

## Power Transistor (120V, 7A)

## 2SD1957

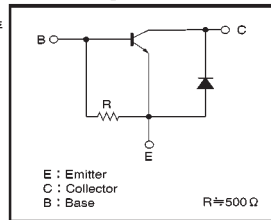
## ●Features

- 1) High DC current gain. (160~500)
- 2) Low saturation voltage, typically  $V_{CE(sat)} = 0.2V$  at  $I_C / I_B = 3A / 0.3A$ .
- 3)  $P_C = 30W$ . ( $T_C = 25^\circ C$ )
- 4) Wide SOA (safe operating area).
- 5) Built-in damper diode.

## ●Packaging specifications and hFE

|                              |          |
|------------------------------|----------|
| Type                         | 2SD1957  |
| Package                      | TO-220FP |
| hFE                          | FG       |
| Code                         | —        |
| Basic ordering unit (pieces) | 500      |

## ●Circuit diagram



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

| Parameter                            | Symbol        | Min. | Typ. | Max. | Unit    | Conditions                                    |
|--------------------------------------|---------------|------|------|------|---------|---|
| Collector-base breakdown voltage     | $BV_{CBO}$    | 120  | —    | —    | V       | $I_C = 50 \mu A$                              |
| Collector-emitter breakdown voltage  | $BV_{CEO}$    | 120  | —    | —    | V       | $I_C = 1mA$                                   |
| Emitter-base breakdown voltage       | $BV_{EBO}$    | 5    | —    | —    | V       | $I_E = 30mA$                                  |
| Collector cutoff current             | $I_{CBO}$     | —    | —    | 10   | $\mu A$ | $V_{CB} = 100V$                               |
| Emitter cutoff current               | $I_{EBO}$     | —    | —    | 20   | mA      | $V_{EB} = 4V$                                 |
| Collector-emitter saturation voltage | $V_{CE(sat)}$ | —    | 0.2  | 1    | V       | $I_C / I_B = 3A / 0.3A$ *                     |
| Base-emitter saturation voltage      | $V_{BE(sat)}$ | —    | 0.9  | 1.5  | V       | $I_C / I_B = 3A / 0.3A$ *                     |
| DC current transfer ratio            | hFE           | 160  | —    | 500  | —       | $V_{CE} / I_C = 5V / 1A$                      |
| Transition frequency                 | $f_T$         | —    | 40   | —    | MHz     | $V_{CE} = 5V$ , $I_E = -0.5A$ , $f = 10MHz$ * |
| Output capacitance                   | $C_{ob}$      | —    | 100  | —    | pF      | $V_{CB} = 10V$ , $I_E = 0A$ , $f = 1MHz$      |
| Diode forward current                | $V_{SCF}$     | —    | —    | 3    | V       | $I_D = 7A$ *                                  |

\* Measured using pulse current.

(94L-919-D301)

## Power Transistor (60V, 3A)

## 2SD2061

## ●Features

- 1) Low saturation voltage, typically  $V_{CE(sat)} = 0.3V$  at  $I_C / I_B = 2A / 0.2A$ .
- 2) Excellent DC current gain characteristics.
- 3)  $P_C = 30W$ . ( $T_C = 25^\circ C$ )
- 4) Wide SOA (safe operating area).

## ●Packaging specifications and hFE

|                              |          |
|------------------------------|----------|
| Type                         | 2SD2061  |
| Package                      | TO-220FP |
| hFE                          | EF       |
| Code                         | —        |
| Basic ordering unit (pieces) | 500      |

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

| Parameter                   | Symbol    | Limits     | Unit                     |
|-----------------------------|-----------|------------|--------------------------|
| Collector-base voltage      | $V_{CBO}$ | 80         | V                        |
| Collector-emitter voltage   | $V_{CEO}$ | 60         | V                        |
| Emitter-base voltage        | $V_{EBO}$ | 5          | V                        |
| Collector current           | $I_C$     | 3          | A (DC)                   |
|                             |           | 6          | A (Pulse) *              |
| Collector power dissipation | $P_C$     | 2          | W                        |
|                             |           | 30         | W ( $T_C = 25^\circ C$ ) |
| Junction temperature        | $T_J$     | 150        | $^\circ C$               |
| Storage temperature         | $T_{stg}$ | -55 ~ +150 | $^\circ C$               |

\* Single pulse  $P_w = 100ms$ 

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

| Parameter                            | Symbol        | Min. | Typ. | Max. | Unit    | Conditions                                   |
|--------------------------------------|---------------|------|------|------|---------|--|
| Collector-base breakdown voltage     | $BV_{CBO}$    | 80   | —    | —    | V       | $I_C = 50 \mu A$                             |
| Collector-emitter breakdown voltage  | $BV_{CEO}$    | 60   | —    | —    | V       | $I_C = 1mA$                                  |
| Emitter-base breakdown voltage       | $BV_{EBO}$    | 5    | —    | —    | V       | $I_E = 50 \mu A$                             |
| Collector cutoff current             | $I_{CBO}$     | —    | —    | 10   | $\mu A$ | $V_{CB} = 60V$                               |
| Emitter cutoff current               | $I_{EBO}$     | —    | —    | 10   | $\mu A$ | $V_{EB} = 4V$                                |
| Collector-emitter saturation voltage | $V_{CE(sat)}$ | —    | —    | 1    | V       | $I_C / I_B = 2A / 0.2A$ *                    |
| Base-emitter saturation voltage      | $V_{BE(sat)}$ | —    | —    | 1.5  | V       | $I_C / I_B = 2A / 0.2A$ *                    |
| DC current transfer ratio            | hFE           | 100  | —    | 320  | —       | $V_{CE} / I_C = 5V / 0.5A$                   |
| Transition frequency                 | $f_T$         | —    | 8    | —    | MHz     | $V_{CE} = 5V$ , $I_E = -0.5A$ , $f = 5MHz$ * |
| Output capacitance                   | $C_{ob}$      | —    | 70   | —    | pF      | $V_{CB} = 10V$ , $I_E = 0A$ , $f = 1MHz$     |

\* Measured using pulse current.

(94L-1016-D304)