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# 2SJ160, 2SJ161, 2SJ162

## Silicon P Channel MOS FET

REJ03G0847-0200
(Previous: ADE-208-1182)
Rev.2.00
Sep 07, 2005

## Description

Low frequency power amplifier

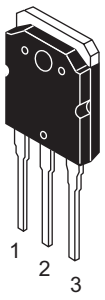
Complementary pair with 2SK1056, 2SK1057 and 2SK1058

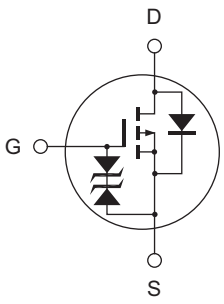
## Features

- Good frequency characteristic
- High speed switching
- Wide area of safe operation
- Enhancement-mode
- Good complementary characteristics
- Equipped with gate protection diodes
- Suitable for audio power amplifier

## Outline

RENESAS Package code: PRSS0004ZE-A
(Package name: TO-3P)




1. Gate
2. Source (Flange)
3. Drain

## Absolute Maximum Ratings

(Ta = 25°C)

| Item | | Symbol | Value | Unit |
|---|---|---|---|---|
| Drain to source voltage | 2SJ160 | $V_{DSX}$ | –120 | V |
| | 2SJ161 | | –140 | |
| | 2SJ162 | | –160 | |
| Gate to source voltage | | $V_{GSS}$ | ±15 | V |
| Drain current | | $I_D$ | –7 | A |
| Body to drain diode reverse drain current | | $I_{DR}$ | –7 | A |
| Channel dissipation | | Pch Note 1 | 100 | W |
| Channel temperature | | Tch | 150 | °C |
| Storage temperature | | Tstg | –55 to +150 | °C |

Note: 1. Value at Tc = 25°C

## Electrical Characteristics

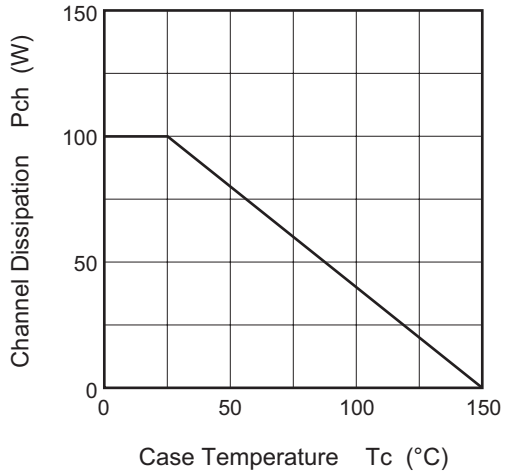
(Ta = 25°C)

| Item | | Symbol | Min | Typ | Max | Unit | Test Conditions |
|---|---|---|---|---|---|---|---|
| Drain to source breakdown voltage | 2SJ160 | $V_{(BR)\ DSX}$ | –120 | — | — | V | $I_D$ = –10 mA, $V_{GS}$ = 10 V |
| | 2SJ161 | | –140 | — | — | V | |
| | 2SJ162 | | –160 | — | — | V | |
| Gate to source breakdown voltage | | $V_{(BR)\ GSS}$ | ±15 | — | — | V | $I_G$ = ±100 µA, $V_{DS}$ = 0 |
| Gate to source cutoff voltage | | $V_{GS\ (off)}$ | –0.15 | — | –1.45 | V | $I_D$ = –100 mA, $V_{DS}$ = –10 V |
| Drain to source saturation voltage | | $V_{DS\ (sat)}$ | — | — | –12 | V | $I_D$ = –7 A, $V_{GS}$ = 0 Note 2 |
| Forward transfer admittance | | $\|y_{fs}\|$ | 0.7 | 1.0 | 1.4 | S | $I_D$ = –3 A, $V_{DS}$ = –10 V Note 2 |
| Input capacitance | | Ciss | — | 900 | — | pF | $V_{GS}$ = 5 V, $V_{DS}$ = –10 V, f = 1 MHz |
| Output capacitance | | Coss | — | 400 | — | pF | |
| Reverse transfer capacitance | | Crss | — | 40 | — | pF | |
| Turn-on time | | $t_{on}$ | — | 230 | — | ns | $V_{DD}$ = –20 V $I_D$ = –4 A |
| Turn-off time | | $t_{off}$ | — | 110 | — | ns | |

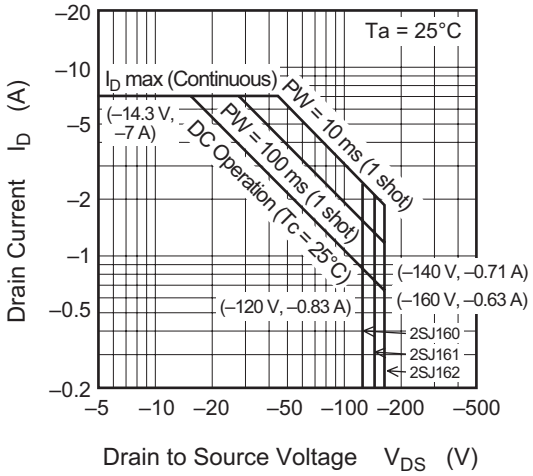
Note: 2. Pulse test

## Main Characteristics

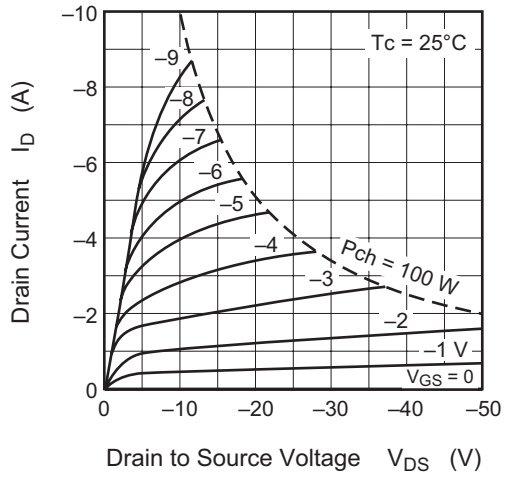
Power vs. Temperature Derating



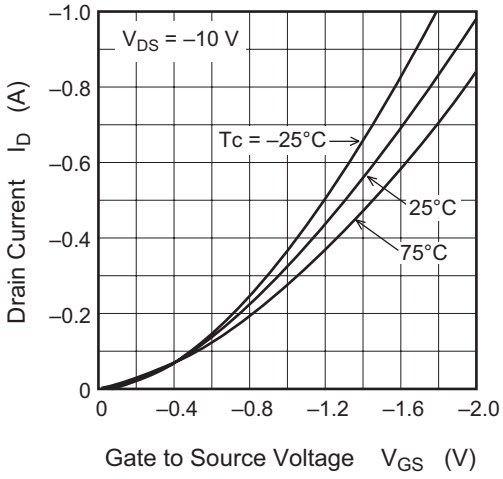

Maximum Safe Operation Area



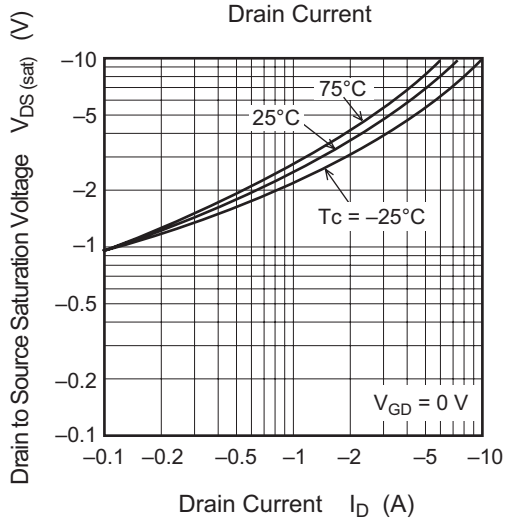

Typical Output Characteristics



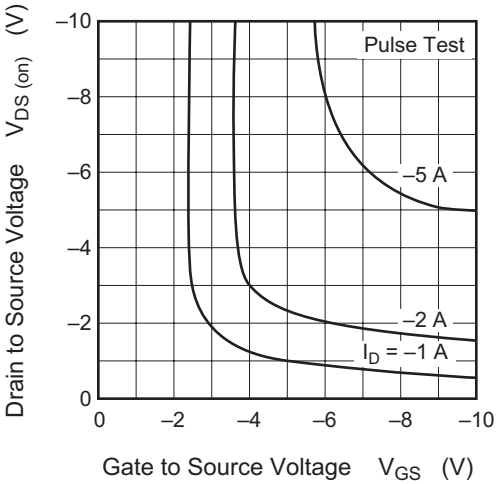

Typical Transfer Characteristics



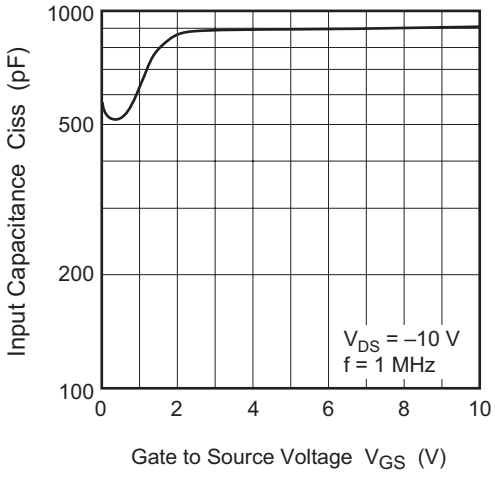

Drain to Source Saturation Voltage vs. Drain Current



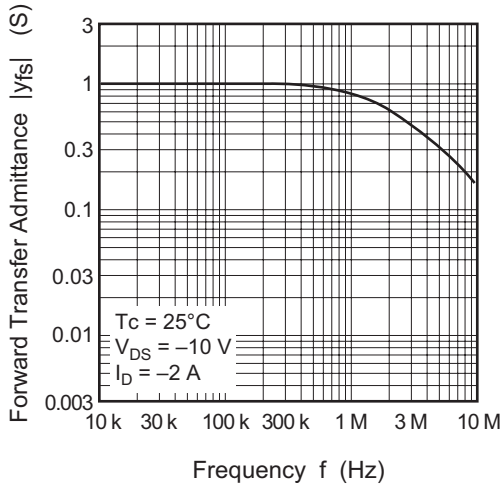

Drain to Source Voltage vs. Gate to Source Voltage



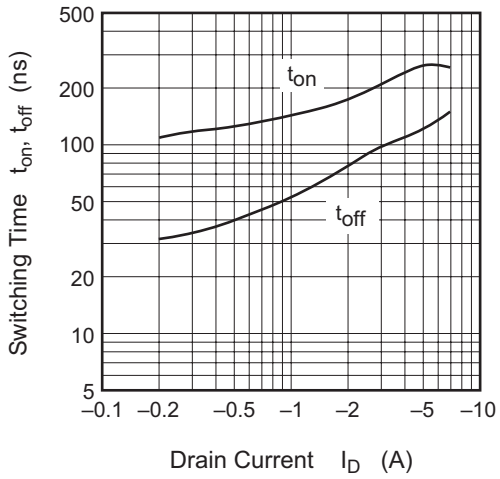
Input Capacitance vs. Gate to Source Voltage



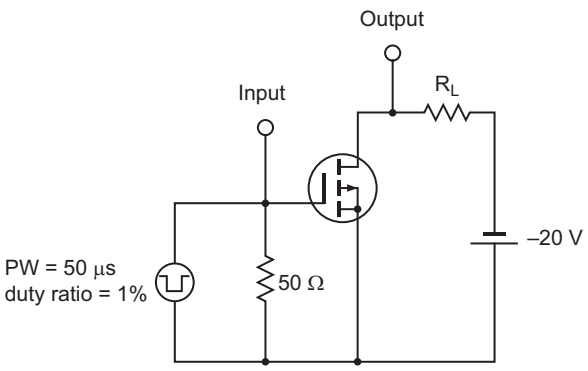

Forward Transfer Admittance vs. Frequency



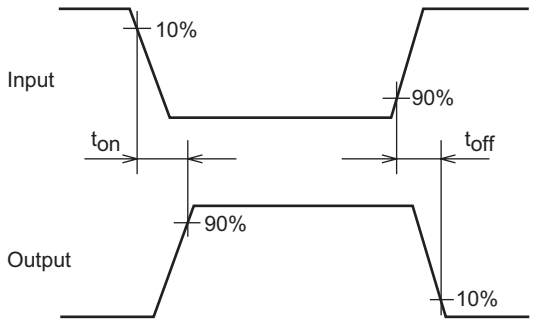

Switching Time vs. Drain Current




Switching Time Test Circuit



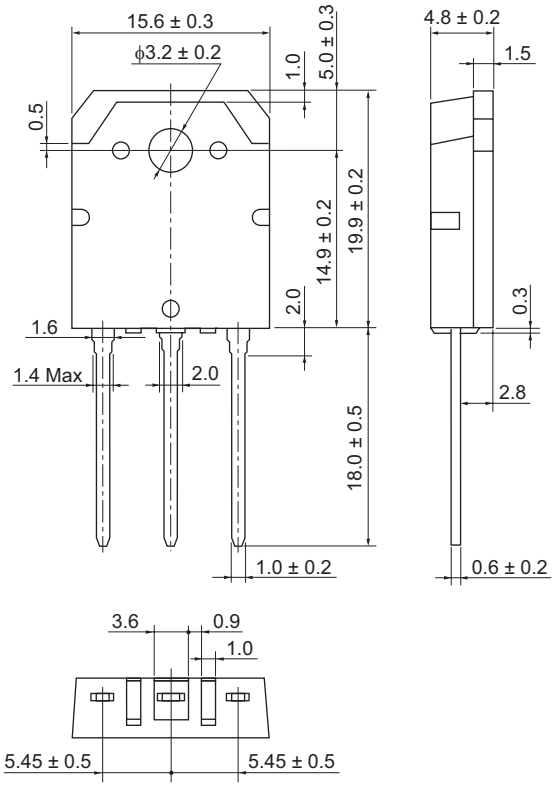

Waveform



## Package Dimensions

| JEITA Package Code | RENESAS Code | Package Name | MASS[Typ.] |
|---|---|---|---|
| SC-65 | PRSS0004ZE-A | TO-3P / TO-3PV | 5.0g |

Unit: mm




## Ordering Information

| Part Name | Quantity | Shipping Container |
|---|---|---|
| 2SJ160-E | 360 pcs | Box (Tube) |
| 2SJ161-E | 360 pcs | Box (Tube) |
| 2SJ162-E | 360 pcs | Box (Tube) |

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# 2SK1056, 2SK1057, 2SK1058

## Silicon N Channel MOS FET

REJ03G0906-0200
(Previous: ADE-208-1244)
Rev.2.00
Sep 07, 2005

## Application

Low frequency power amplifier

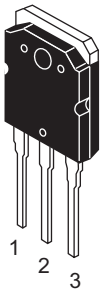
Complementary pair with 2SJ160, 2SJ161 and 2SJ162

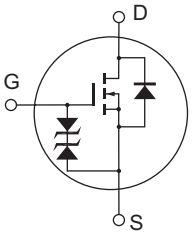
## Features

- Good frequency characteristic
- High speed switching
- Wide area of safe operation
- Enhancement-mode
- Good complementary characteristics
- Equipped with gate protection diodes
- Suitable for audio power amplifier

## Outline

RENESAS Package code: PRSS0004ZE-A
(Package name: TO-3P)




1. Gate
2. Source
   (Flange)
3. Drain

## Absolute Maximum Ratings

(Ta = 25°C)

| Item | | Symbol | Ratings | Unit |
|---|---|---|---|---|
| Drain to source voltage | 2SK1056 | $V_{DSX}$ | 120 | V |
| | 2SK1057 | | 140 | |
| | 2SK1058 | | 160 | |
| Gate to source voltage | | $V_{GSS}$ | ±15 | V |
| Drain current | | $I_D$ | 7 | A |
| Body to drain diode reverse drain current | | $I_{DR}$ | 7 | A |
| Channel dissipation | | Pch*[1] | 100 | W |
| Channel temperature | | Tch | 150 | °C |
| Storage temperature | | Tstg | –55 to +150 | °C |

Note: 1. Value at $T_C$ = 25°C

## Electrical Characteristics

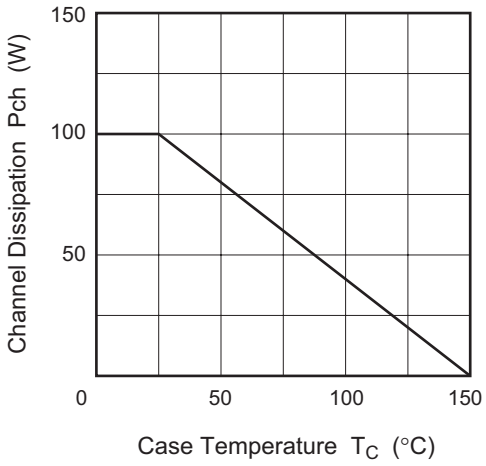
(Ta = 25°C)

| Item | | Symbol | Min | Typ | Max | Unit | Test conditions |
|---|---|---|---|---|---|---|---|
| Drain to source breakdown voltage | 2SK1056 | $V_{(BR)DSX}$ | 120 | — | — | V | $I_D$ = 10 mA, $V_{GS}$ = –10 V |
| | 2SK1057 | | 140 | | | | |
| | 2SK1058 | | 160 | | | | |
| Gate to source breakdown voltage | | $V_{(BR)GSS}$ | ±15 | — | — | V | $I_G$ = ±100 µA, $V_{DS}$ = 0 |
| Gate to source cutoff voltage | | $V_{GS(off)}$ | 0.15 | — | 1.45 | V | $I_D$ = 100 mA, $V_{DS}$ = 10 V |
| Drain to source saturation voltage | | $V_{DS(sat)}$ | — | — | 12 | V | $I_D$ = 7 A, $V_{GD}$ = 0 *[2] |
| Forward transfer admittance | | $\|y_{fs}\|$ | 0.7 | 1.0 | 1.4 | S | $I_D$ = 3 A, $V_{DS}$ = 10 V *[2] |
| Input capacitance | | Ciss | — | 600 | — | pF | $V_{GS}$ = –5 V, $V_{DS}$ = 10 V, f = 1 MHz |
| Output capacitance | | Coss | — | 350 | — | pF | |
| Reverse transfer capacitance | | Crss | — | 10 | — | pF | |
| Turn-on time | | $t_{on}$ | — | 180 | — | ns | $V_{DD}$ = 20 V, $I_D$ = 4 A |
| Turn-off time | | $t_{off}$ | — | 60 | — | ns | |

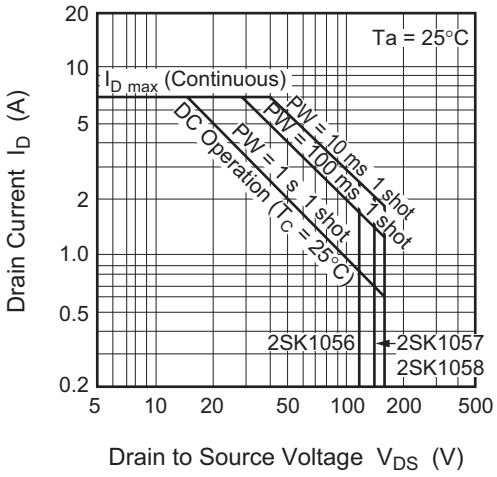
Note: 2. Pulse test

## Main Characteristics

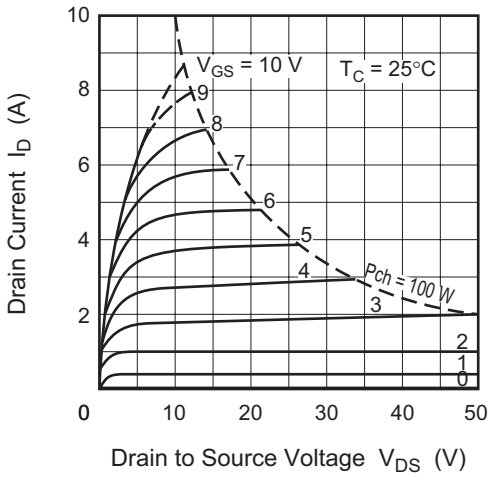
Power vs. Temperature Derating



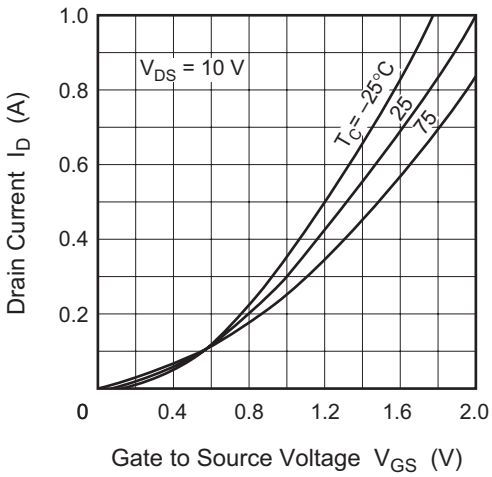

Maximum Safe Operation Area



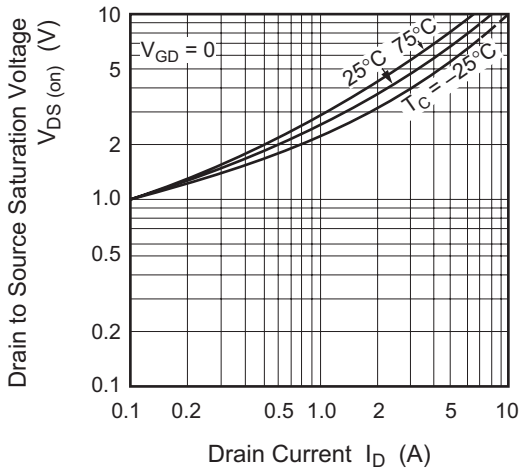

Typical Output Characteristics



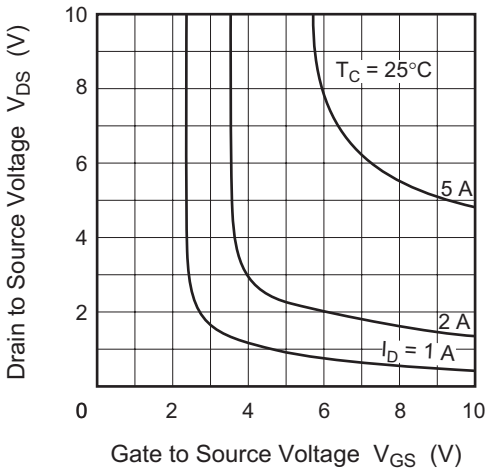

Typical Transfer Characteristics



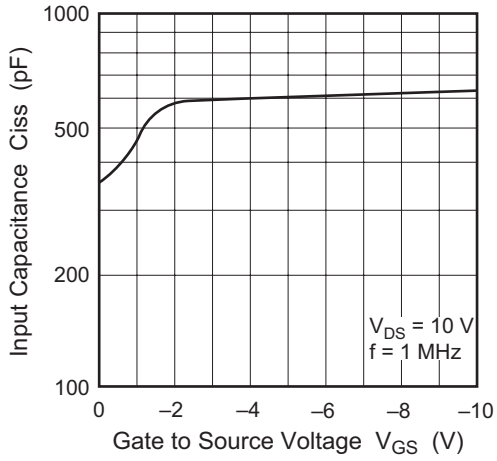

Drain to Source Saturation Voltage vs. Drain Current



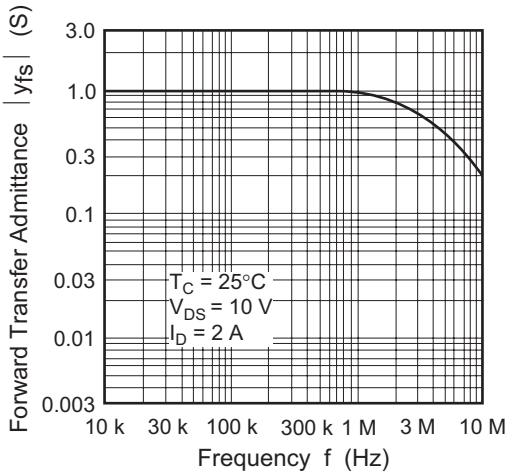

Drain to Source Voltage vs. Gate to Source Voltage



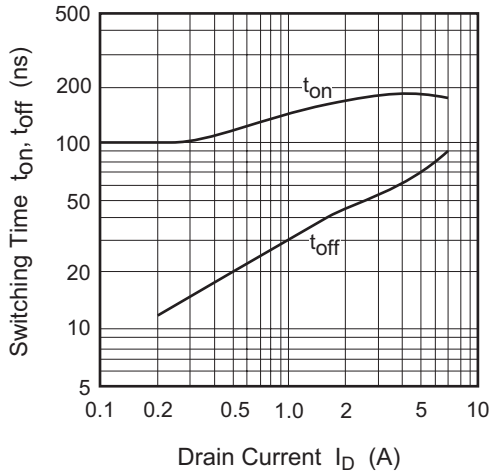
Input Capacitance vs. Gate Source Voltage



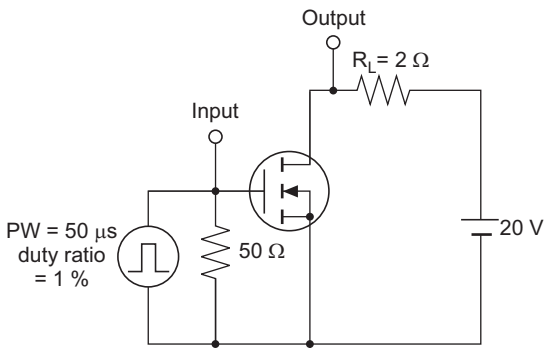

Forward Transfer Admittance vs. Frequency



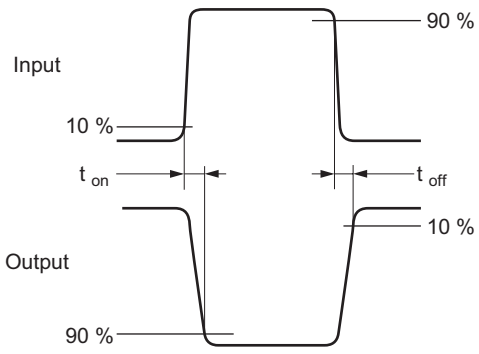

Switching Time vs. Drain Current




Switching Time Test Circuit



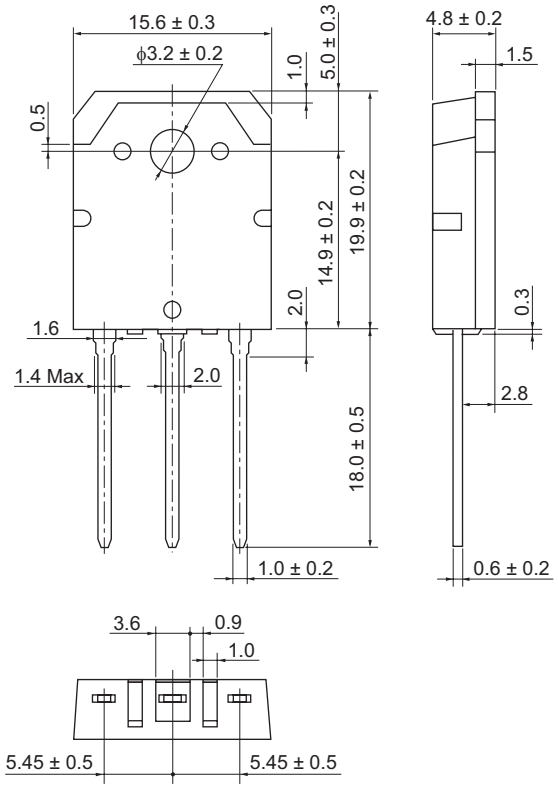

Waveforms



## Package Dimensions

| JEITA Package Code | RENESAS Code | Package Name | MASS[Typ.] |
|---|---|---|---|
| SC-65 | PRSS0004ZE-A | TO-3P / TO-3PV | 5.0g |

Unit: mm




## Ordering Information

| Part Name | Quantity | Shipping Container |
|---|---|---|
| 2SK1056-E | 360 pcs | Box (Tube) |
| 2SK1057-E | 360 pcs | Box (Tube) |
| 2SK1058-E | 360 pcs | Box (Tube) |

Note: For some grades, production may be terminated. Please contact the Renesas sales office to check the state of production before ordering the product.

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## RENESAS SALES OFFICES

http://www.renesas.com

Refer to "**http://www.renesas.com/en/network**" for the latest and detailed information.

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