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# 2SC4680

Silicon NPN Epitaxial

# HITACHI

ADE-208-1118A (Z)  
2nd. Edition  
Mar. 2001

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## Application

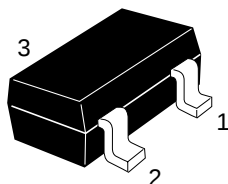
VHF / UHF high frequency switching

## Features

- Low  $R_{on}$  and high performance for RF switch.
- Capable of high density mounting.

## Outline

MPAK



1. Emitter
2. Base
3. Collector

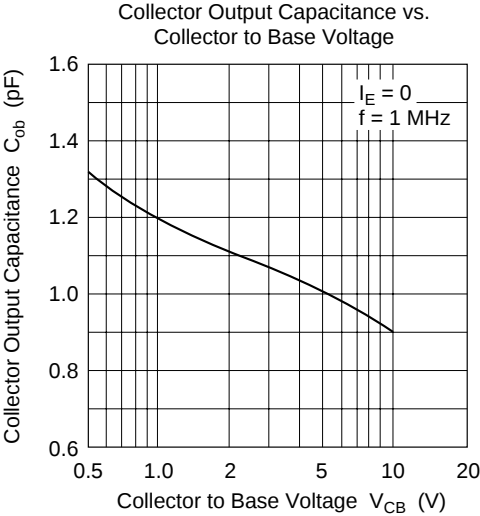
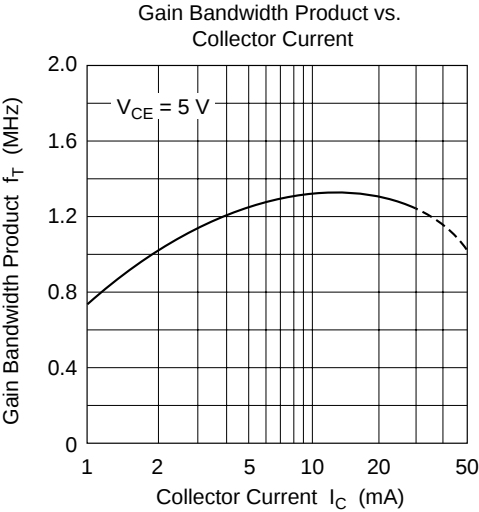
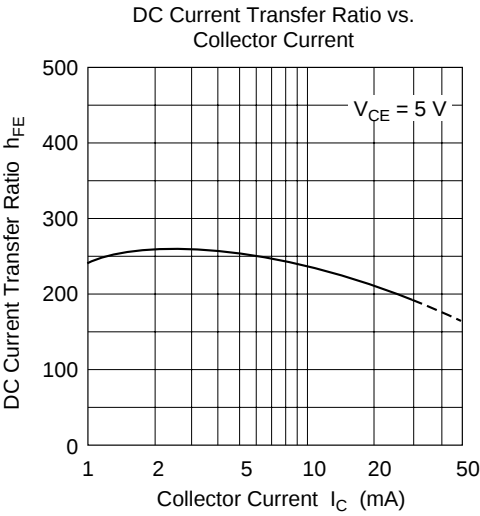
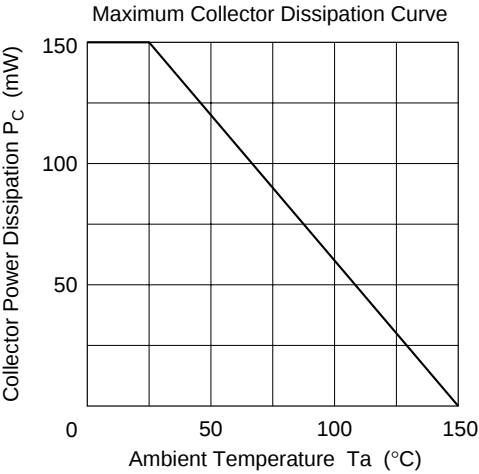
Note: Marking is "XU—".

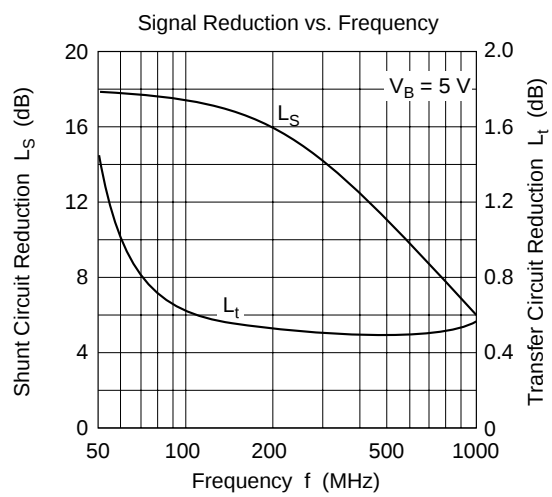
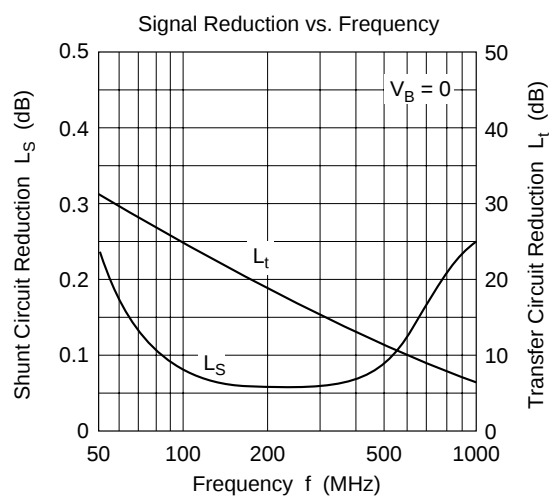
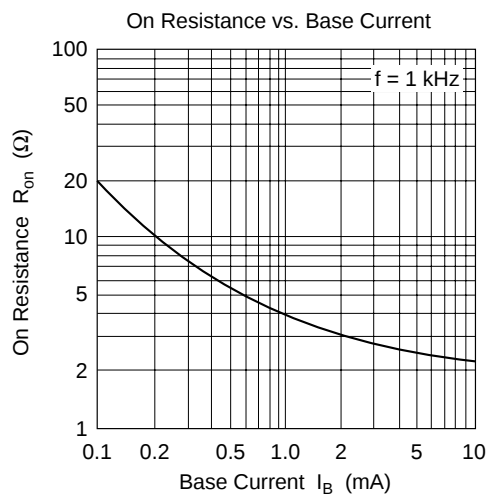
Absolute Maximum Ratings (Ta = 25°C)

| Item                         | Symbol    | Ratings     | Unit |
|------------------------------|-----------|-------------|------|
| Collector to base voltage    | $V_{CBO}$ | 12          | V    |
| Collector to emitter voltage | $V_{CEO}$ | 8           | V    |
| Emitter to base voltage      | $V_{EBO}$ | 3           | V    |
| Collector current            | $I_C$     | 50          | mA   |
| Collector power dissipation  | $P_C$     | 150         | mW   |
| Junction temperature         | $T_j$     | 150         | °C   |
| Storage temperature          | $T_{stg}$ | −55 to +150 | °C   |

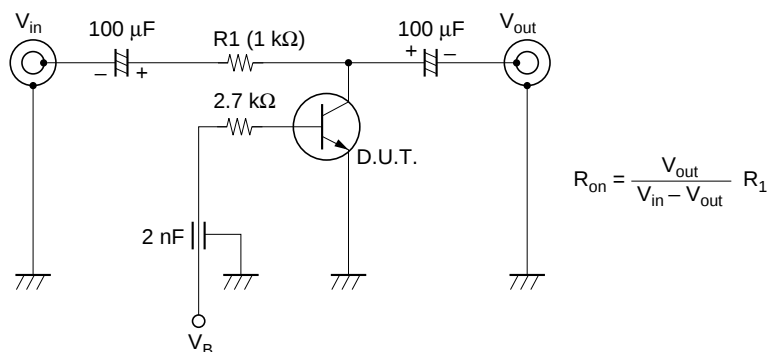
Electrical Characteristics (Ta = 25°C)

| Item                                    | Symbol        | Min | Typ | Max | Unit          | Test conditions                                        |
|-----------------------------------------|---------------|-----|-----|-----|---------------|--------------------------------------------------------|
| Collector to base breakdown voltage     | $V_{(BR)CBO}$ | 12  | —   | —   | V             | $I_C = 10\text{ }\mu\text{A}$ , $I_E = 0$              |
| Collector cutoff current                | $I_{CBO}$     | —   | —   | 10  | $\mu\text{A}$ | $V_{CB} = 12\text{ V}$ , $I_E = 0$                     |
|                                         | $I_{CEO}$     | —   | —   | 1   | mA            | $V_{CE} = 8\text{ V}$ , $R_{BE} = \infty$              |
| Emitter cutoff current                  | $I_{EBO}$     | —   | —   | 10  | $\mu\text{A}$ | $V_{EB} = 3\text{ V}$ , $I_C = 0$                      |
| Collector to emitter saturation voltage | $V_{CE(sat)}$ | —   | 70  | 100 | mV            | $I_C = 20\text{ mA}$ , $I_B = 4\text{ mA}$             |
| DC current transfer ratio               | $h_{FE}$      | 100 | 250 | —   |               | $V_{CE} = 5\text{ V}$ , $I_C = 5\text{ mA}$            |
| Collector output capacitance            | $C_{ob}$      | —   | 1.0 | 1.5 | pF            | $V_{CB} = 5\text{ V}$ , $I_E = 0$ , $f = 1\text{ MHz}$ |

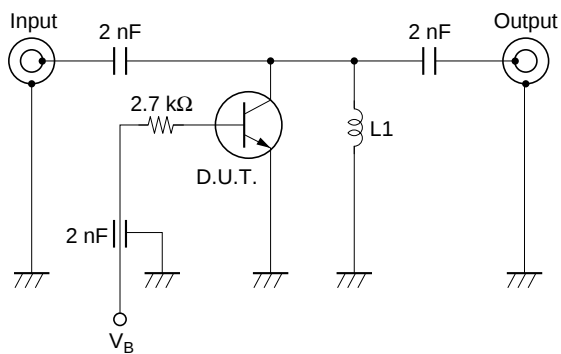




On Resistance Test Circuit

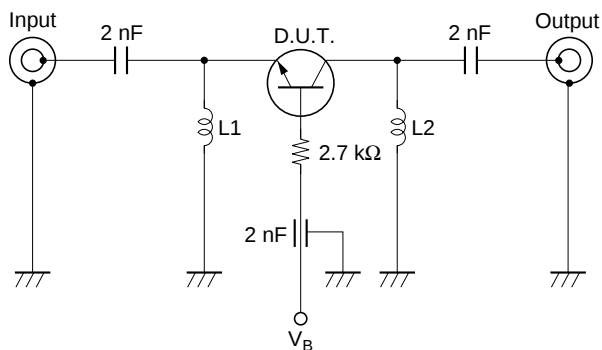


Reduction Test Circuit (Shunt Circuit)



$L_1$  : 3 mm inside dia,  $\phi 0.2$  mm enameled copper wire, 15 turns

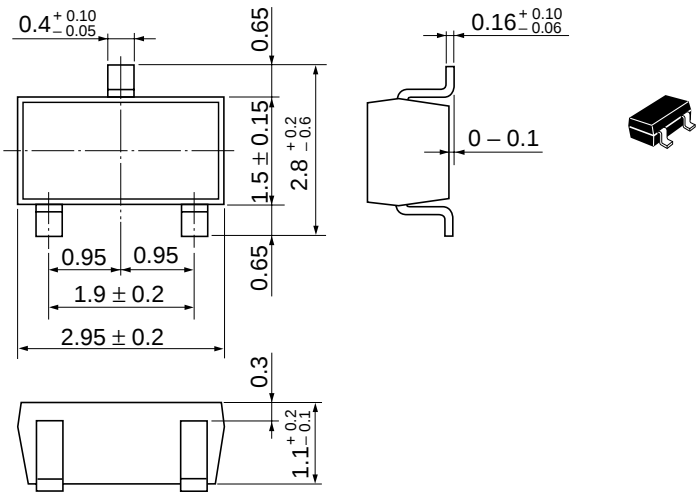
Reduction Test Circuit (Transfer Circuit)



$L_1, L_2$  : 3 mm inside dia,  $\phi 0.2$  mm enameled copper wire, 15 turns

Package Dimensions

As of January, 2001  
Unit: mm



|                        |          |
|------------------------|----------|
| Hitachi Code           | MPAK     |
| JEDEC                  | —        |
| EIAJ                   | Conforms |
| Mass (reference value) | 0.011 g  |

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