

# 2SA0838 (2SA838)

Silicon PNP epitaxial planar type

For low-frequency amplification

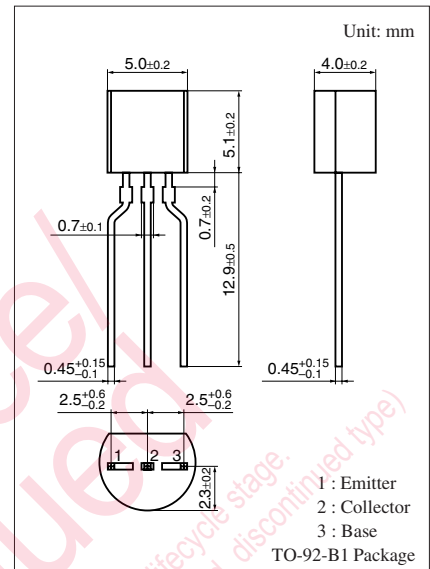
Complementary to 2SC1359

## ■ Features

- High transfer ratio  $f_T$

## ■ Absolute Maximum Ratings $T_a = 25^\circ\text{C}$

| Parameter                             | Symbol    | Rating      | Unit             |
|---------------------------------------|-----------|-------------|------------------|
| Collector-base voltage (Emitter open) | $V_{CBO}$ | -30         | V                |
| Collector-emitter voltage (Base open) | $V_{CEO}$ | -20         | V                |
| Emitter-base voltage (Collector open) | $V_{EBO}$ | -5          | V                |
| Collector current                     | $I_C$     | -30         | mA               |
| Collector power dissipation           | $P_C$     | 250         | mW               |
| Junction temperature                  | $T_j$     | 150         | $^\circ\text{C}$ |
| Storage temperature                   | $T_{stg}$ | -55 to +150 | $^\circ\text{C}$ |



## ■ Electrical Characteristics $T_a = 25^\circ\text{C} \pm 3^\circ\text{C}$

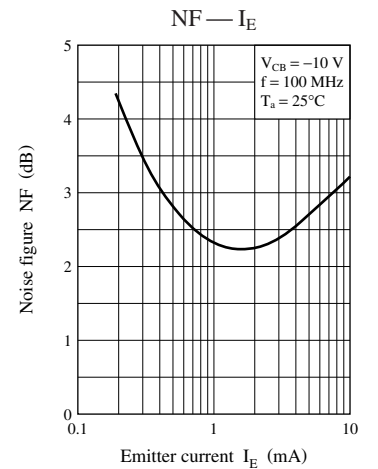
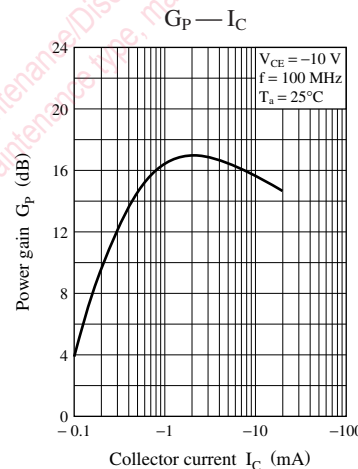
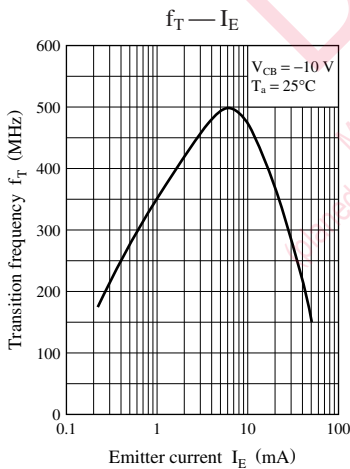
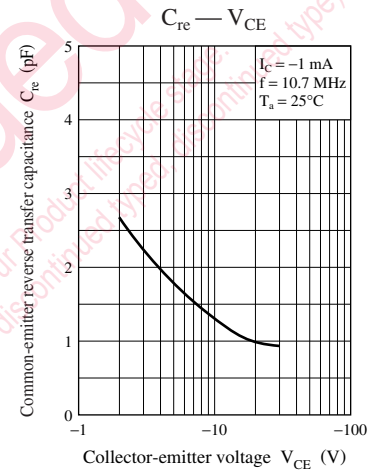
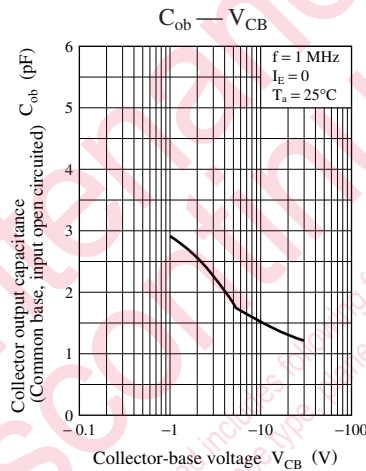
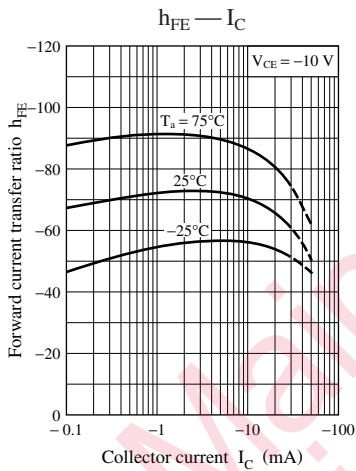
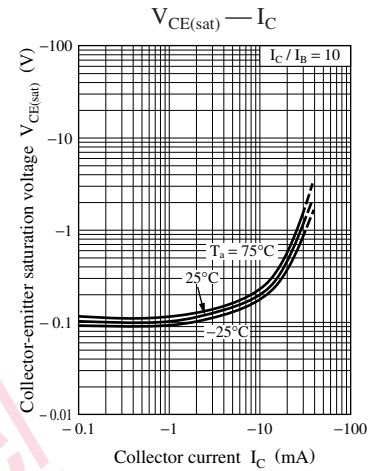
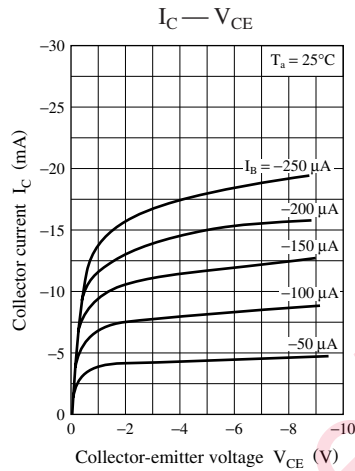
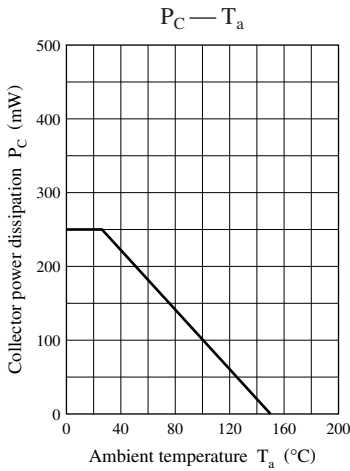
| Parameter                                     | Symbol        | Conditions   | Min | Typ  | Max  | Unit          |
|---|---------------|--|-----|------|------|---------------|
| Base-emitter saturation voltage               | $V_{BE}$      | $V_{CE} = -10\text{ V}, I_C = -1\text{ mA}$                      |     | -0.7 |      | V             |
| Collector-base cutoff current (Emitter open)  | $I_{CBO}$     | $V_{CB} = -10\text{ V}, I_E = 0$                                 |     |      | -0.1 | $\mu\text{A}$ |
| Collector-emitter cutoff current (Base open)  | $I_{CEO}$     | $V_{CE} = -20\text{ V}, I_B = 0$                                 |     |      | -100 | $\mu\text{A}$ |
| Emitter-base cutoff current (Collector open)  | $I_{EBO}$     | $V_{EB} = -5\text{ V}, I_C = 0$                                  |     |      | -10  | $\mu\text{A}$ |
| Forward current transfer ratio *              | $h_{FE}$      | $V_{CE} = -10\text{ V}, I_C = -1\text{ mA}$                      | 70  |      | 220  | —             |
| Collector-emitter saturation voltage          | $V_{CE(sat)}$ | $I_C = -10\text{ mA}, I_B = -1\text{ mA}$                        |     | -0.1 |      | V             |
| Transition frequency                          | $f_T$         | $V_{CB} = -10\text{ V}, I_E = 1\text{ mA}, f = 200\text{ MHz}$   | 150 | 300  |      | MHz           |
| Noise figure                                  | NF            | $V_{CB} = -10\text{ V}, I_E = 1\text{ mA}, f = 5\text{ MHz}$     |     | 2.8  | 4.0  | dB            |
| Reverse transfer impedance                    | $Z_{rb}$      | $V_{CE} = -10\text{ V}, I_C = -1\text{ mA}, f = 2\text{ MHz}$    |     | 22   | 50   | $\Omega$      |
| Reverse transfer capacitance (Common-emitter) | $C_{re}$      | $V_{CE} = -10\text{ V}, I_C = -1\text{ mA}, f = 10.7\text{ MHz}$ |     | 1.2  | 2.0  | pF            |

Note) 1. Measuring methods are based on JAPANESE INDUSTRIAL STANDARD JIS C 7030 measuring methods for transistors.

2. \*: Rank classification

| Rank     | B         | C          |
|----------|-----------|------------|
| $h_{FE}$ | 70 to 140 | 110 to 220 |

Note) The part number in the parenthesis shows conventional part number.



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