

# For audio amplifier output stages / TV velocity modulation (−160V, −1.5A)

## 2SA1964

### ●Features

- 1) Flat DC current gain characteristics.
- 2) High breakdown voltage. ( $BV_{CEO} = -160V$ )
- 3) High transition frequency, typically  $f_T = 150MHz$
- 4) Wide SOA (safe operating area).
- 5) Complements the 2SC5248.

### ●Packaging specifications and hFE

|                              |          |
|------------------------------|----------|
| Type                         | 2SA1964  |
| Package                      | TO-220FP |
| hFE                          | DE       |
| Code                         | —        |
| Basic ordering unit (pieces) | 500      |

### ●Absolute maximum ratings (Ta=25°C)

| Parameter                   | Symbol    | Limits   | Unit        |
|-----------------------------|-----------|----------|-------------|
| Collector-base voltage      | $V_{CBO}$ | −160     | V           |
| Collector-emitter voltage   | $V_{CEO}$ | −160     | V           |
| Emitter-base voltage        | $V_{EBO}$ | −5       | V           |
| Collector current           | $I_C$     | −1.5     | A           |
| Collector power dissipation | $P_C$     | 2        | W           |
|                             |           | 20       | W (Tc=25°C) |
| Junction temperature        | $T_J$     | 150      | °C          |
| Storage temperature         | $T_{stg}$ | −55~+150 | °C          |

### ●Electrical characteristics (Ta=25°C)

| Parameter                            | Symbol        | Min. | Typ. | Max. | Unit    | Conditions                               |
|--------------------------------------|---------------|------|------|------|---------|------------------------------------------|
| Collector-emitter breakdown voltage  | $BV_{CEO}$    | −160 | —    | —    | V       | $I_C = -1mA$                             |
| Collector-base breakdown voltage     | $BV_{CBO}$    | −160 | —    | —    | V       | $I_C = -50\mu A$                         |
| Emitter-base breakdown voltage       | $BV_{EBO}$    | −5   | —    | —    | V       | $I_E = -50\mu A$                         |
| Collector cutoff current             | $I_{CBO}$     | —    | —    | −1   | $\mu A$ | $V_{CB} = -160V$                         |
| Emitter cutoff current               | $I_{EBO}$     | —    | —    | −1   | $\mu A$ | $V_{EB} = -4V$                           |
| Collector-emitter saturation voltage | $V_{CE(sat)}$ | —    | —    | −1   | V       | $I_C/I_E = -1A/-0.1A$                    |
| DC current transfer ratio            | hFE           | 60   | —    | 200  | —       | $V_{CE} = -5V, I_C = -0.1A$              |
| Transition frequency                 | $f_T$         | —    | 150  | —    | MHz     | $V_{CE} = -10V, I_E = -0.2A, f = 100MHz$ |
| Output capacitance                   | $C_{ob}$      | —    | 35   | —    | pF      | $V_{CB} = -10V, I_C = 0A, f = 1MHz$      |

(SPEC-A315)

# For audio amplifier output stages / TV velocity modulation (160V, 1.5A)

## 2SC5248

### ●Features

- 1) Flat DC current gain characteristics.
- 2) High breakdown voltage. ( $BV_{CEO} = 160V$ )
- 3) High transition frequency, typically  $f_T = 150MHz$
- 4) Wide SOA (safe operating area).
- 5) Complements the 2SA1964.

### ●Packaging specifications and hFE

|                              |          |
|------------------------------|----------|
| Type                         | 2SC5248  |
| Package                      | TO-220FP |
| hFE                          | DE       |
| Code                         | —        |
| Basic ordering unit (pieces) | 500      |

### ●Absolute maximum ratings (Ta=25°C)

| Parameter                   | Symbol    | Limits   | Unit        |
|-----------------------------|-----------|----------|-------------|
| Collector-base voltage      | $V_{CBO}$ | 160      | V           |
| Collector-emitter voltage   | $V_{CEO}$ | 160      | V           |
| Emitter-base voltage        | $V_{EBO}$ | 5        | V           |
| Collector current           | $I_C$     | 1.5      | A           |
| Collector power dissipation | $P_C$     | 2        | W           |
|                             |           | 20       | W (Tc=25°C) |
| Junction temperature        | $T_J$     | 150      | °C          |
| Storage temperature         | $T_{stg}$ | −55~+150 | °C          |

### ●Electrical characteristics (Ta=25°C)

| Parameter                            | Symbol        | Min. | Typ. | Max. | Unit    | Conditions                             |
|--------------------------------------|---------------|------|------|------|---------|----------------------------------------|
| Collector-emitter breakdown voltage  | $BV_{CEO}$    | 160  | —    | —    | V       | $I_C = 1mA$                            |
| Collector-base breakdown voltage     | $BV_{CBO}$    | 160  | —    | —    | V       | $I_C = 50\mu A$                        |
| Emitter-base breakdown voltage       | $BV_{EBO}$    | 5    | —    | —    | V       | $I_E = 50\mu A$                        |
| Collector cutoff current             | $I_{CBO}$     | —    | —    | 1    | $\mu A$ | $V_{CB} = 160V$                        |
| Emitter cutoff current               | $I_{EBO}$     | —    | —    | 1    | $\mu A$ | $V_{EB} = 4V$                          |
| Collector-emitter saturation voltage | $V_{CE(sat)}$ | —    | —    | 1    | V       | $I_C/I_E = 1A/0.1A$                    |
| DC current transfer ratio            | hFE           | 60   | —    | 200  | —       | $V_{CE} = 5V, I_C = 0.1A$              |
| Transition frequency                 | $f_T$         | —    | 150  | —    | MHz     | $V_{CE} = 10V, I_E = 0.2A, f = 100MHz$ |
| Output capacitance                   | $C_{ob}$      | —    | 20   | —    | pF      | $V_{CB} = 10V, I_C = 0A, f = 1MHz$     |

(SPEC-C315)