

2003A

NPN Epitaxial Planar Silicon Transistor

T-29-15

## Low-Noise Amp Applications

©431E

The 2SC1570 is developed as very low-noise transistor and is especially suited for use in equalizer first stage of high-grade type stereo sets.

### Absolute Maximum Ratings at $T_a = 25^\circ\text{C}$

|                              |           | unit                         |
|------------------------------|-----------|------------------------------|
| Collector to Base Voltage    | $V_{CB0}$ | 55 V                         |
| Collector to Emitter Voltage | $V_{CEO}$ | 50 V                         |
| Emitter to Base Voltage      | $V_{EBO}$ | 5 V                          |
| Collector Current            | $I_C$     | 100 mA                       |
| Peak Collector Current       | $i_{cp}$  | 200 mA                       |
| Base Current                 | $I_B$     | 20 mA                        |
| Collector Dissipation        | $P_C$     | 200 mW                       |
| Junction Temperature         | $T_j$     | 125 $^\circ\text{C}$         |
| Storage Temperature          | $T_{stg}$ | -55 to +125 $^\circ\text{C}$ |

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

|                          |               | min | typ  | max  | unit          |
|--------------------------|---------------|-----|------|------|---------------|
| Collector Cutoff Current | $I_{CBO}$     |     |      | 0.1  | $\mu\text{A}$ |
| Emitter Cutoff Current   | $I_{EBO}$     |     |      | 0.1  | $\mu\text{A}$ |
| DC Current Gain          | $h_{FE}$      |     |      | 960* |               |
| Gain-Bandwidth Product   | $f_T$         |     | 100  |      | MHz           |
| Output Capacitance       | $c_{ob}$      |     | 3    |      | pF            |
| C-E Saturation Voltage   | $V_{CE(sat)}$ |     |      | 0.5  | V             |
| Base to Emitter Voltage  | $V_{BE}$      |     | 0.58 | 0.80 | V             |
| C-B Breakdown Voltage    | $V_{(BR)CBO}$ | 55  |      |      | V             |
| C-E Breakdown Voltage    | $V_{(BR)CEO}$ | 50  |      |      | V             |
| E-B Breakdown Voltage    | $V_{(BR)EBO}$ | 5   |      |      | V             |
| Noise Level              | $V_{NO(ave)}$ |     |      | 40   | mV            |

 $V_{CB} = 18\text{V}, I_E = 0$  $V_{EB} = 3\text{V}, I_C = 0$  $V_{CE} = 6\text{V}, I_C = 1\text{mA}$  $V_{CE} = 6\text{V}, I_C = 1\text{mA}$  $V_{CB} = 6\text{V}, f = 1\text{MHz}$  $I_C = 50\text{mA}, I_B = 5\text{mA}$  $V_{CE} = 2\text{V}, I_C = 1\text{mA}$  $I_C = 10\mu\text{A}, I_E = 0$  $I_C = 1\text{mA}, R_{BE} = \infty$  $I_E = 10\mu\text{A}, I_C = 0$ 

See specified Test Circuit.

 $V_{CC} = 30\text{V}, I_C = 1\text{mA}$  $R_g = 56\text{k}\Omega, V_G = 77\text{dB}$ 

(at 1kHz)

Noise Peak Level

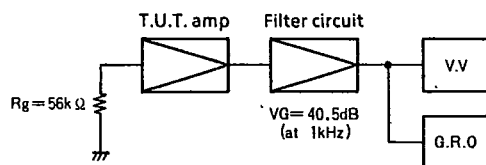
 $V_{NO(peak)}$ 

280 mV

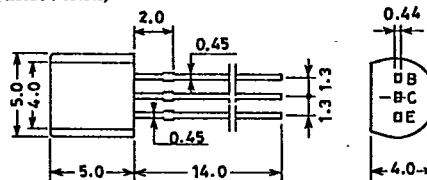
\* : The 2SC1570 is classified by 1mA  $h_{FE}$  as follows :

|     |   |     |     |   |     |     |   |     |
|-----|---|-----|-----|---|-----|-----|---|-----|
| 160 | F | 320 | 280 | G | 560 | 480 | H | 960 |
|-----|---|-----|-----|---|-----|-----|---|-----|

### Noise Test Circuit



### Case Outline 2003A (unit : mm)



JEDEC: TO-92

EIAJ: SC-43

SANYO: NP

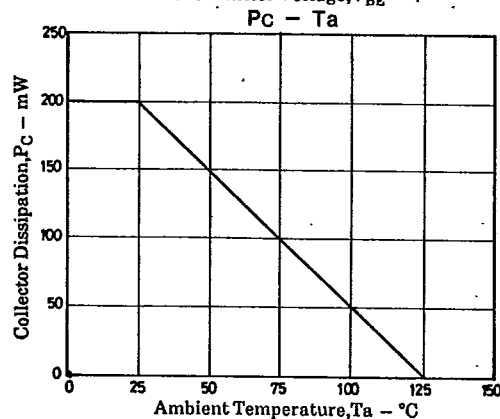
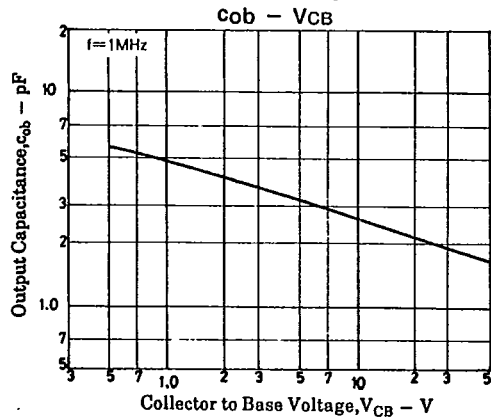
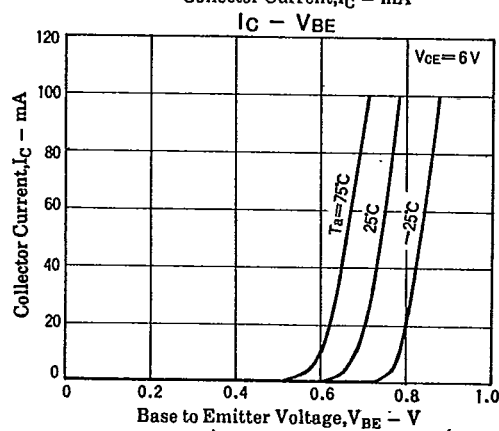
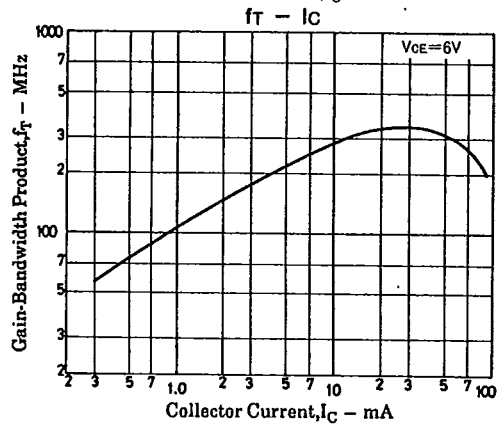
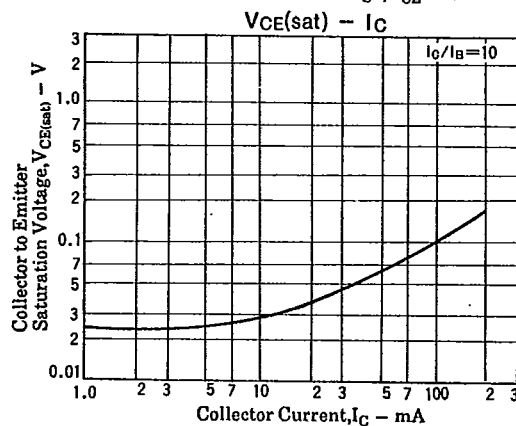
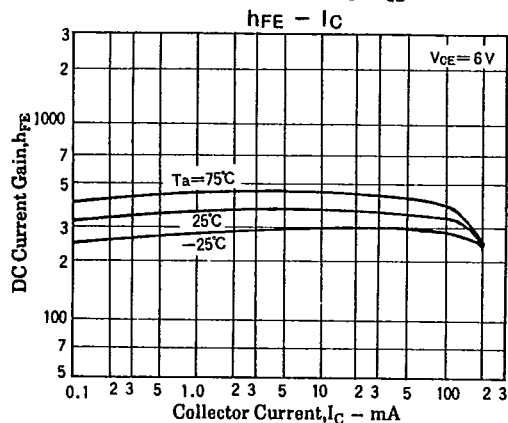
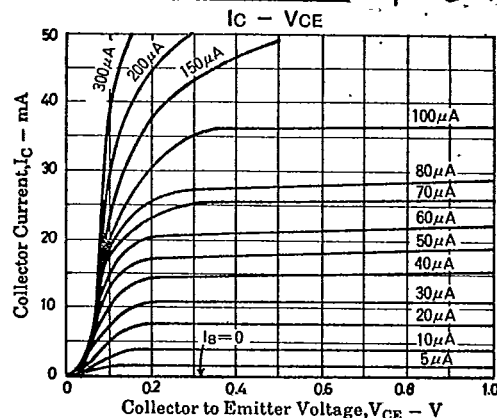
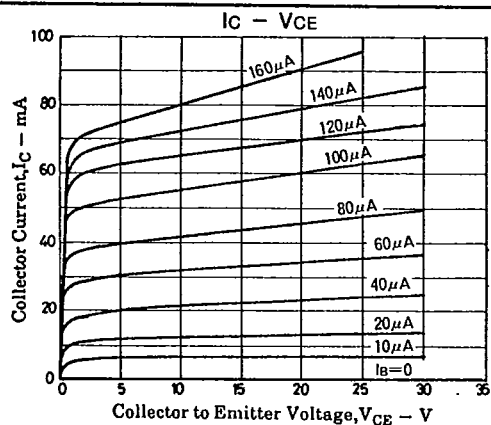
B: Base

C: Collector

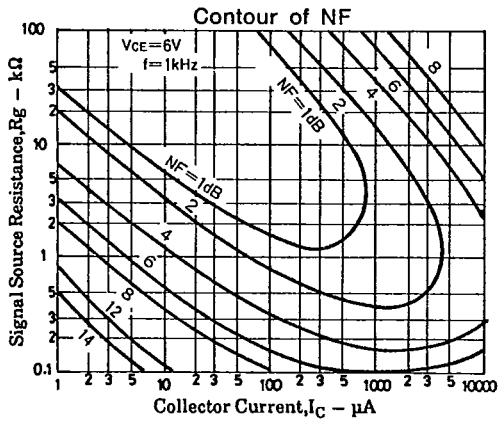
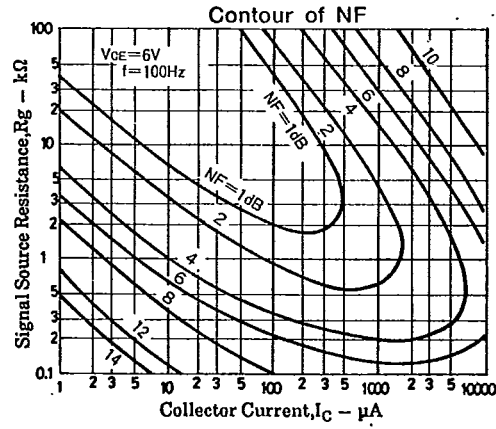
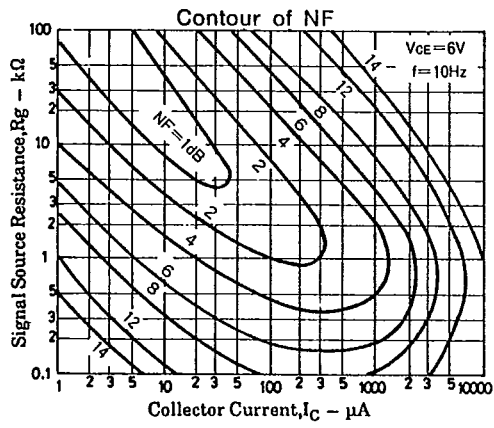
E: Emitter

2SC1570

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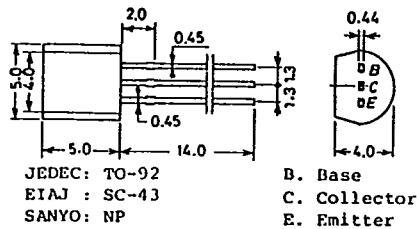


T-91-20

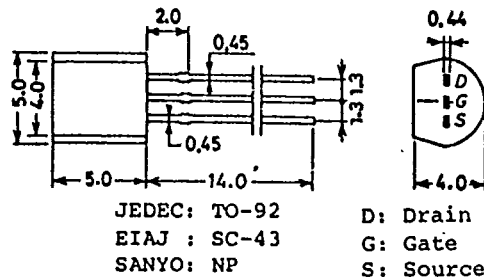
## CASE OUTLINES OF LEAD FORMED SMALL SIGNAL TRANSISTORS

- All of Sanyo lead formed small signal 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.

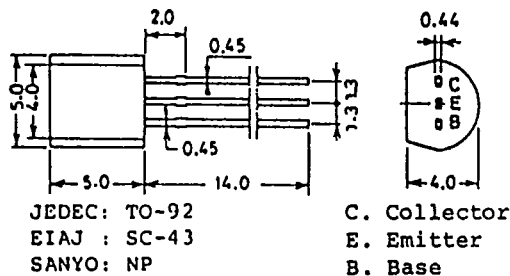
Case Outline—[2003A] unit: mm



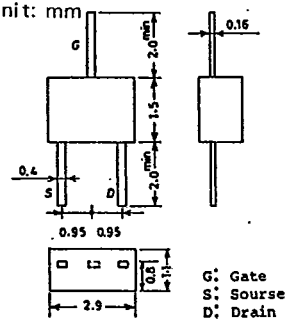
Case Outline—[2019A] unit: mm



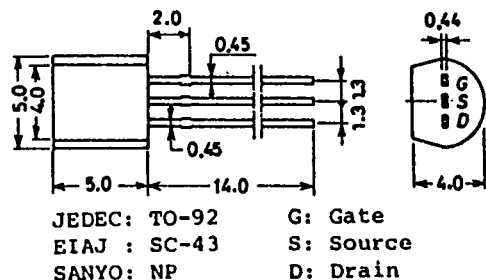
Case Outline—[2004A] unit: mm



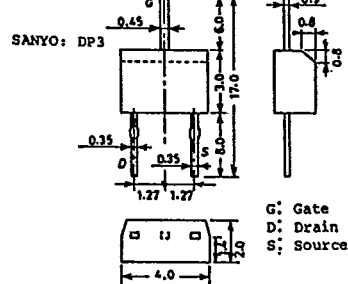
Case Outline—[2025] unit: mm



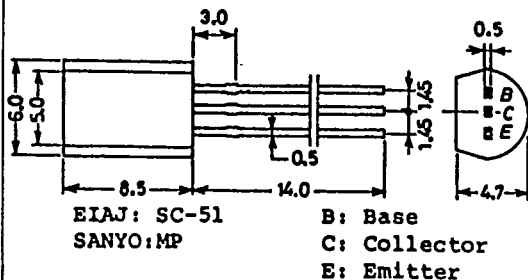
Case Outline—[2005A] unit: mm



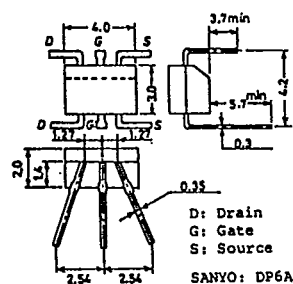
Case Outline—[2026] unit: mm



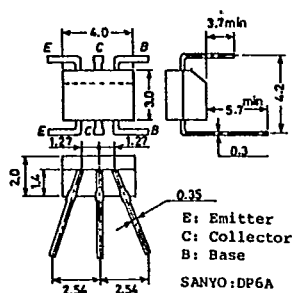
Case Outline—[2006A] unit: mm



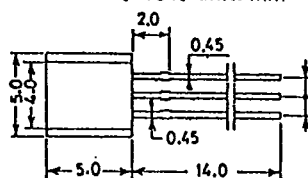
Case Outline—[2027A] unit: mm



Case Outline—[2029A] unit: mm



Case Outline—[2061] unit: mm

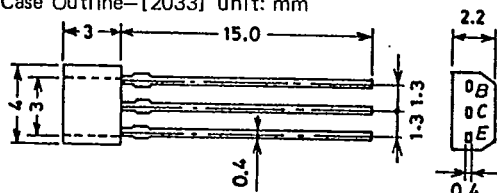


JEDEC: TO-92  
EIAJ: SC-43

T-91-20

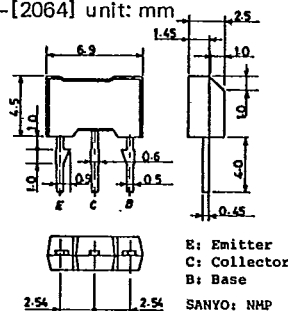
C: Collector  
B: Base  
E: Emitter  
SANYO: NP

Case Outline—[2033] unit: mm

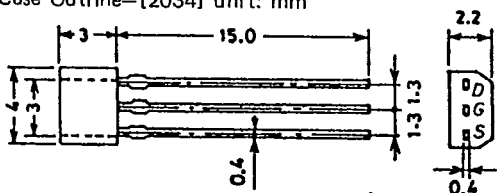


B: Base  
C: Collector  
E: Emitter  
SANYO: SPA

Case Outline—[2064] unit: mm

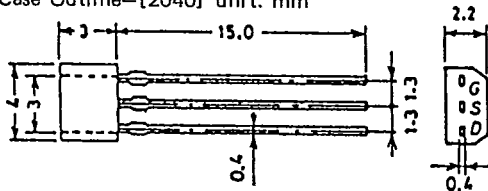


Case Outline—[2034] unit: mm



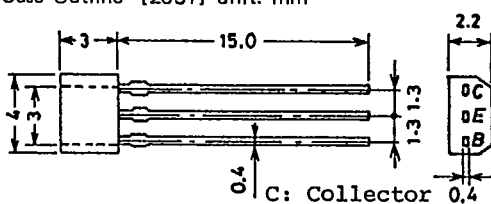
D: Drain  
G: Gate  
S: Source  
SANYO: SPA

Case Outline—[2040] unit: mm



G: Gate  
S: Source  
D: Drain  
SANYO: SPA

Case Outline—[2051] unit: mm



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