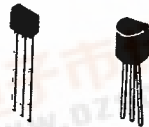


2SC930



2033 2003A

T-31-15  
T-31-17

NPN Epitaxial Planar  
Silicon Transistor

# AM Converter, FM RF · IF Amp Applications

©545E

The 2SC930 has two types of package: SPA and NP.

Use

- FM RF amp, mixer, OSC, converter, and IF amplifier.

| Absolute Maximum Ratings at Ta=25°C |                  | 2SC930SPA   | 2SC930NP    | unit |
|-------------------------------------|------------------|-------------|-------------|------|
| Collector to Base Voltage           | V <sub>CB0</sub> | 30          | 30          | V    |
| Collector to Emitter Voltage        | V <sub>CE0</sub> | 20          | 20          | V    |
| Emitter to Base Voltage             | V <sub>EB0</sub> | 5           | 5           | V    |
| Collector Current                   | I <sub>C</sub>   | 30          | 30          | mA   |
| Collector Dissipation               | P <sub>C</sub>   | 120         | 250         | mW   |
| Junction Temperature                | T <sub>j</sub>   | 125         | 125         | °C   |
| Storage Temperature                 | T <sub>stg</sub> | -40 to +125 | -55 to +125 | °C   |

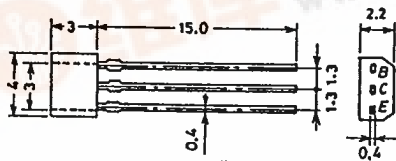
Electrical Characteristics at Ta=25°C

| Parameter                       | Symbol            | Conditions  | min | typ | max  | unit |
|---------------------------------|-------------------|---|-----|-----|------|------|
| Collector Cutoff Current        | I <sub>CB0</sub>  | V <sub>CB</sub> =10V, I <sub>E</sub> =0                           |     |     | 1    | µA   |
| Emitter Cutoff Current          | I <sub>EB0</sub>  | V <sub>EB</sub> =4V, I <sub>C</sub> =0                            |     |     | 1    | µA   |
| DC Current Gain                 | h <sub>FE</sub>   | V <sub>CE</sub> =6V, I <sub>C</sub> =1mA                          | 40* | 80  | 320* |      |
| Gain Bandwidth Product          | f <sub>T</sub>    | V <sub>CE</sub> =6V, I <sub>C</sub> =1mA                          | 170 | 300 |      | MHz  |
| Reverse Transfer capacitance    | C <sub>re</sub>   | V <sub>CB</sub> =6V, I <sub>C</sub> =1MHz (2SC930SPA)             | 0.8 |     | 1.6  | pF   |
|                                 |                   | V <sub>CB</sub> =6V, f=1MHz (2SC930NP)                            | 1.0 | 1.3 | 1.8  | pF   |
| Base to Collector Time Constant | τ <sub>bb'c</sub> | V <sub>CE</sub> =6V, I <sub>C</sub> =1mA<br>f=31.9MHz             |     | 20  | 36   | ps   |
| Noise Figure                    | NF                | V <sub>CE</sub> =6V, I <sub>C</sub> =1mA<br>f=100MHz              |     | 4.0 |      | dB   |
| Turn-on Time                    | t <sub>on</sub>   | V <sub>IN</sub> =+12V, V <sub>BB</sub> =-3V,<br>appointed circuit |     | 30  |      | ns   |
| Turn-off Time                   | t <sub>off</sub>  | V <sub>IN</sub> =-12V, V <sub>BB</sub> =+3V,<br>appointed circuit |     | 30  |      | ns   |

\*The 2SC930 is graded as follows by 1mA h<sub>FE</sub>:

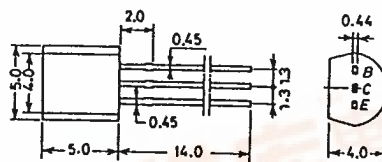
|    |   |    |    |   |     |     |   |     |     |   |     |
|----|---|----|----|---|-----|-----|---|-----|-----|---|-----|
| 40 | C | 80 | 60 | D | 120 | 100 | E | 200 | 160 | F | 320 |
|----|---|----|----|---|-----|-----|---|-----|-----|---|-----|

Case Outline 2033  
(unit:mm)



B: Base  
C: Collector  
E: Emitter  
SANYO: SPA

Case Outline 2003A  
(unit:mm)



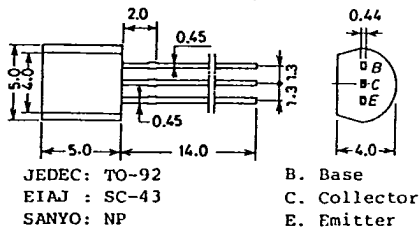
JEDEC: TO-92  
EIAJ: SC-43  
SANYO: NP  
B. Base  
C. Collector  
E. Emitter

The 2SC930 is scheduled to be discontinued soon. Use the 2SC2839, instead of the 2SC930, in new applications where you are planning to use the 2SC930.

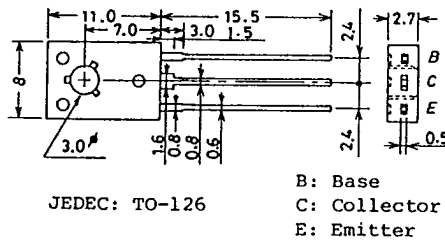
## CASE OUTLINES AND ATTACHMENTS

- All of Sanyo Transistor case outlines are illustrated below.
- All dimensions are in mm, and dimensions which are not followed by min. or max. are represented by typical values.
- No marking is indicated.

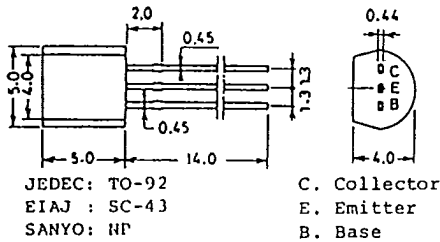
Case Outline—[2003A]  
unit:mm



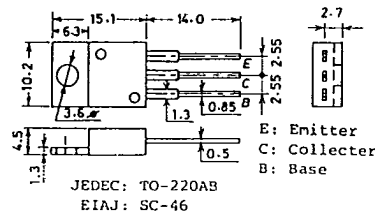
Case Outline—[2009A]  
unit:mm



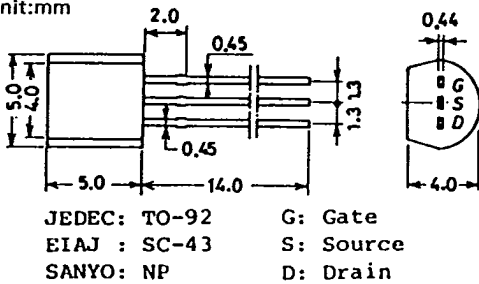
Case Outline—[2004A]  
unit:mm



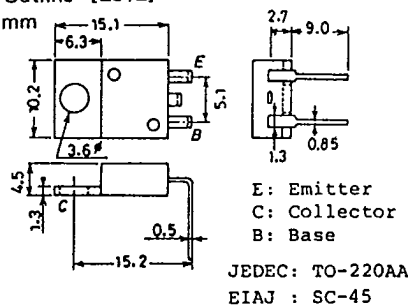
Case Outline—[2010A]  
unit:mm



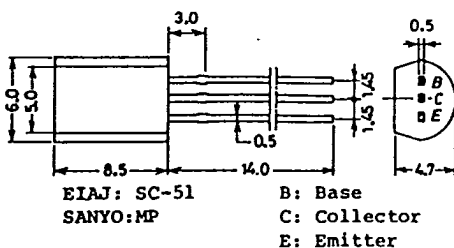
Case Outline—[2005A]  
unit:mm



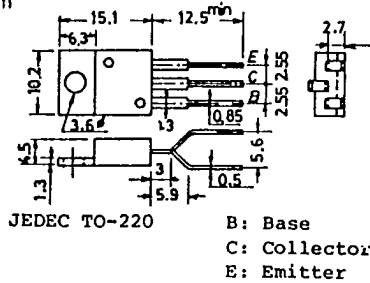
Case Outline—[2012]  
unit:mm



Case Outline—[2006A]  
unit:mm



Case Outline—[2013]  
unit:mm







T-91-20

