

# General purpose amplification (12V, 1.5A)

## 2SD2702

### ●Application

Low frequency amplifier

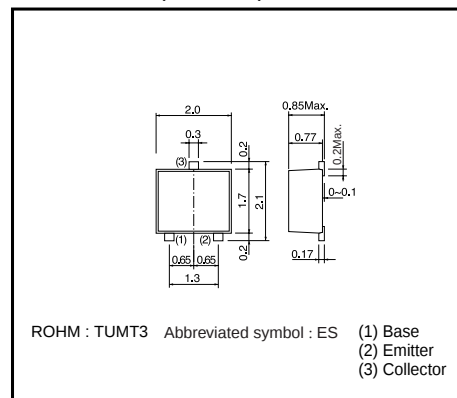
### ●Features

- 1) A collector current is large.
- 2) Collector saturation voltage is low.

$$V_{CE(sat)} \leq 200\text{mV}$$

at  $I_C = 500\text{mA}$  /  $I_B = 25\text{mA}$

### ●Dimensions (Unit : mm)



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

| Parameter                    | Symbol    | Limits      | Unit |
|------------------------------|-----------|-------------|------|
| Collector-base voltage       | $V_{CBO}$ | 15          | V    |
| Collector-emitter voltage    | $V_{CEO}$ | 12          | V    |
| Emitter-base voltage         | $V_{EBO}$ | 6           | V    |
| Collector current            | $I_C$     | 1.5         | A    |
|                              | $I_{CP}$  | 3           | A*1  |
| Power dissipation            | $P_C$     | 0.4         | W    |
|                              |           | 0.8*2       |      |
| Junction temperature         | $T_j$     | 150         | °C   |
| Range of storage temperature | $T_{stg}$ | -55 to +150 | °C   |

\*1 Single pulse,  $P_W=1\text{ms}$

\*2 Mounted on a  $25 \times 25 \times 0.8\text{mm}$  Ceramic substrate

### ●Packaging specifications

| Type    | Package                      | Taping |
|---------|------------------------------|--------|
|         | Code                         | TL     |
|         | Basic ordering unit (pieces) | 3000   |
| 2SD2702 |                              | ○      |

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

| Parameter                            | Symbol        | Min. | Typ. | Max. | Unit | Conditions                                                    |
|--------------------------------------|---------------|------|------|------|------|---------------------------------------------------------------|
| Collector-base breakdown voltage     | $BV_{CBO}$    | 15   | —    | —    | V    | $I_C=10\mu\text{A}$                                           |
| Collector-emitter breakdown voltage  | $BV_{CEO}$    | 12   | —    | —    | V    | $I_C=1\text{mA}$                                              |
| Emitter-base breakdown voltage       | $BV_{EBO}$    | 6    | —    | —    | V    | $I_E=10\mu\text{A}$                                           |
| Collector cutoff current             | $I_{CBO}$     | —    | —    | 100  | nA   | $V_{CB}=15\text{V}$                                           |
| Emitter cutoff current               | $I_{EBO}$     | —    | —    | 100  | nA   | $V_{EB}=6\text{V}$                                            |
| Collector-emitter saturation voltage | $V_{CE(sat)}$ | —    | 85   | 200  | mV   | $I_C/I_B=500\text{mA}/25\text{mA}$                            |
| DC current gain                      | $h_{FE}$      | 270  | —    | 680  | —    | $V_{CE}/I_C=2\text{V}/200\text{mA}$ *                         |
| Transition frequency                 | $f_T$         | —    | 400  | —    | MHz  | $V_{CE}=2\text{V}$ , $I_E=200\text{mA}$ , $f=100\text{MHz}$ * |
| Collector output capacitance         | $C_{ob}$      | —    | 12   | —    | pF   | $V_{CB}=10\text{V}$ , $I_E=0\text{A}$ , $f=1\text{MHz}$       |

\* Pulsed

## Transistors

## ●Electrical characteristic curves

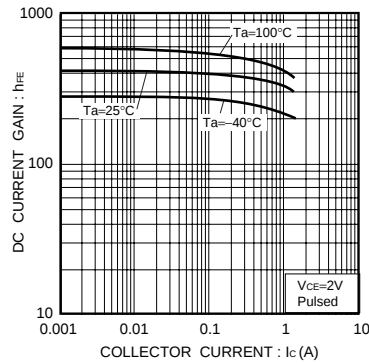


Fig.1 DC current gain vs. collector current

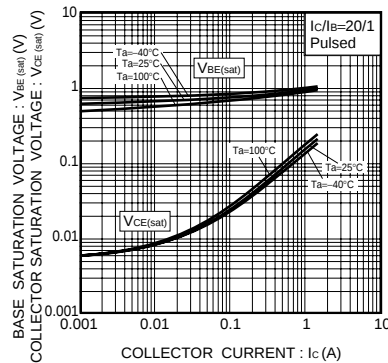


Fig.2 Collector-emitter saturation voltage vs. collector current

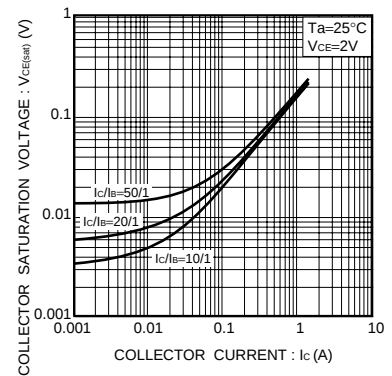


Fig.3 Collector-emitter saturation voltage vs. collector current

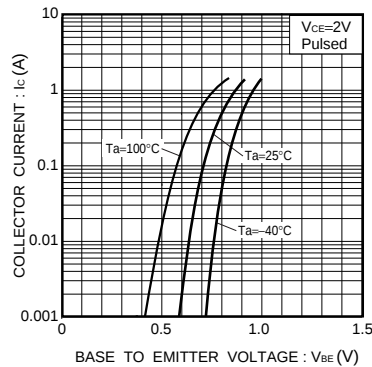


Fig.4 Grounded emitter propagation characteristics

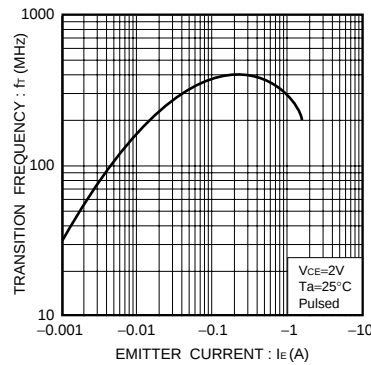


Fig.5 Gain bandwidth product vs. emitter current

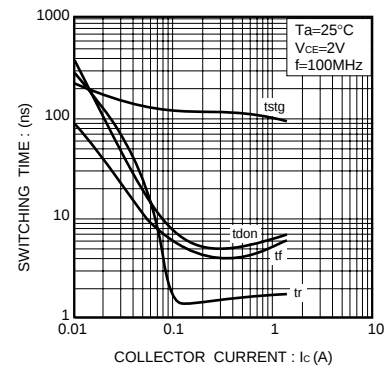
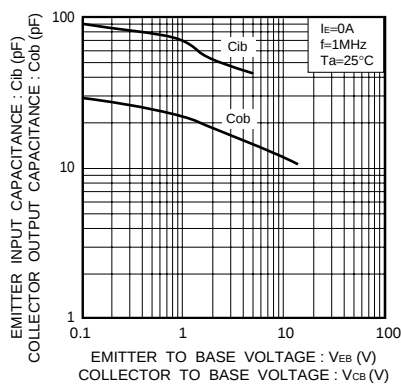


Fig.6 Switching time

Fig.7 Collector output capacitance vs. collector-base voltage  
Emitter input capacitance vs. emitter-base voltage

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