

# 2SA0963 (2SA963)

Silicon PNP epitaxial planar type

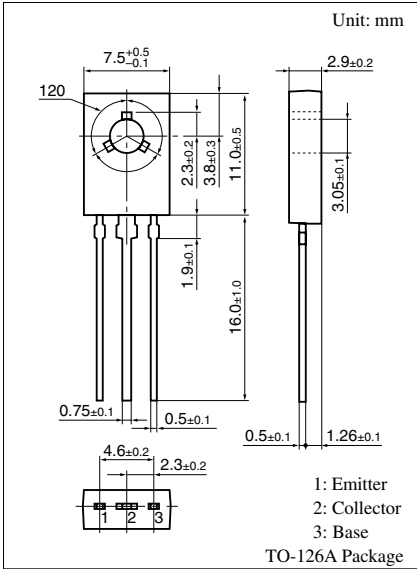
For low-frequency power amplification  
Complementary to 2SC2209

## ■ Features

- Large collector power dissipation  $P_C$
- Output of 4 W to 5 W can be obtained by a complementary pair with 2SC2209

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

| Parameter                                                | Symbol    | Rating      | Unit             |
|----------------------------------------------------------|-----------|-------------|------------------|
| Collector to base voltage                                | $V_{CBO}$ | -50         | V                |
| Collector to emitter voltage                             | $V_{CEO}$ | -40         | V                |
| Emitter to base voltage                                  | $V_{EBO}$ | -5          | V                |
| Peak collector current                                   | $I_{CP}$  | -3          | A                |
| Collector current                                        | $I_C$     | -1.5        | A                |
| Collector power dissipation ( $T_C = 25^\circ\text{C}$ ) | $P_C$     | 10          | W                |
| Junction temperature                                     | $T_j$     | 150         | $^\circ\text{C}$ |
| Storage temperature                                      | $T_{stg}$ | -55 to +150 | $^\circ\text{C}$ |



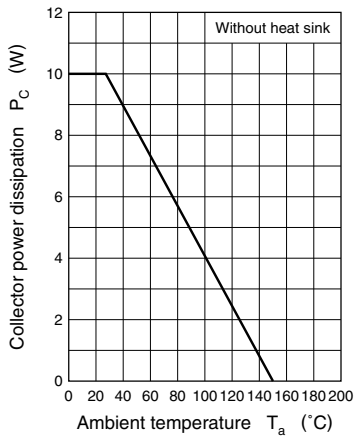
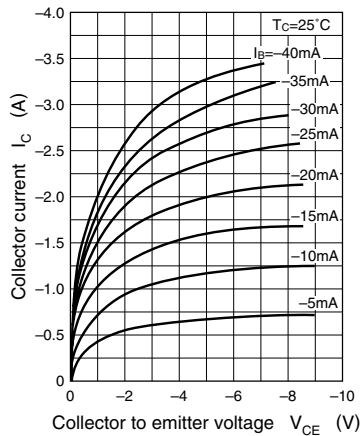
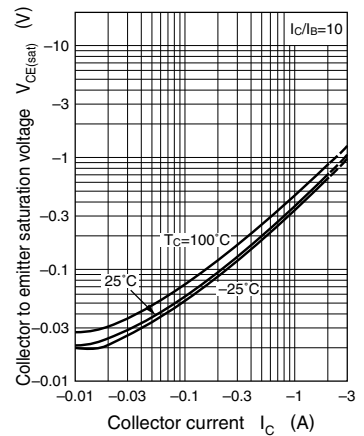
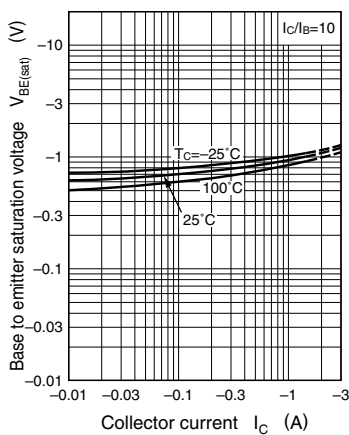
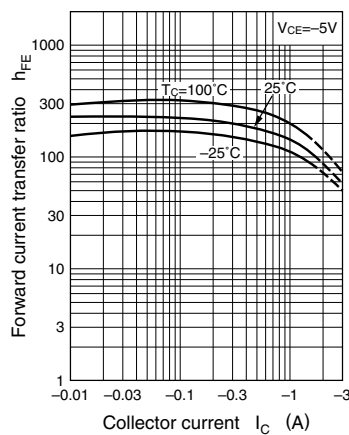
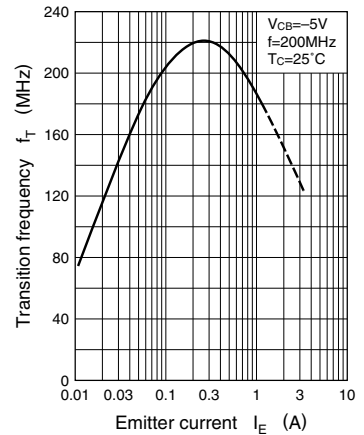
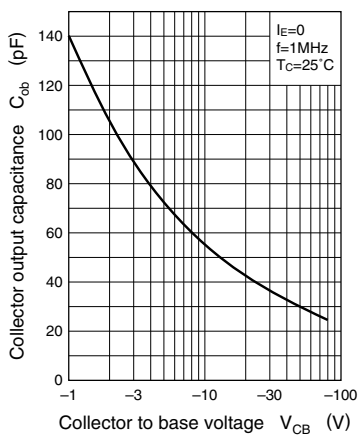
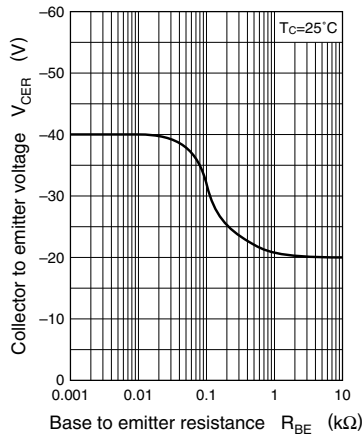
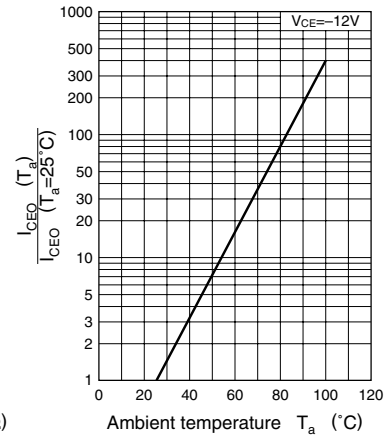
## ■ Electrical Characteristics $T_C = 25^\circ\text{C}$

| Parameter                               | Symbol        | Conditions                                                     | Min | Typ | Max  | Unit          |
|-----------------------------------------|---------------|----------------------------------------------------------------|-----|-----|------|---------------|
| Collector cutoff current                | $I_{CBO}$     | $V_{CB} = -20\text{ V}, I_E = 0$                               |     |     | -1   | $\mu\text{A}$ |
|                                         | $I_{CEO}$     | $V_{CE} = -10\text{ V}, I_B = 0$                               |     |     | -100 | $\mu\text{A}$ |
| Emitter cutoff current                  | $I_{EBO}$     | $V_{EB} = -5\text{ V}, I_C = 0$                                |     |     | -10  | $\mu\text{A}$ |
| Collector to base voltage               | $V_{CBO}$     | $I_C = -1\text{ mA}, I_E = 0$                                  | -50 |     |      | V             |
| Collector to emitter voltage            | $V_{CEO}$     | $I_C = -2\text{ mA}, I_B = 0$                                  | -40 |     |      | V             |
| Forward current transfer ratio *        | $h_{FE}$      | $V_{CE} = -5\text{ V}, I_C = -1\text{ A}$                      | 80  |     | 220  |               |
| Collector to emitter saturation voltage | $V_{CE(sat)}$ | $I_C = -1.5\text{ A}, I_B = -150\text{ mA}$                    |     |     | -1.0 | V             |
| Base to emitter saturation voltage      | $V_{BE(sat)}$ | $I_C = -2\text{ A}, I_B = -0.2\text{ A}$                       |     |     | -1.5 | V             |
| Transition frequency                    | $f_T$         | $V_{CB} = -5\text{ V}, I_E = 0.5\text{ A}, f = 200\text{ MHz}$ |     | 150 |      | MHz           |
| Collector output capacitance            | $C_{ob}$      | $V_{CB} = -5\text{ V}, I_E = 0, f = 1\text{ MHz}$              |     | 70  |      | pF            |

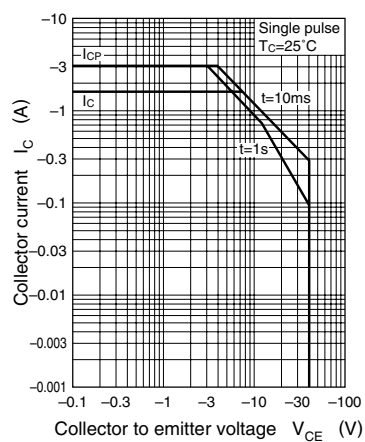
Note) \*: Rank classification

| Rank     | Q         | R          |
|----------|-----------|------------|
| $h_{FE}$ | 80 to 160 | 120 to 220 |

Note.) The Part number in the Parenthesis shows conventional part number.

$P_C - T_a$  $I_C - V_{CE}$  $V_{CE(sat)} - I_C$  $V_{BE(sat)} - I_C$  $h_{FE} - I_C$  $f_T - I_E$  $C_{ob} - V_{CB}$  $V_{CER} - R_{BE}$  $I_{CEO} - T_a$ 

Area of safe operation (ASO)



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