



SANYO Semiconductors

# DATA SHEET

An ON Semiconductor Company

## 15C01C — NPN Epitaxial Planar Silicon Transistor Low-Frequency General-Purpose Amplifier Applications

### Applications

- Low-frequency Amplifier, muting circuit

### Features

- Large current capacity
- Low collector-to-emitter saturation voltage (resistance)  $R_{CE(sat)}$  typ.= $0.58\Omega$  [ $I_C=0.7A$ ,  $I_B=35mA$ ]
- Ultrasmall package facilitates miniaturization in end products
- Small ON-resistance ( $R_{on}$ )

### Specifications

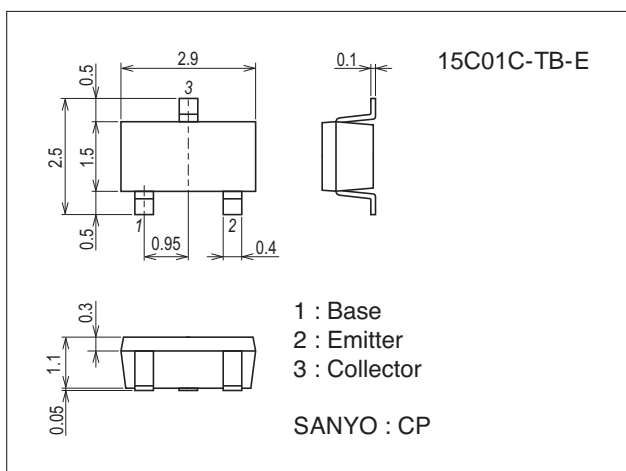
Absolute Maximum Ratings at  $T_a=25^\circ C$

| Parameter                    | Symbol    | Conditions                                   | Ratings     | Unit       |
|------------------------------|-----------|--|-------------|------------|
| Collector-to-Base Voltage    | VCBO      |  | 20          | V          |
| Collector-to-Emitter Voltage | VCEO      |  | 15          | V          |
| Emitter-to-Base Voltage      | VEBO      |  | 5           | V          |
| Collector Current            | $I_C$     |  | 700         | mA         |
| Collector Current (Pulse)    | $I_{CP}$  |  | 1.4         | A          |
| Collector Dissipation        | PC        | Mounted on a glass epoxy board (20×30×1.6mm) | 300         | mW         |
| Junction Temperature         | $T_j$     |  | 150         | $^\circ C$ |
| Storage Temperature          | $T_{stg}$ |  | -55 to +150 | $^\circ C$ |

### Package Dimensions

unit : mm (typ)

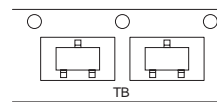
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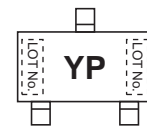
### Product & Package Information

- Package : CP
- JEITA, JEDEC : SC-59, TO-236, SOT-23, TO-236AB
- Minimum Packing Quantity : 3,000 pcs./reel

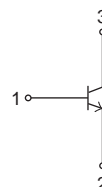
### Packing Type: TB



### Marking



### Electrical Connection

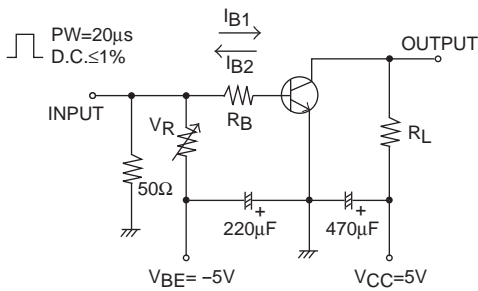


# 15C01C

## Electrical Characteristics at $T_a=25^\circ\text{C}$

| Parameter                               | Symbol        | Conditions                          | Ratings |     |     | Unit          |
|---|---------------|-------------------------------------|---------|-----|-----|---------------|
|   |               |                                     | min     | typ | max |               |
| Collector Cutoff Current                | $I_{CBO}$     | $V_{CB}=15\text{V}, I_E=0\text{A}$  |         |     | 0.1 | $\mu\text{A}$ |
| Emitter Cutoff Current                  | $I_{EBO}$     | $V_{EB}=4\text{V}, I_C=0\text{A}$   |         |     | 0.1 | $\mu\text{A}$ |
| DC Current Gain                         | $h_{FE}$      | $V_{CE}=2\text{V}, I_C=10\text{mA}$ | 300     |     | 800 |               |
| Gain-Bandwidth Product                  | $f_T$         | $V_{CE}=2\text{V}, I_C=50\text{mA}$ |         | 330 |     | MHz           |
| Output Capacitance                      | $C_{ob}$      | $V_{CB}=10\text{V}, f=1\text{MHz}$  |         | 3.2 |     | pF            |
| Collector-to-Emitter Saturation Voltage | $V_{CE(sat)}$ | $I_C=200\text{mA}, I_B=10\text{mA}$ |         | 150 | 300 | mV            |
| Base-to-Emitter Saturation Voltage      | $V_{BE(sat)}$ | $I_C=200\text{mA}, I_B=10\text{mA}$ |         | 0.9 | 1.2 | V             |
| Collector-to-Base Breakdown Voltage     | $V_{(BR)CBO}$ | $I_C=10\mu\text{A}, I_E=0\text{A}$  | 20      |     |     | V             |
| Collector-to-Emitter Breakdown Voltage  | $V_{(BR)CEO}$ | $I_C=1\text{mA}, R_{BE}=\infty$     | 15      |     |     | V             |
| Emitter-to-Base Breakdown Voltage       | $V_{(BR)EBO}$ | $I_E=10\mu\text{A}, I_C=0\text{A}$  | 5       |     |     | V             |
| Turn-On Time                            | $t_{on}$      | See specified Test Circuit.         |         | 30  |     | ns            |
| Storage Time                            | $t_{stg}$     |                                     |         | 77  |     | ns            |
| Fall Time                               | $t_f$         |                                     |         | 40  |     | ns            |

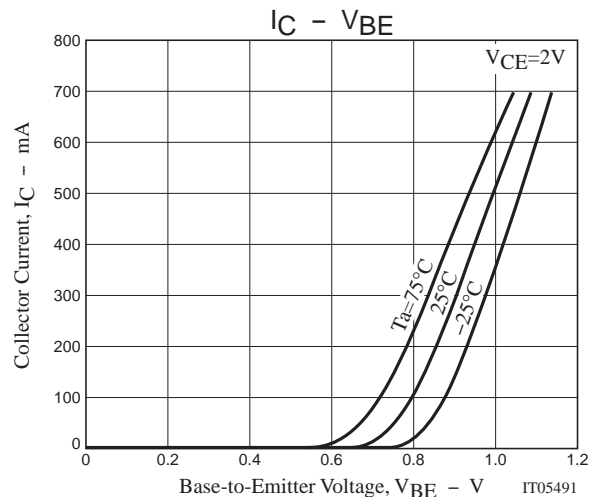
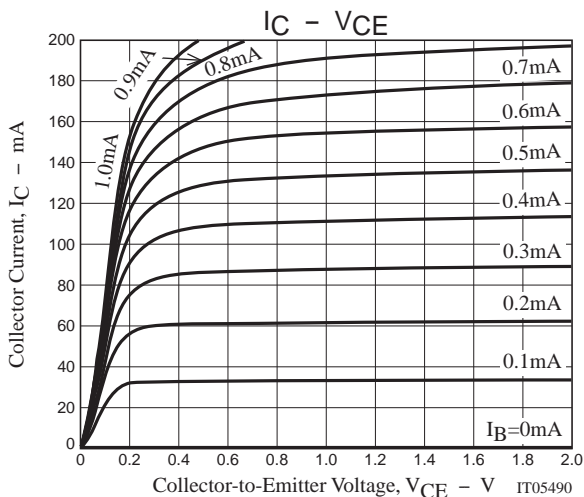
## Switching Time Test Circuit

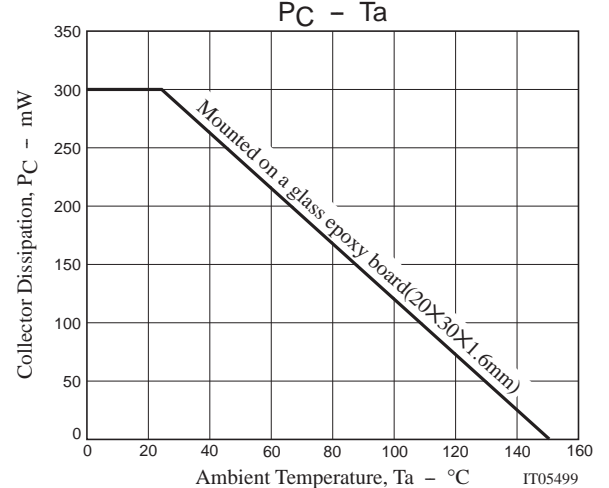
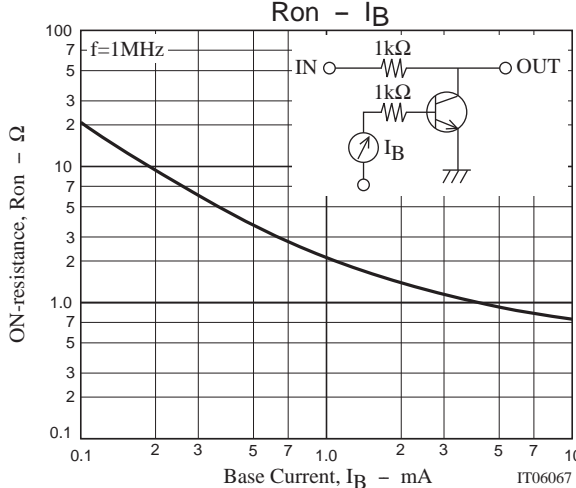
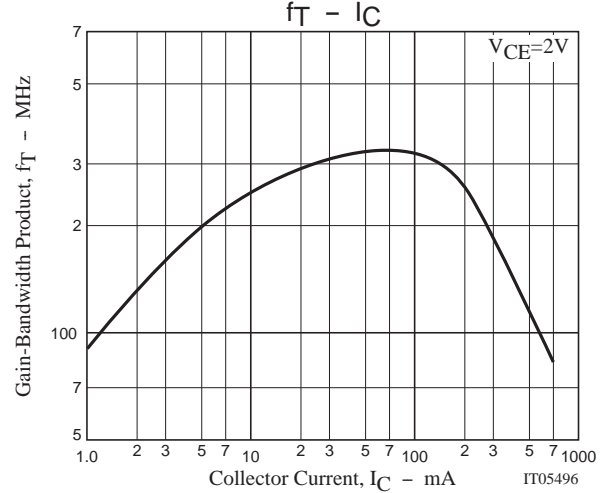
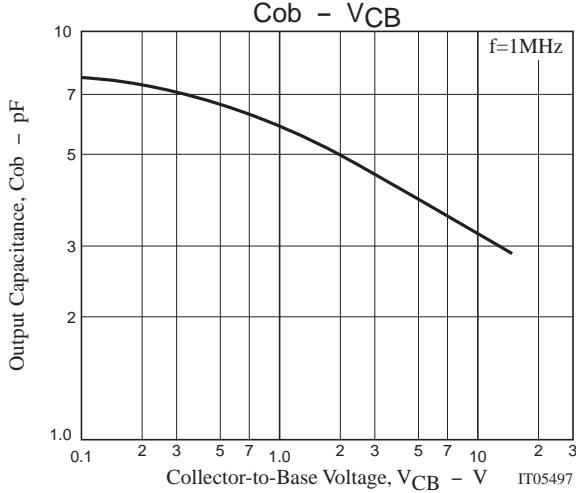
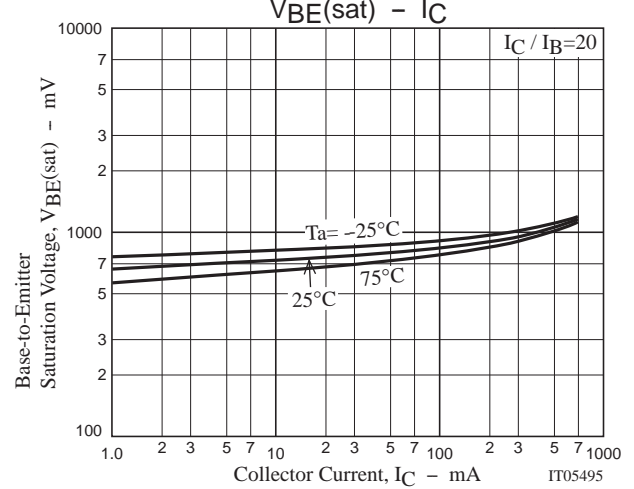
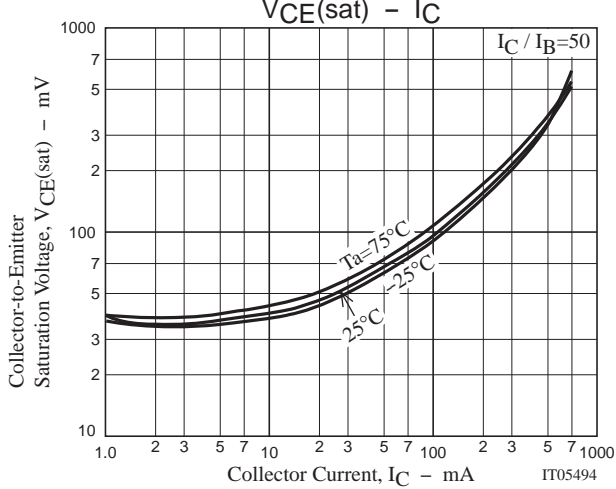
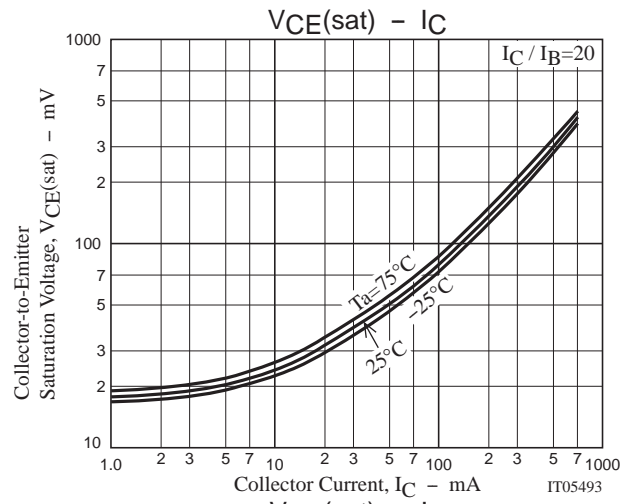
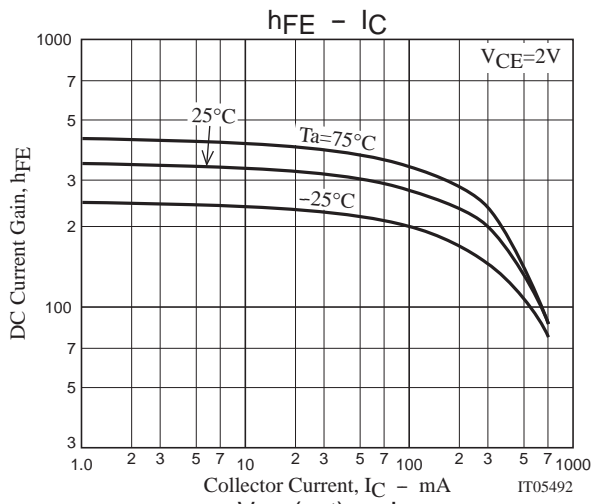


$$I_C = 20I_{B1} = -20I_{B2} = 500\text{mA}$$

## Ordering Information

| Device      | Package | Shipping       | memo    |
|-------------|---------|----------------|---------|
| 15C01C-TB-E | CP      | 3,000pcs./reel | Pb Free |





# 15C01C

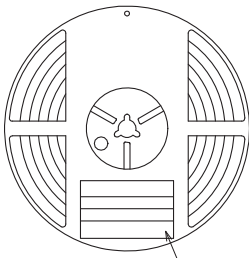
## Embossed Taping Specification

15C01C-TB-E

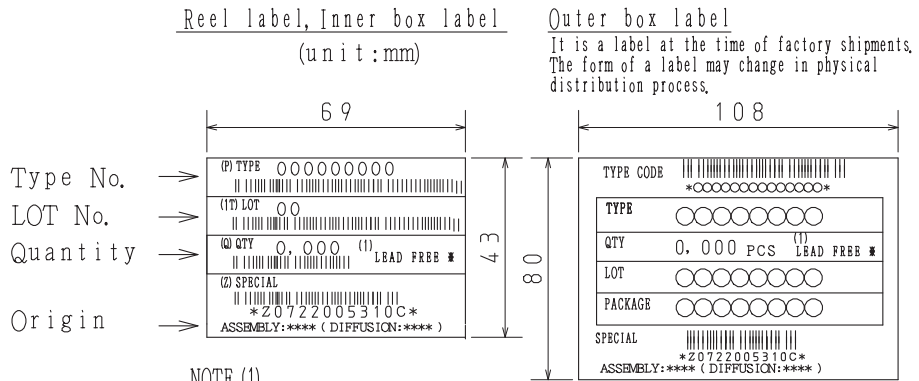
### 1. Packing Format

| Package Name | Carrier Tape Type | Maximum Number of devices contained (pcs) |           |           | Packing format  |  |
|--------------|-------------------|---|-----------|-----------|---|--|
|              |                   | Reel                                      | Inner box | Outer box | Inner BOX (C-1)   | Outer BOX (A-7)  |
| CP           | CP                | 3,000                                     | 15,000    | 90,000    | 5 reels contained<br>Dimensions:mm (external)<br>183×72×185 | 6 inner boxes contained<br>Dimensions:mm (external)<br>440×195×210 |

#### Packing method



Reel label



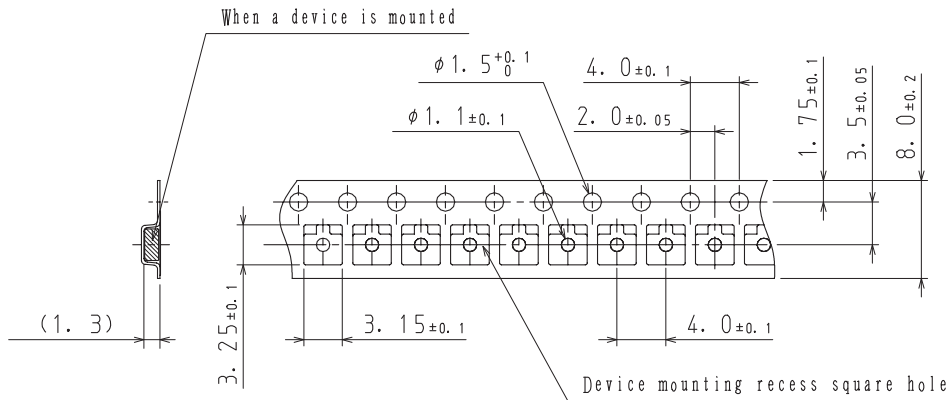
#### NOTE (1)

The LEAD FREE \* description shows that the surface treatment of the terminal is lead free.

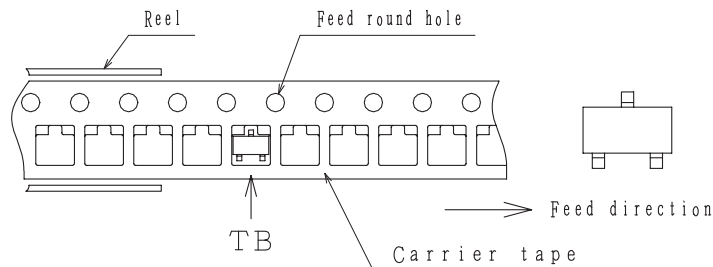
| Label       | JEITA Phase    |
|-------------|----------------|
| LEAD FREE 3 | JEITA Phase 3A |
| LEAD FREE 4 | JEITA Phase 3  |

### 2. Taping configuration

#### 2-1. Carrier tape size (unit:mm)



#### 2-2. Device placement direction

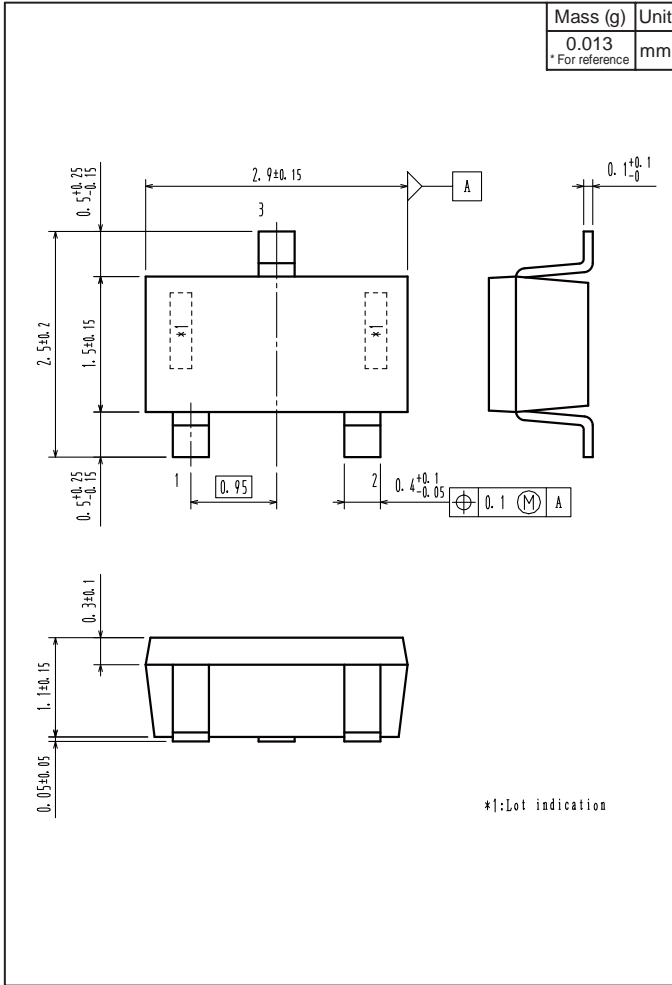


Those with one electrode terminal on the feed hole side.....TB

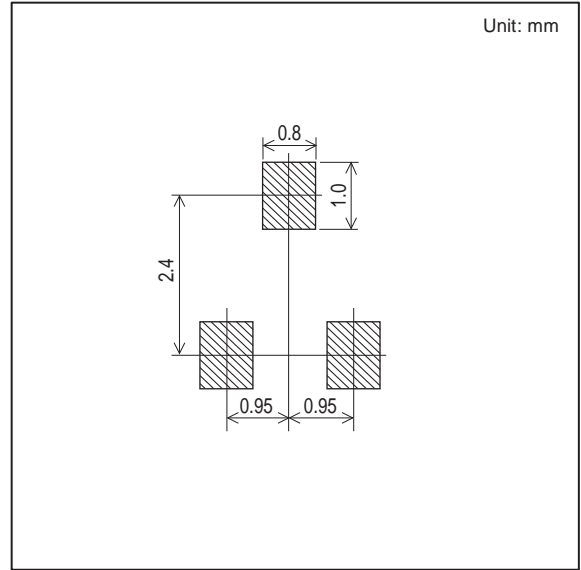
# 15C01C

## Outline Drawing

15C01C-TB-E



## Land Pattern Example



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