

**2SK596**

2034

N-Channel Junction Silicon FET

T-29-25

## Capacitor Microphone Applications

©2215

### Features

- Especially suited for use in audio, telephone capacitor microphones
- Excellent voltage characteristic
- Excellent transient characteristic
- Adoption of FBET process

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

|                             |                  |             | unit             |
|-----------------------------|------------------|-------------|------------------|
| Gate to Drain Voltage       | $V_{\text{GDO}}$ | -20         | V                |
| Gate Current                | $I_{\text{G}}$   | 10          | mA               |
| Drain Current               | $I_{\text{D}}$   | 1           | mA               |
| Allowable Power Dissipation | $P_{\text{D}}$   | 100         | mW               |
| Junction Temperature        | $T_{\text{J}}$   | 125         | $^\circ\text{C}$ |
| Storage Temperature         | $T_{\text{stg}}$ | -55 to +125 | $^\circ\text{C}$ |

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

|                                 |                             |                                                           | min  | typ  | max  | unit          |
|---------------------------------|-----------------------------|-----------------------------------------------------------|------|------|------|---------------|
| Gate to Drain Breakdown Voltage | $V_{(\text{BR})\text{GDO}}$ | $I_{\text{G}}=-100\mu\text{A}$                            | -20  |      |      | V             |
| Cutoff Voltage                  | $V_{\text{GS(off)}}$        | $V_{\text{DS}}=5\text{V}, I_{\text{D}}=1\mu\text{A}$      | -0.6 | -1.5 |      | V             |
| Drain Current                   | $I_{\text{DSS}}$            | $V_{\text{DS}}=5\text{V}, V_{\text{GS}}=0$                | 100* |      | 800* | $\mu\text{A}$ |
| Forward Transfer Admittance     | $ Y_{\text{fs}} $           | $V_{\text{DS}}=5\text{V}, V_{\text{GS}}=0, f=1\text{kHz}$ | 0.4  | 1.2  |      | mS            |
| Input Capacitance               | $C_{\text{iss}}$            | $V_{\text{DS}}=5\text{V}, V_{\text{GS}}=0, f=1\text{MHz}$ |      | 3.5  |      | pF            |
| Output Capacitance              | $C_{\text{rss}}$            | $V_{\text{DS}}=5\text{V}, V_{\text{GS}}=0, f=1\text{MHz}$ |      | 0.65 |      | pF            |

\*: The 2SK596 is classified by  $I_{\text{DSS}}$  as follows (unit:  $\mu\text{A}$ ):

|     |   |     |     |   |     |     |   |     |     |   |     |     |   |     |
|-----|---|-----|-----|---|-----|-----|---|-----|-----|---|-----|-----|---|-----|
| 100 | A | 170 | 150 | B | 240 | 210 | C | 350 | 320 | D | 480 | 440 | E | 800 |
|-----|---|-----|-----|---|-----|-----|---|-----|-----|---|-----|-----|---|-----|

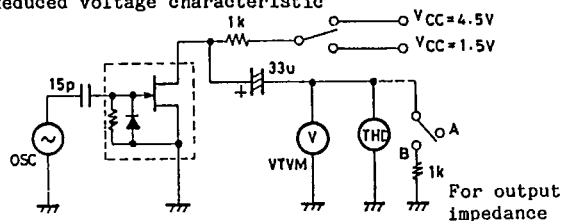
[ $T_a=25^\circ\text{C}, V_{\text{CC}}=4.5\text{V}, R_{\text{L}}=1\text{k}\Omega, C_{\text{in}}=15\text{pF}$ , See specified Test Circuit.]

|                                |                        |                                                                                 | min  | typ  | max | unit |
|--------------------------------|------------------------|---------------------------------------------------------------------------------|------|------|-----|------|
| Voltage Gain                   | $G_{\text{V}}$         | $V_{\text{in}}=10\text{mV}, f=1\text{kHz}$                                      | -3.0 |      |     | dB   |
| Reduced Voltage Characteristic | $\Delta G_{\text{V}}$  | $V_{\text{in}}=10\text{mV}, f=1\text{kHz}$                                      | -1.2 | -3.5 |     | dB   |
| Frequency Characteristic       | $\Delta G_{\text{VF}}$ | $V_{\text{CC}}=4.5 \rightarrow 1.5\text{V}$<br>$f=1\text{kHz to } 110\text{Hz}$ |      | -1.0 |     | dB   |

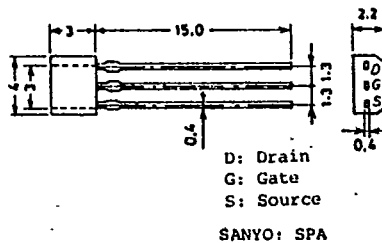
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### Specified Test Circuit

Voltage gain  
Frequency characteristic  
Distortion  
Reduced voltage characteristic

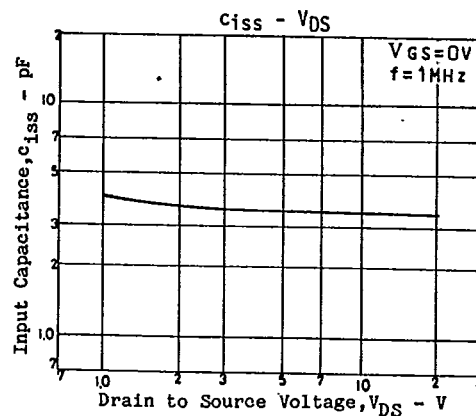
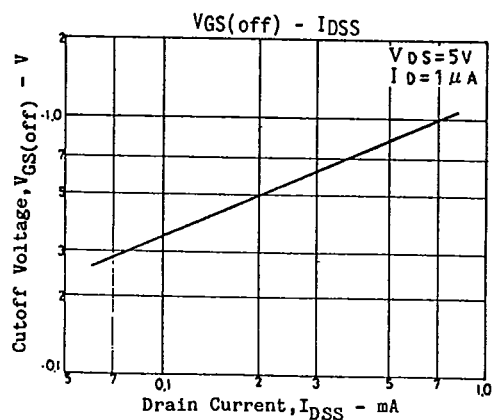
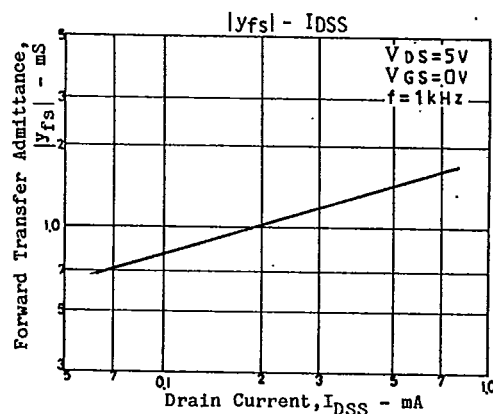
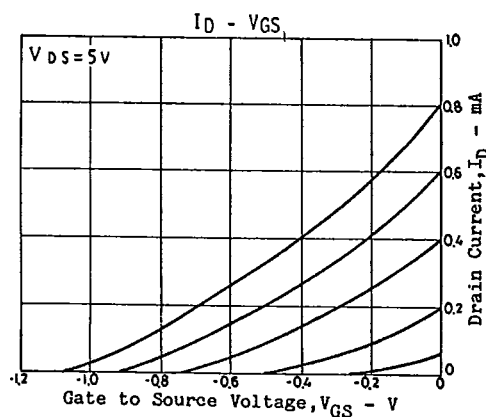
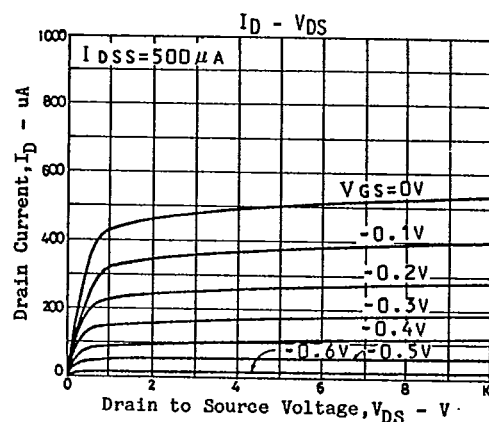
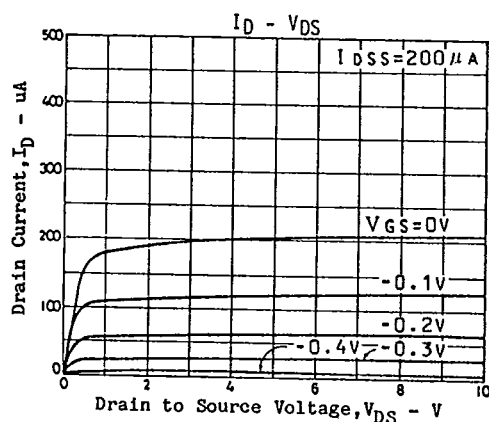


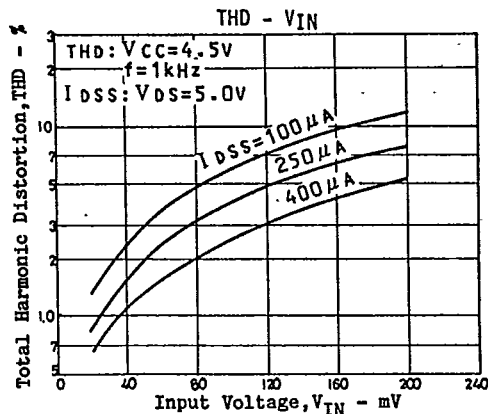
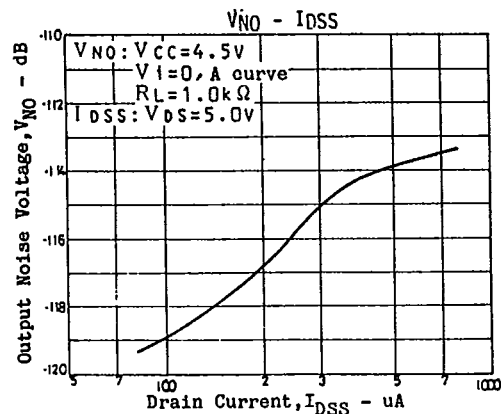
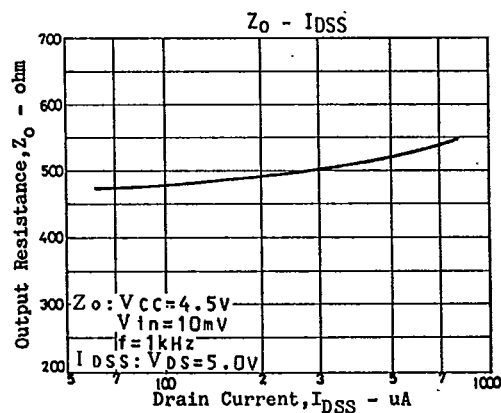
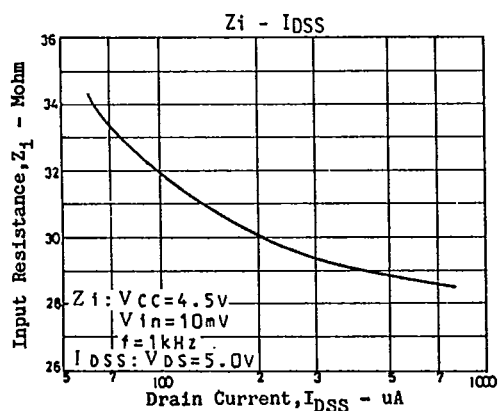
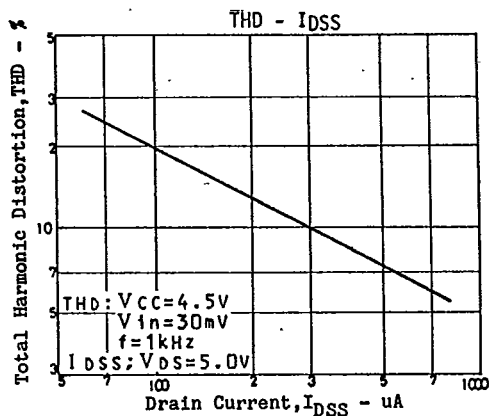
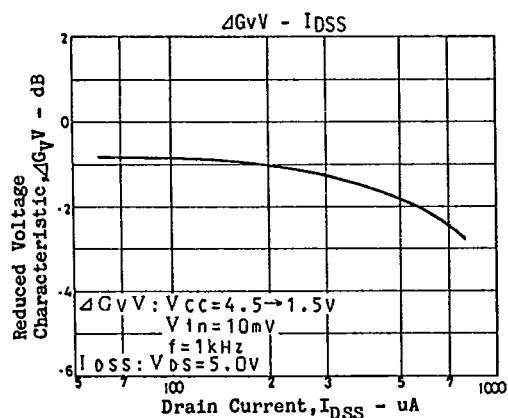
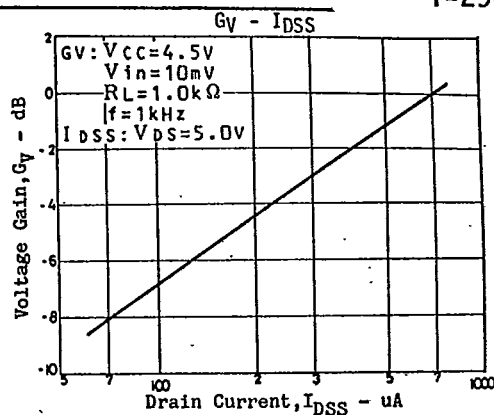
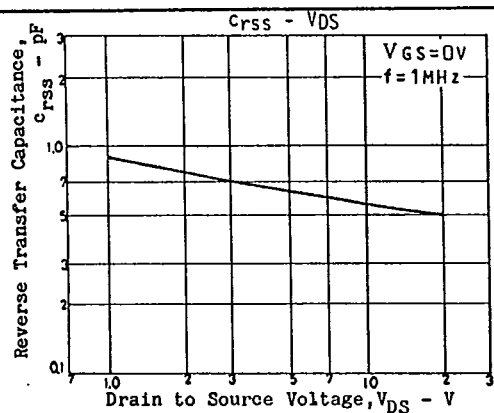
### Case Outline 2034 (unit:mm)

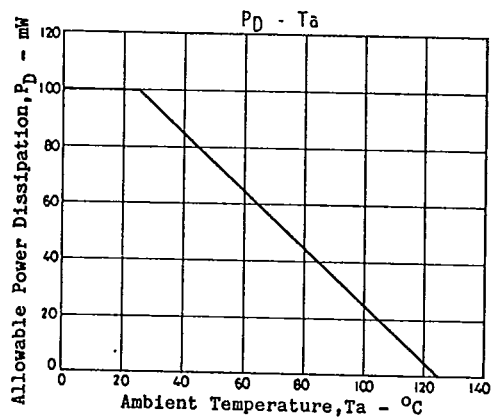


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|                           |          |                                     |     |     |      |      |
|---------------------------|----------|-------------------------------------|-----|-----|------|------|
| Input Resistance          | $Z_{in}$ | $f=1\text{kHz}$                     | min | typ | max  | unit |
| Output Resistance         | $Z_o$    | $f=1\text{kHz}$                     | 25  |     |      | Mohm |
| Total Harmonic Distortion | THD      | $V_{in}=30\text{mV}, f=1\text{kHz}$ |     | 1.0 | 700  | ohm  |
| Output Noise Voltage      | $V_{NO}$ | $V_{in}=0, A \text{ curve}$         |     |     | -110 | dB   |







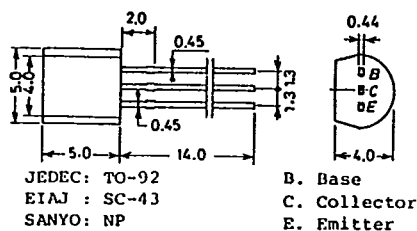
T-29-25

T-91-20

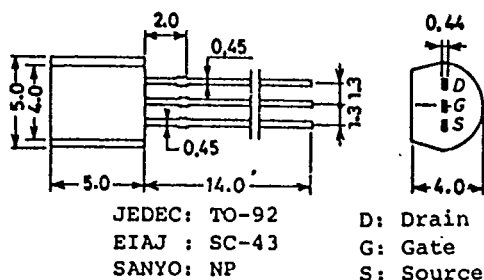
## CASE OUTLINES OF LEAD FORMED SMALL SIGNAL TRANSISTORS

- 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.

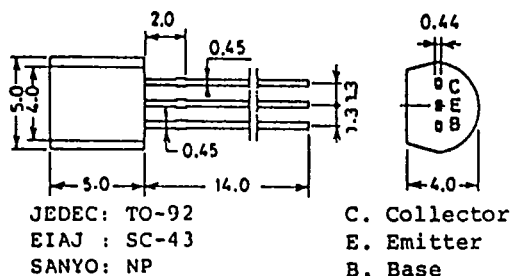
Case Outline—[2003A] unit: mm



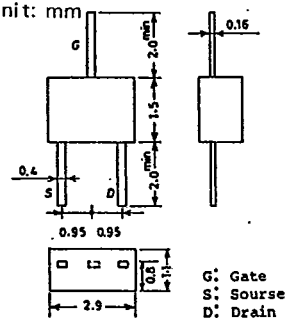
Case Outline—[2019A] unit: mm



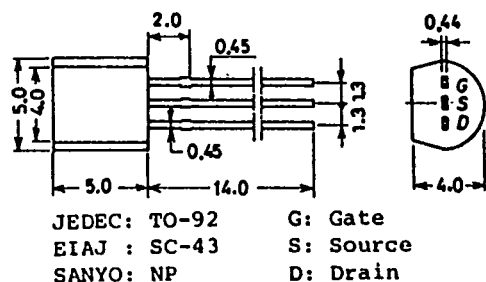
Case Outline—[2004A] unit: mm



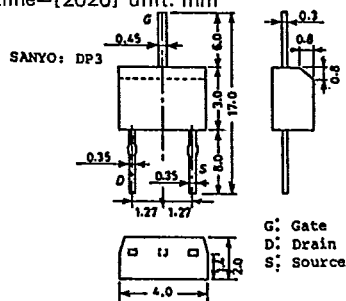
Case Outline—[2025] unit: mm



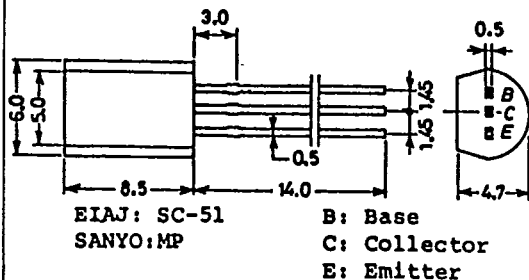
Case Outline—[2005A] unit: mm



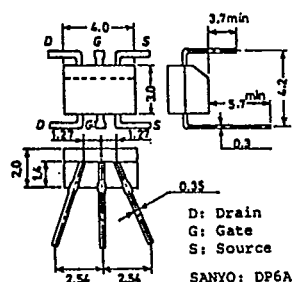
Case Outline—[2026] unit: mm



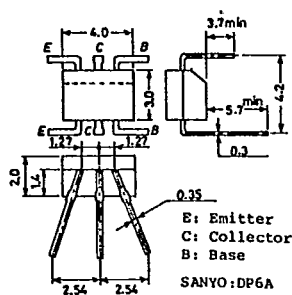
Case Outline—[2006A] unit: mm



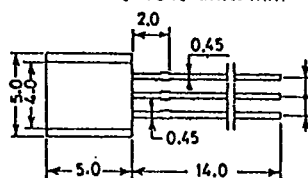
Case Outline—[2027A] unit: mm



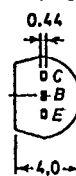
Case Outline—[2029A] unit: mm



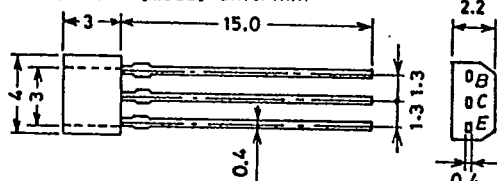
Case Outline—[2061] unit: mm



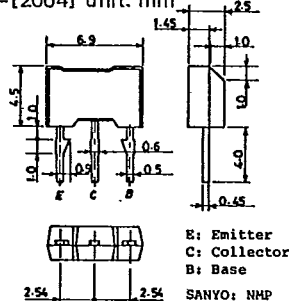
T-91-20



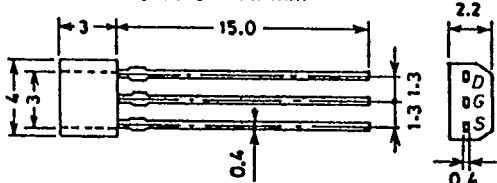
Case Outline—[2033] unit: mm



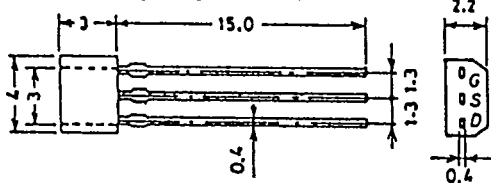
Case Outline—[2064] unit: mm



Case Outline—[2034] unit: mm



Case Outline—[2040] unit: mm



Case Outline—[2051] unit: mm

