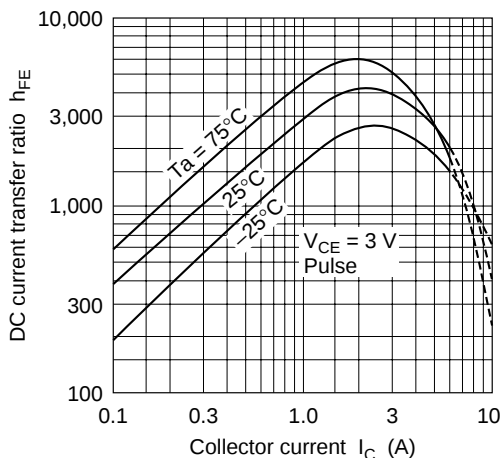
Note: 1. Pulse test.



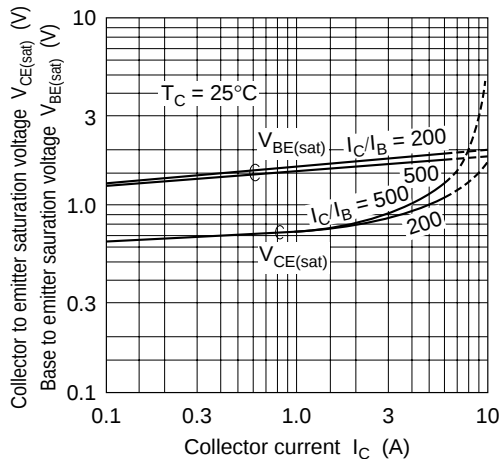
Typical Output Characteristics



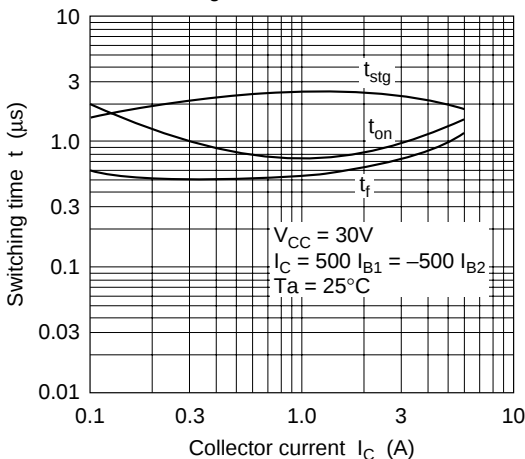
DC Current Transfer Ratio vs. Collector Current

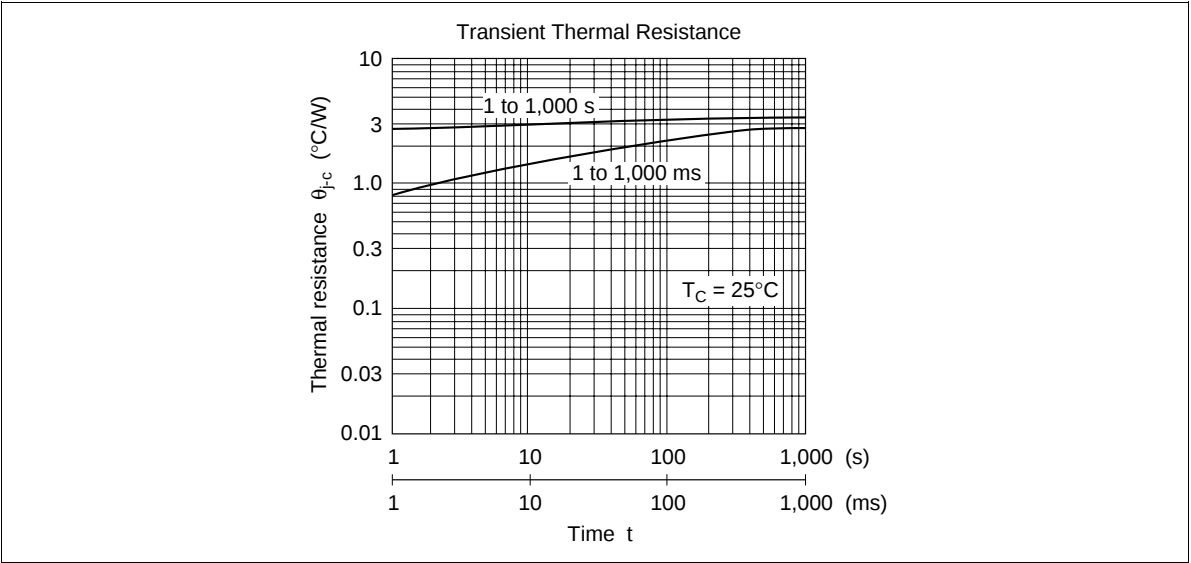


Saturation Voltage vs. Collector Current



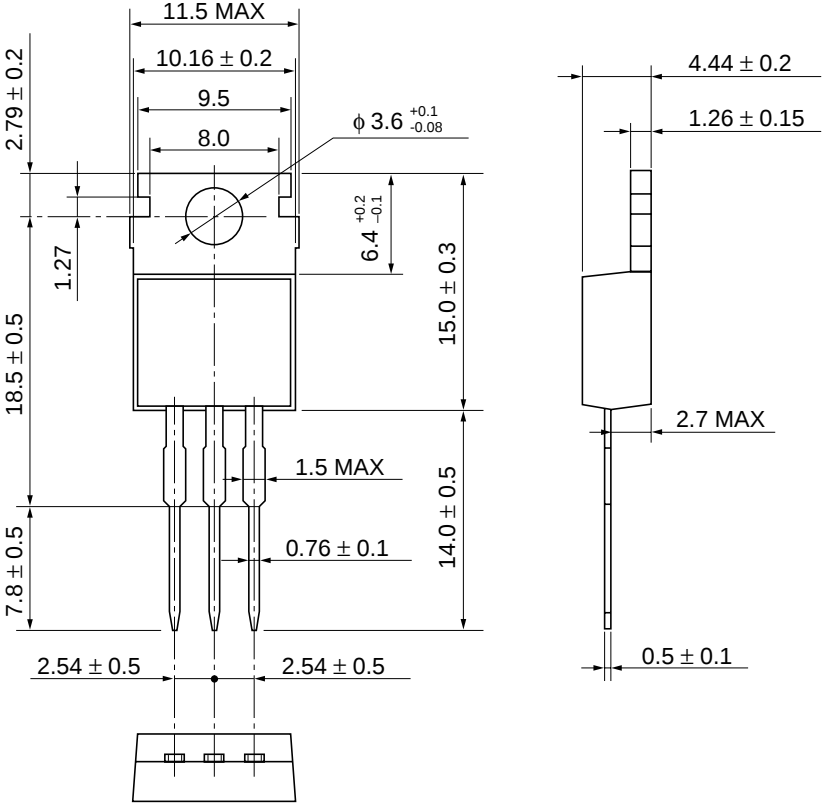
Switching Time vs. Collector Current





Package Dimensions

Unit: mm



|                        |          |
|------------------------|----------|
| Hitachi Code           | TO-220AB |
| JEDEC                  | Conforms |
| EIAJ                   | Conforms |
| Mass (reference value) | 1.8 g    |

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