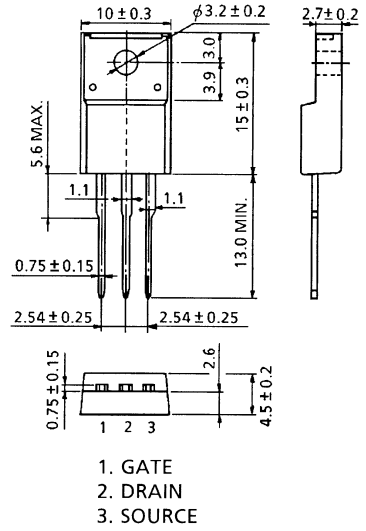
# 2SK2013

Audio Frequency Power Amplifier Application

- High breakdown voltage : $V_{DSS}$ = 180V
- High forward transfer admittance : $|Y_{fs}|$ = 0.7 S (typ.)
- Complementary to 2SJ313

Unit: mm




| | |
|---|---|
| JEDEC | — |
| JEITA | SC−67 |
| TOSHIBA | 2-10R1B |

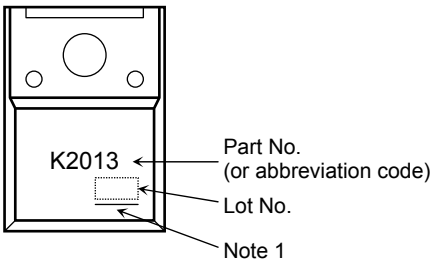
Weight: 1.9 g (typ.)

## Absolute Maximum Ratings (Ta = 25°C)

| Characteristics | Symbol | Rating | Unit |
|---|---|---|---|
| Drain−source voltage | $V_{DSS}$ | 180 | V |
| Gate−source voltage | $V_{GSS}$ | ±20 | V |
| Drain current (Note 2) | $I_D$ | 1 | A |
| Drain power dissipation (Tc = 25°C) | $P_D$ | 25 | W |
| Channel temperature | $T_{ch}$ | 150 | °C |
| Storage temperature range | $T_{stg}$ | −55 to 150 | °C |

Note: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.) are within the absolute maximum ratings. Please design the appropriate reliability upon reviewing the Toshiba Semiconductor Reliability Handbook (“Handling Precautions”/“Derating Concept and Methods”) and individual reliability data (i.e. reliability test report and estimated failure rate, etc).

## Marking




## Electrical Characteristics (Ta = 25°C)

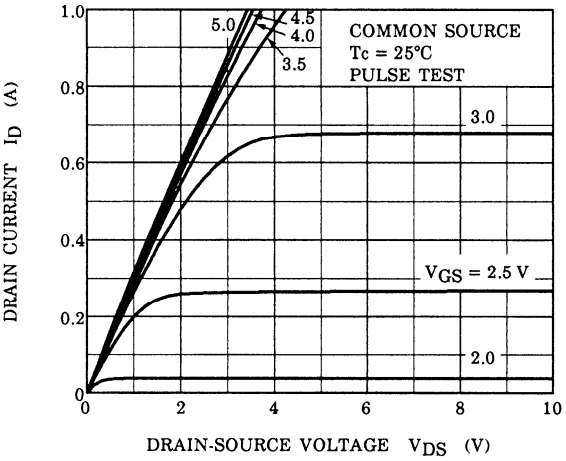
| Characteristics | Symbol | Test Condition | Min | Typ. | Max | Unit |
|---|---|---|---|---|---|---|
| Gate leakage current | $I_{GSS}$ | $V_{DS}$ = 0, $V_{GS}$ = ±20 V | — | — | ±100 | nA |
| Drain−source breakdown voltage | $V_{(BR)\ DSS}$ | $I_D$ = 10 mA, $V_{GS}$ = 0 | 180 | — | — | V |
| Gate−source cut−off voltage (Note 3) | $V_{GS\ (OFF)}$ | $V_{DS}$ = 10 V, $I_D$ = 10 mA | 1.8 | — | 2.8 | V |
| Drain−source saturation voltage | $V_{DS\ (ON)}$ | $I_D$ = 0.6 A, $V_{GS}$ = 10 V | — | 1.7 | 3.0 | V |
| Forward transfer admittance | $\|Y_{fs}\|$ | $V_{DS}$ = 10 V, $I_D$ = 0.3 A | — | 0.7 | — | S |
| Input capacitance | $C_{iss}$ | $V_{DS}$ = 10 V, $V_{GS}$ = 0, f = 1 MHz | — | 170 | — | pF |
| Output capacitance | $C_{oss}$ | $V_{DS}$ = 10 V, $V_{GS}$ = 0, f = 1 MHz | — | 45 | — | |
| Reverse transfer capacitance | $C_{rss}$ | $V_{DD}$ ≈ 10 V, $V_{GS}$ = 0, f = 1 MHz | — | 17 | — | |

Note 2: Ensure that the channel temperature does not exceed 150°C.

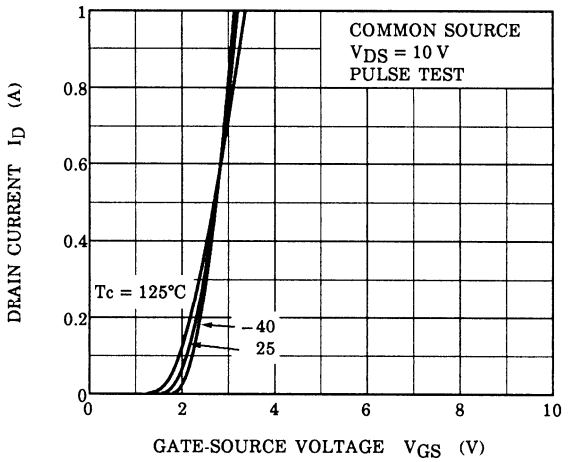
Note 3: $V_{GS\ (OFF)}$ Classification O: 0.8~1.6, Y: 1.4~2.8

This transistor is an electrostatic-sensitive device.
Please handle with caution.

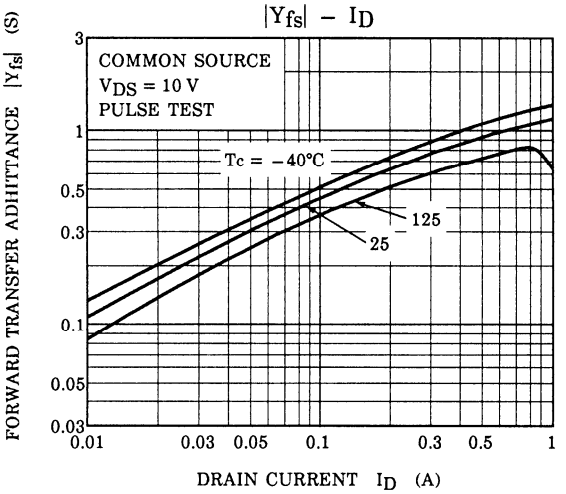
$I_D - V_{DS}$



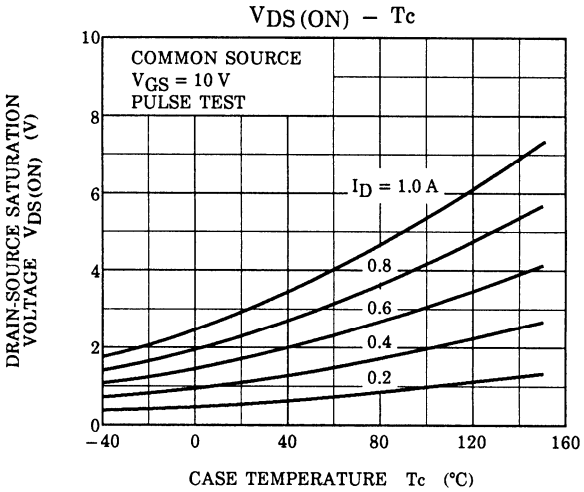

$I_D - V_{GS}$



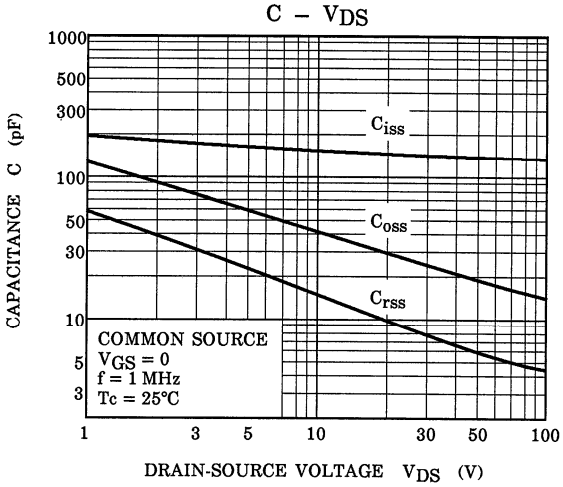

$|Y_{fs}| - I_D$




$V_{DS(ON)} - Tc$




$C - V_{DS}$




$P_D - Ta$