

# Medium Power Transistor (−32V, −0.5A)

**2SA1036K / 2SA1577 / 2SA854S**

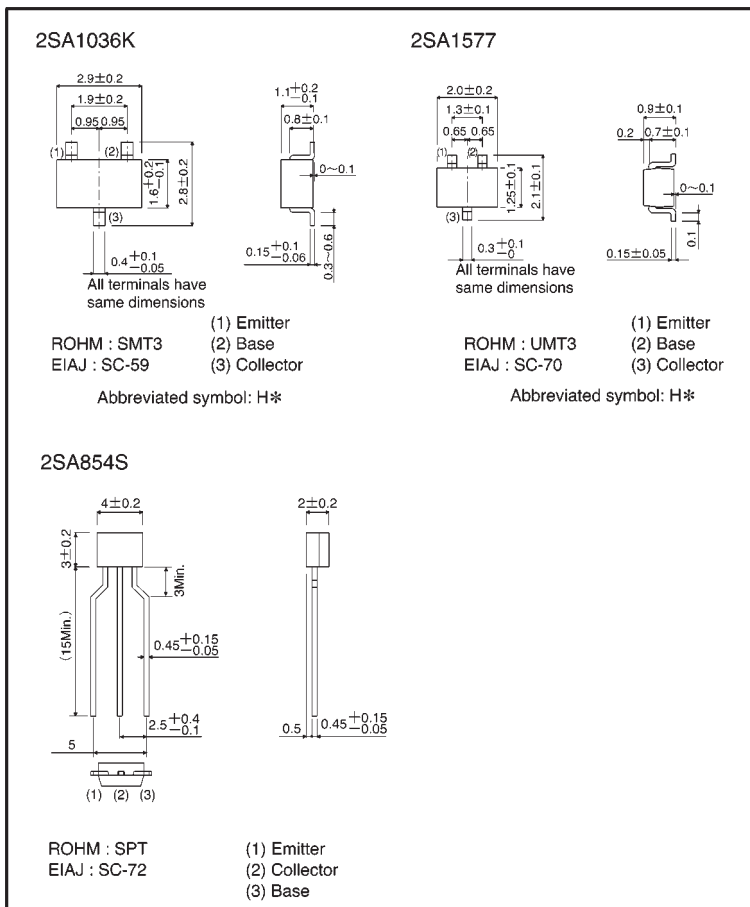
## ●Features

- 1) Large  $I_c$ .  
 $I_{cMax.} = -500mA$
- 2) Low  $V_{CE(sat)}$ . Ideal for low-voltage operation.
- 3) Complements the 2SC2411K / 2SC1741S / 2SC4097.

## ●Structure

Epitaxial planar type  
 PNP silicon transistor

## ●External dimensions (Units: mm)



\* Denotes hFE

●Absolute maximum ratings (Ta = 25°C)

| Parameter                   | Symbol           | Limits   | Unit |
|-----------------------------|------------------|----------|------|
| Collector-base voltage      | V <sub>CBO</sub> | −40      | V    |
| Collector-emitter voltage   | V <sub>CEO</sub> | −32      | V    |
| Emitter-base voltage        | V <sub>EBO</sub> | −5       | V    |
| Collector current           | I <sub>C</sub>   | −0.5     | A *  |
| Collector power dissipation | P <sub>C</sub>   | 0.2      | W    |
| Junction temperature        | T <sub>J</sub>   | 150      | °C   |
| Storage temperature         | T <sub>stg</sub> | −55~+150 | °C   |

\* P<sub>C</sub> MAX. must not be exceeded.

●Electrical characteristics (Ta = 25°C)

| Parameter                            |                   | Symbol               | Min. | Typ. | Max. | Unit | Conditions                                               |
|--------------------------------------|-------------------|----------------------|------|------|------|------|----------------------------------------------------------|
| Collector-base breakdown voltage     |                   | BV <sub>CBO</sub>    | −40  | —    | —    | V    | I <sub>C</sub> = −100 μA                                 |
| Collector-emitter breakdown voltage  |                   | BV <sub>CEO</sub>    | −32  | —    | —    | V    | I <sub>C</sub> = −1 mA                                   |
| Emitter-base breakdown voltage       |                   | BV <sub>EBO</sub>    | −5   | —    | —    | V    | I <sub>E</sub> = −100 μA                                 |
| Collector cutoff current             |                   | I <sub>CBO</sub>     | —    | —    | −1   | μA   | V <sub>CB</sub> = −20V                                   |
| Emitter cutoff current               |                   | I <sub>EBO</sub>     | —    | —    | −1   | μA   | V <sub>EB</sub> = −4V                                    |
| Collector-emitter saturation voltage |                   | V <sub>CE(sat)</sub> | —    | —    | −0.4 | V    | I <sub>C</sub> /I <sub>B</sub> = −100mA/−10mA            |
| DC current transfer ratio            | 2SA1036K, 2SA1577 | h <sub>FE</sub>      | 82   | —    | 390  | —    | V <sub>CE</sub> = −3V, I <sub>C</sub> = −10mA            |
|                                      | 2SA854S           |                      | 120  | —    | 390  | —    | I <sub>C</sub> /I <sub>B</sub> = −500mA/−50mA            |
| Transition frequency                 |                   | f <sub>T</sub>       | —    | 200  | —    | MHz  | V <sub>CE</sub> = −5V, I <sub>E</sub> = 20mA, f = 100MHz |
| Output capacitance                   | 2SA1036K, 2SA1577 | C <sub>ob</sub>      | —    | 7    | —    | pF   | V <sub>CB</sub> = −10V, I <sub>E</sub> = 0A, f = 1MHz    |
|                                      | 2SA854S           |                      | —    | 8    | —    | pF   |                                                          |

●Packaging specifications and h<sub>FE</sub>

| Type     | h <sub>FE</sub> | Package                      | Taping |      |      |
|----------|-----------------|------------------------------|--------|------|------|
|          |                 | Code                         | T146   | T106 | TP   |
|          |                 | Basic ordering unit (pieces) | 3000   | 3000 | 5000 |
| 2SA1036K | PQR             |                              | ○      | —    | —    |
| 2SA1577  | PQR             |                              | —      | ○    | —    |
| 2SA854S  | QR              |                              | —      | —    | ○    |

h<sub>FE</sub> values are classified as follows.

| Item            | P      | Q       | R       |
|-----------------|--------|---------|---------|
| h <sub>FE</sub> | 82~180 | 120~270 | 180~390 |

## ●Electrical characteristic curves

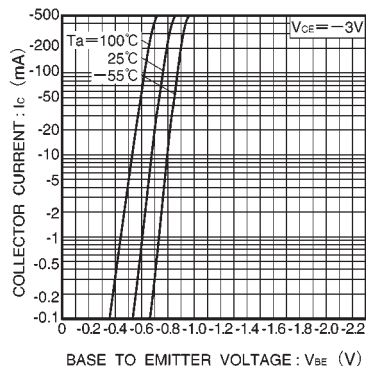


Fig.1 Grounded emitter propagation

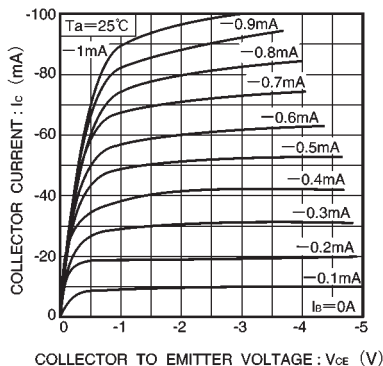


Fig.2 Grounded emitter output characteristics ( I )

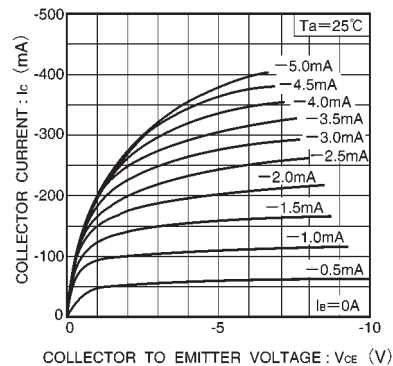


Fig.3 Grounded emitter output characteristics ( II )

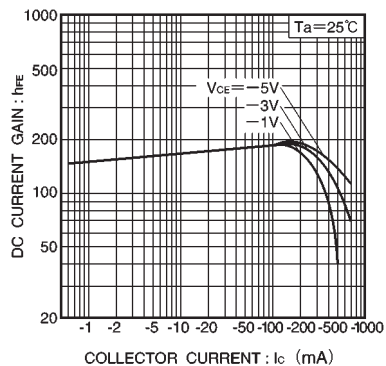


Fig.4 DC current gain vs. collector current ( I )

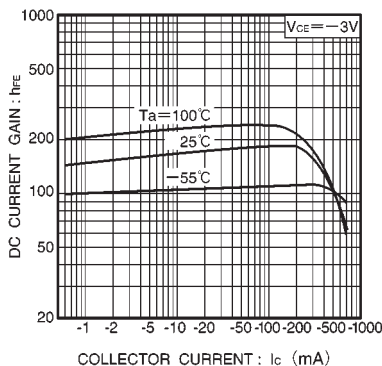


Fig.5 DC current gain vs. collector current ( II )

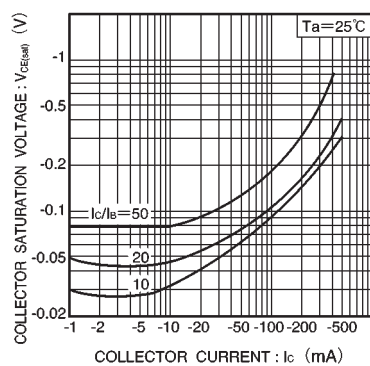


Fig.6 Collector-emitter saturation voltage vs. collector current ( I )

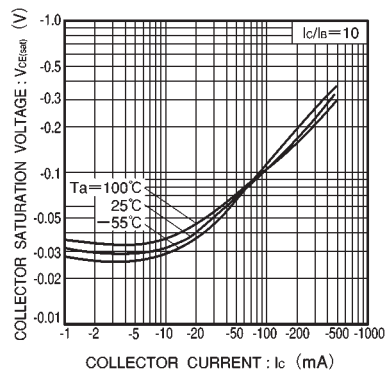


Fig.7 Collector-emitter saturation voltage vs. collector current ( II )

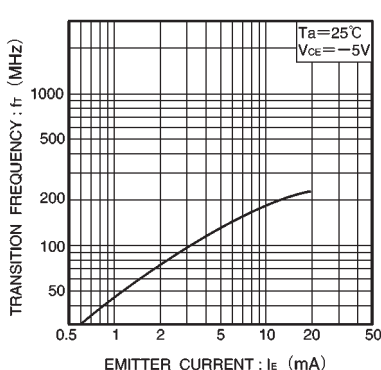


Fig.8 Gain bandwidth product vs. emitter current

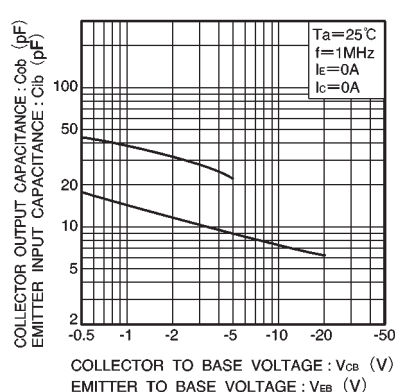


Fig.9 Collector output capacitance vs. collector-base voltage. Emitter input capacitance vs. emitter-base voltage