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Renesas Electronics website: <http://www.renesas.com>

April 1st, 2010
Renesas Electronics Corporation

Issued by: Renesas Electronics Corporation (<http://www.renesas.com>)

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2SK2220, 2SK2221

Silicon N Channel MOS FET

REJ03G1004-0200
(Previous: ADE-208-1352)
Rev.2.00
Sep 07, 2005

Application

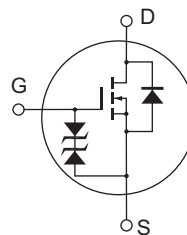
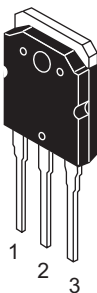
Low frequency power amplifier
Complementary pair with 2SJ351, 2SJ352

Features

- High power gain
- Excellent frequency response
- High speed switching
- Wide area of safe operation
- Enhancement-mode
- Good complementary characteristics
- Equipped with gate protection diodes

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 | 2SK2220 | 180 | V |
| | 2SK2221 | 200 | |
| Gate to source voltage | V _{GSS} | ±20 | V |
| Drain current | I _D | 8 | A |
| Body to drain diode reverse drain current | I _{DR} | 8 | A |
| Channel dissipation | P _{ch} *1 | 100 | W |
| Channel temperature | T _{ch} | 150 | °C |
| Storage temperature | T _{stg} | -55 to +150 | °C |

Note: 1. Value at Tc = 25°C

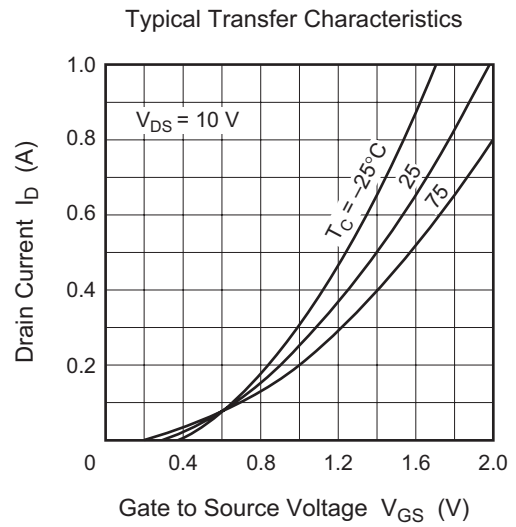
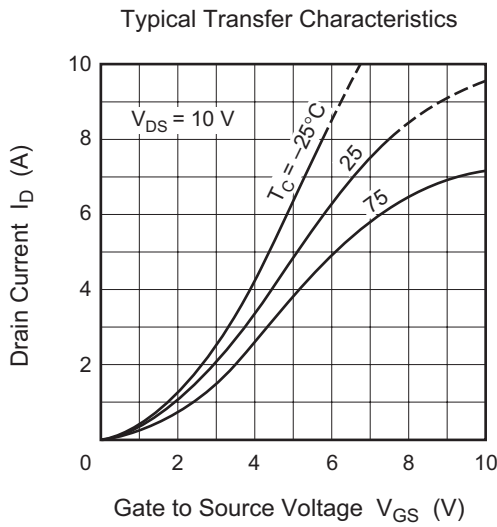
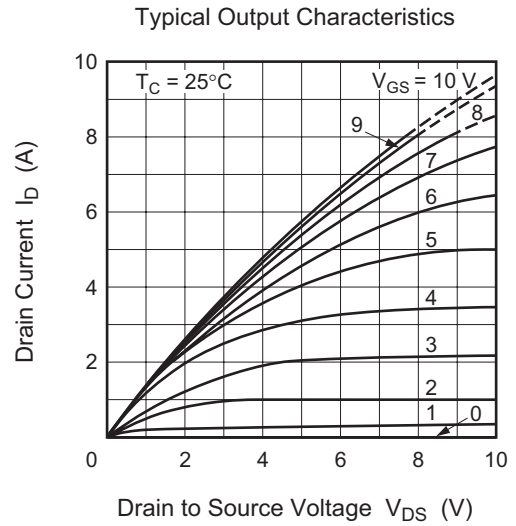
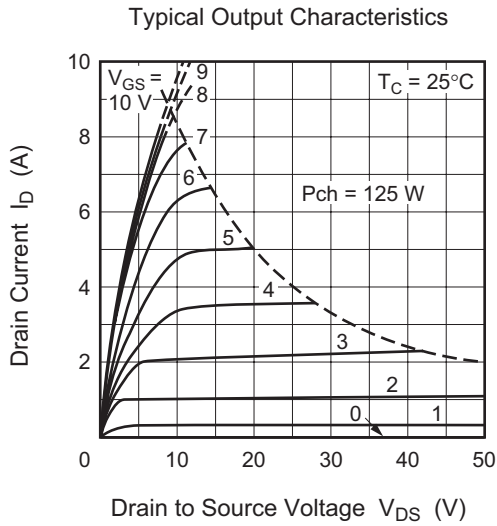
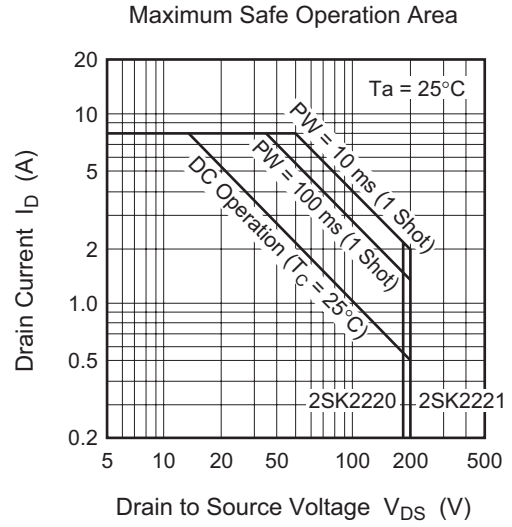
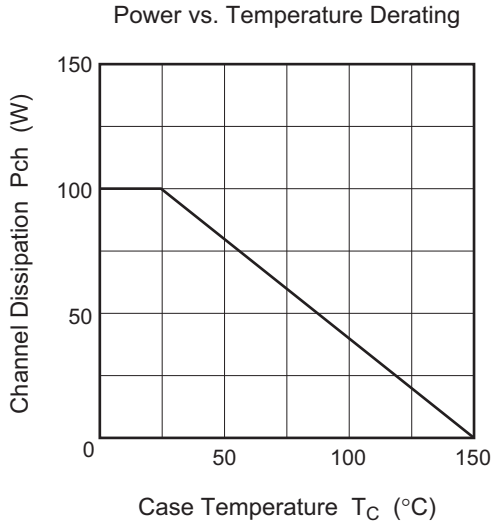
Electrical Characteristics

(Ta = 25°C)

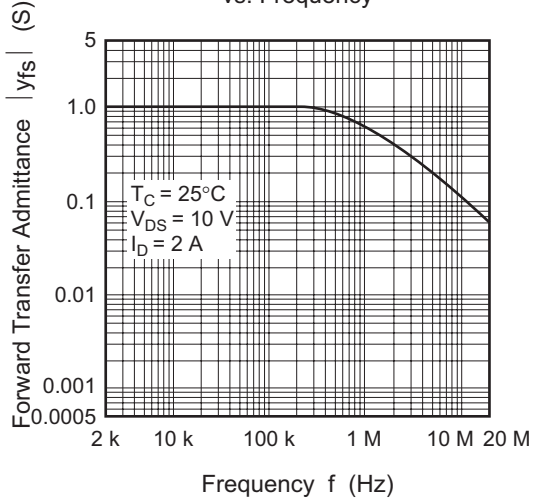
| Item | Symbol | Min | Typ | Max | Unit | Test conditions |
|------------------------------------|----------------------|------|-----|------|------|--|
| Drain to source breakdown voltage | 2SK2220 | 180 | — | — | V | I _D = 10 mA, V _{GS} = -10 V |
| | 2SK2221 | 200 | — | — | | |
| Gate to source breakdown voltage | V _{(BR)GSS} | ±20 | — | — | 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 = 8 A, V _{GD} = 0 V*2 |
| Forward transfer admittance | y _{fs} | 0.7 | 1.0 | 1.4 | S | I _D = 3 A, V _{DS} = 10 V*2 |
| Input capacitance | C _{iss} | — | 600 | — | pF | V _{GS} = -5 V, V _{DS} = 10 V, f = 1 MHz |
| Output capacitance | C _{oss} | — | 800 | — | pF | |
| Reverse transfer capacitance | C _{rss} | — | 8 | — | pF | |
| Turn-on time | t _{on} | — | 250 | — | ns | V _{DD} = 30 V, I _D = 4 A |
| Turn-off time | t _{off} | — | 90 | — | ns | |

Note: 2. Pulse Test

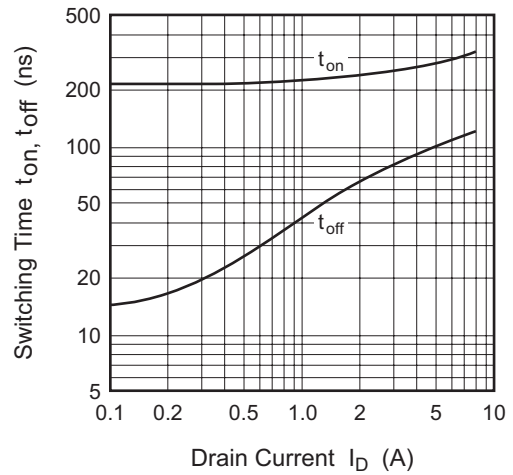
Main Characteristics



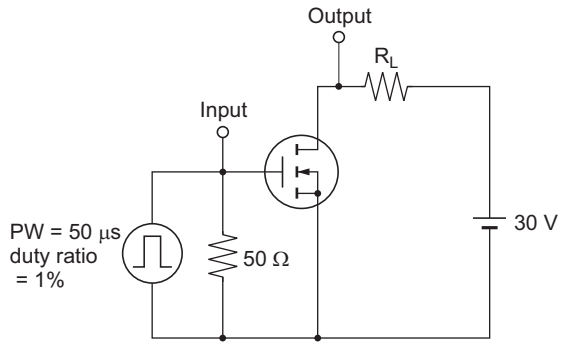
Forward Transfer Admittance vs. Frequency



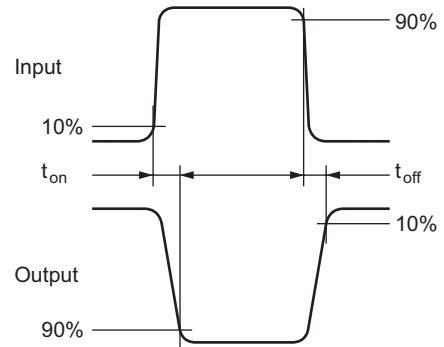
Switching Time vs. Drain Current



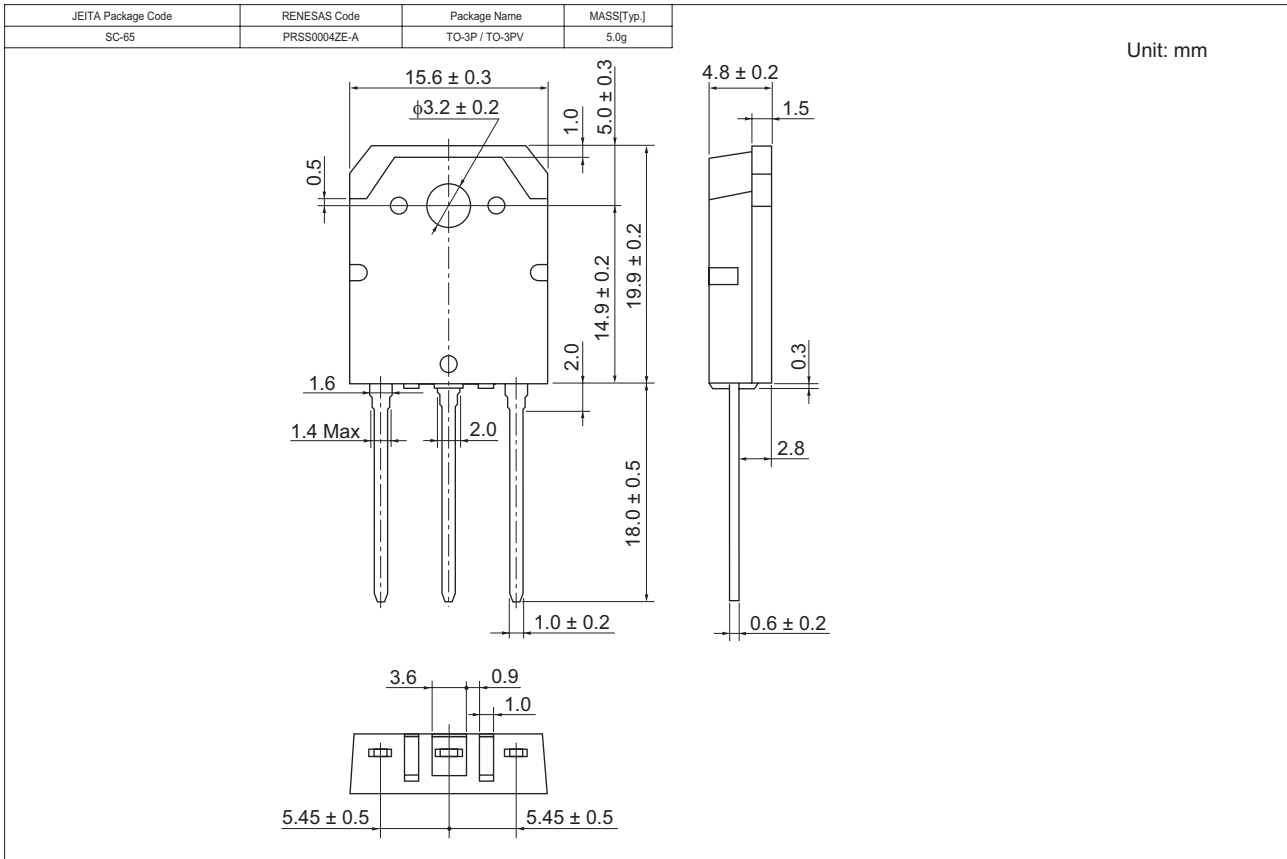
Switching Time Test Circuit



Waveforms



Package Dimensions



Ordering Information

| Part Name | Quantity | Shipping Container |
|-----------|----------|--------------------|
| 2SK2220-E | 360 pcs | Box (Tube) |
| 2SK2221-E | 360 pcs | Box (Tube) |

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