

# Low frequency amplifier

## 2SD2657K

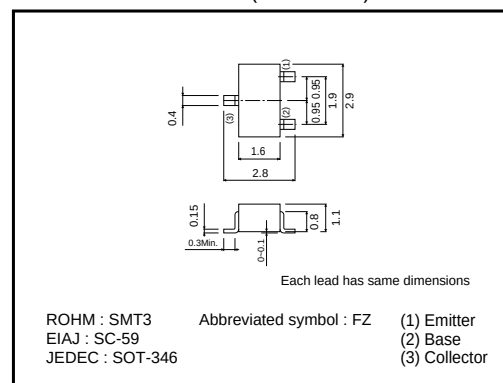
### ●Application

Low frequency amplifier  
Driver

### ●Features

- 1) A collector current is large.
- 2)  $V_{CE(sat)} \leq 350\text{mV}$   
At  $I_C = 1\text{A} / I_B = 50\text{mA}$

### ●External dimensions (Units : mm)



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

| Parameter                    | Symbol    | Limits   | Unit |
|------------------------------|-----------|----------|------|
| Collector-base voltage       | $V_{CBO}$ | 30       | V    |
| Collector-emitter voltage    | $V_{CEO}$ | 30       | V    |
| Emitter-base voltage         | $V_{EBO}$ | 6        | V    |
| Collector current            | $I_C$     | 1.5      | A    |
|                              | $I_{CP}$  | 3        | A *  |
| Power dissipation            | $P_C$     | 200      | mW   |
| Junction temperature         | $T_j$     | 150      | °C   |
| Range of storage temperature | $T_{stg}$ | -55~+150 | °C   |

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

### ●Packaging specifications

| Type     | Package                      | Taping |
|----------|------------------------------|--------|
|          | Code                         | T146   |
|          | Basic ordering unit (pieces) | 3000   |
| 2SD2657K |                              | ○      |

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

| Parameter                            | Symbol        | Min. | Typ. | Max. | Unit | Conditions                                               |
|--------------------------------------|---------------|------|------|------|------|----------------------------------------------------------|
| Collector-base breakdown voltage     | $BV_{CBO}$    | 30   | —    | —    | V    | $I_C=10\mu\text{A}$                                      |
| Collector-emitter breakdown voltage  | $BV_{CEO}$    | 30   | —    | —    | 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   | $V_{CB}=30\text{V}$                                      |
| Emitter cutoff current               | $I_{EBO}$     | —    | —    | 100  | nA   | $V_{EB}=6\text{V}$                                       |
| Collector-emitter saturation voltage | $V_{CE(sat)}$ | —    | 160  | 350  | mV   | $I_C=1\text{A}, I_B=50\text{mA}$                         |
| DC current gain                      | $h_{FE}$      | 270  | —    | 680  | —    | $V_{CE}=2\text{V}, I_C=100\text{mA}^*$                   |
| Transition frequency                 | $f_T$         | —    | 330  | —    | MHz  | $V_{CE}=2\text{V}, I_E=-100\text{mA}, f=100\text{MHz}^*$ |
| Corrector output capacitance         | $C_{ob}$      | —    | 11   | —    | pF   | $V_{CB}=10\text{V}, I_E=0\text{A}, f=1\text{MHz}$        |

\* Pulsed

## Transistors

## ●Electrical characteristic curves

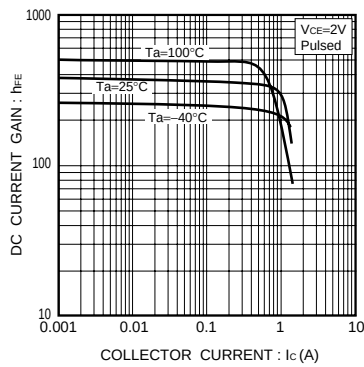


Fig.1 DC current gain vs. collector current

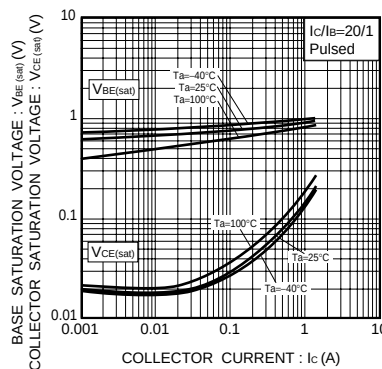


Fig.2 Collector-emitter saturation voltage vs. collector current

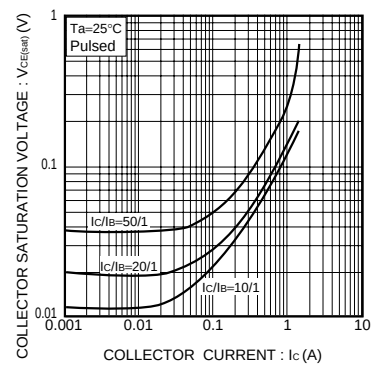


Fig.3 Collector-emitter saturation voltage vs. collector current

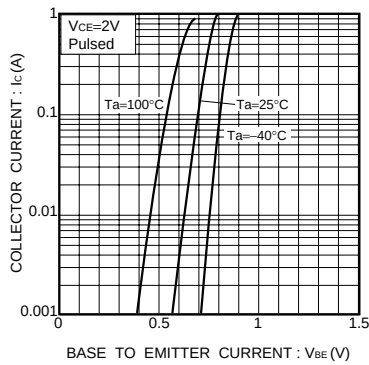


Fig.4 Grounded emitter propagation characteristics

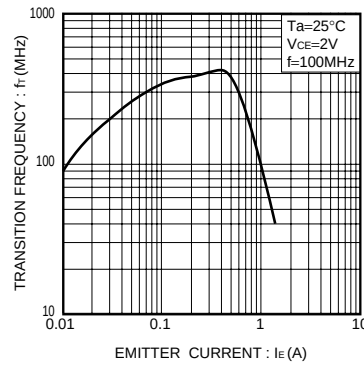


Fig.5 Gain bandwidth product vs. emitter current

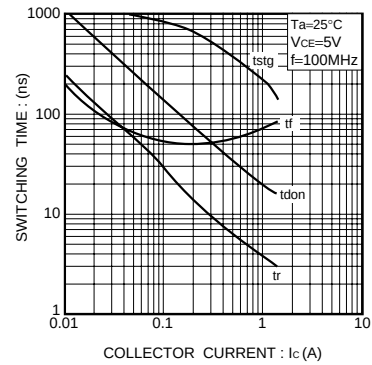


Fig.6 Switching time

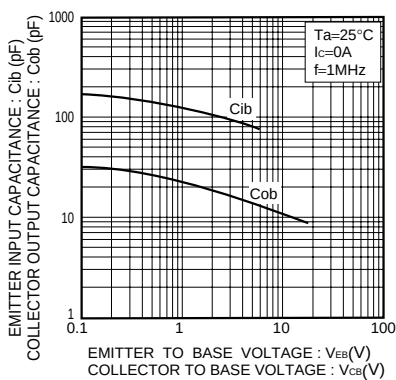
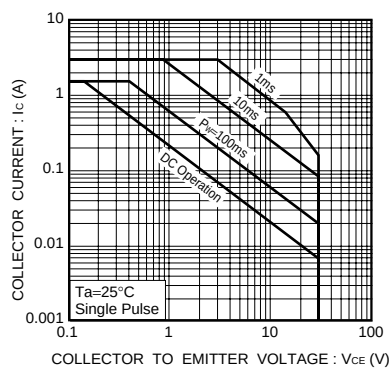
Fig.7 Collector output capacitance vs. collector-base voltage  
Emitter input capacitance vs. emitter-base voltage

Fig.8 Safe Operating Area

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