

RJK4014DPK

Silicon N Channel MOS FET High Speed Power Switching

REJ03G1576-0100

Rev.1.00

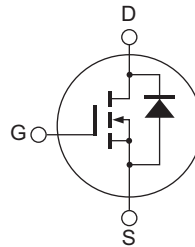
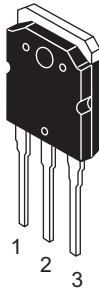
Aug 08, 2007

Features

- Low on-resistance
- Low leakage current
- High speed switching

Outline

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



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

Absolute Maximum Ratings

(Ta = 25°C)

| Item | Symbol | Ratings | Unit |
|---|----------------------------------|-------------|------|
| Drain to source voltage | V_{DSS} | 400 | V |
| Gate to source voltage | V_{GSS} | ±30 | V |
| Drain current | I_D | 24 | A |
| Drain peak current | $I_{D(pulse)}$ ^{Note1} | 72 | A |
| Body-drain diode reverse drain current | I_{DR} | 24 | A |
| Body-drain diode reverse drain peak current | $I_{DR(pulse)}$ ^{Note1} | 72 | A |
| Avalanche current | I_{AP} ^{Note3} | 8 | A |
| Avalanche energy | E_{AR} ^{Note3} | 3.65 | mJ |
| Channel dissipation | P_{ch} ^{Note2} | 150 | W |
| Channel to case thermal impedance | θ_{ch-c} | 0.833 | °C/W |
| Channel temperature | T_{ch} | 150 | °C |
| Storage temperature | T_{stg} | -55 to +150 | °C |

Notes: 1. $PW \leq 10 \mu s$, duty cycle $\leq 1\%$ 2. Value at $T_c = 25^\circ C$ 3. $STch = 25^\circ C$, $T_{ch} \leq 150^\circ C$

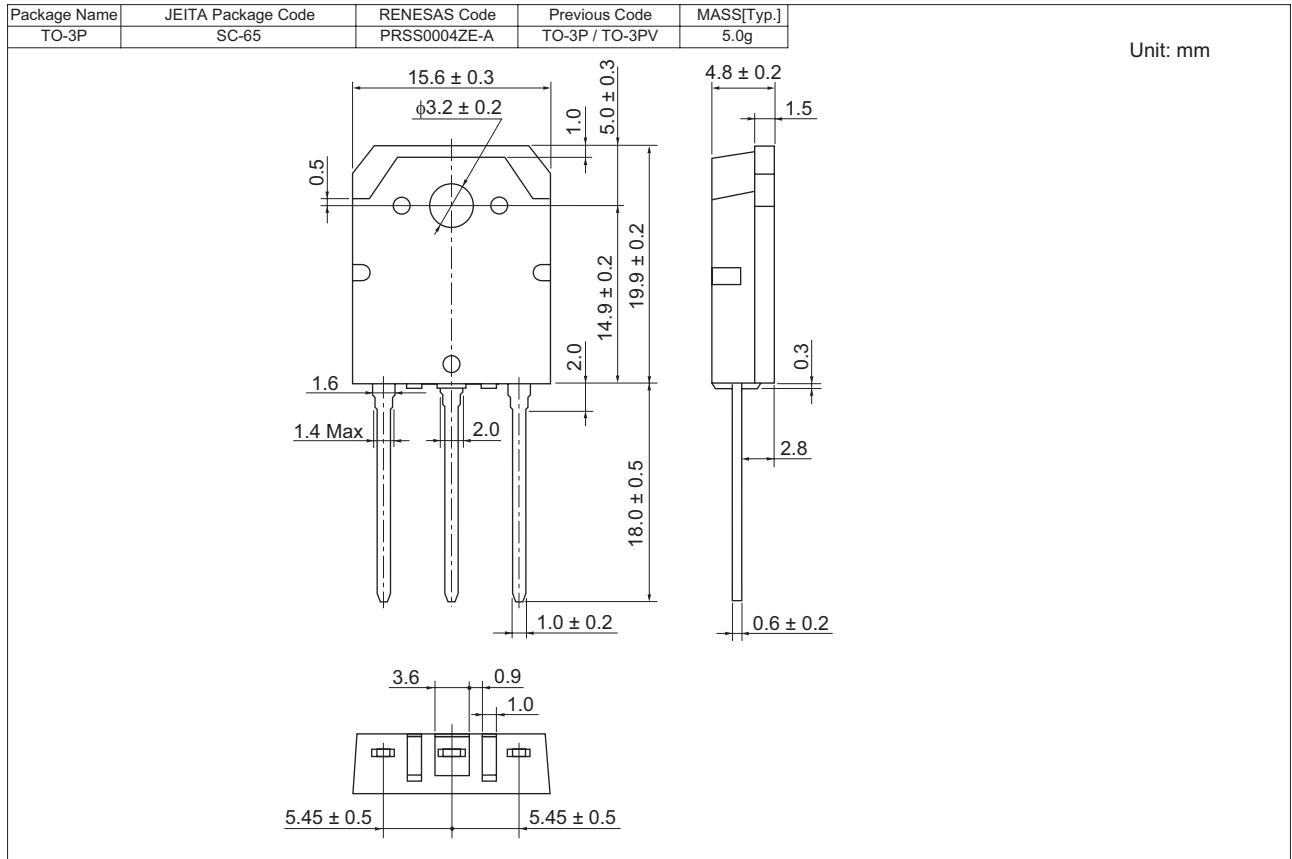
Electrical Characteristics

(Ta = 25°C)

| Item | Symbol | Min | Typ | Max | Unit | Test conditions |
|--|---------------|-----|------|-----------|---------------|--|
| Drain to source breakdown voltage | $V_{(BR)DSS}$ | 400 | — | — | V | $I_D = 10 \text{ mA}$, $V_{GS} = 0$ |
| Zero gate voltage drain current | I_{DSS} | — | — | 1 | μA | $V_{DS} = 400 \text{ V}$, $V_{GS} = 0$ |
| Gate to source leak current | I_{GSS} | — | — | ± 0.1 | μA | $V_{GS} = \pm 30 \text{ V}$, $V_{DS} = 0$ |
| Gate to source cutoff voltage | $V_{GS(off)}$ | 3.0 | — | 4.5 | V | $V_{DS} = 10 \text{ V}$, $I_D = 1 \text{ mA}$ |
| Static drain to source on state resistance | $R_{DS(on)}$ | — | 0.20 | 0.24 | Ω | $I_D = 12 \text{ A}$, $V_{GS} = 10 \text{ V}$ ^{Note4} |
| Input capacitance | C_{iss} | — | 1800 | — | pF | $V_{DS} = 25 \text{ V}$ |
| Output capacitance | C_{oss} | — | 220 | — | pF | $V_{GS} = 0$ |
| Reverse transfer capacitance | C_{rss} | — | 29 | — | pF | $f = 1 \text{ MHz}$ |
| Turn-on delay time | $t_{d(on)}$ | — | 35 | — | ns | $I_D = 12 \text{ A}$ |
| Rise time | t_r | — | 63 | — | ns | $V_{GS} = 10 \text{ V}$ |
| Turn-off delay time | $t_{d(off)}$ | — | 93 | — | ns | $R_L = 16.7 \Omega$ |
| Fall time | t_f | — | 49 | — | ns | $R_g = 10 \Omega$ |
| Total gate charge | Q_g | — | 47 | — | nC | $V_{DD} = 320 \text{ V}$ |
| Gate to source charge | Q_{gs} | — | 10 | — | nC | $V_{GS} = 10 \text{ V}$ |
| Gate to drain charge | Q_{gd} | — | 21 | — | nC | $I_D = 24 \text{ A}$ |
| Body-drain diode forward voltage | V_{DF} | — | 0.95 | 1.60 | V | $I_F = 24 \text{ A}$, $V_{GS} = 0$ ^{Note4} |
| Body-drain diode reverse recovery time | t_{rr} | — | 310 | — | ns | $I_F = 24 \text{ A}$, $V_{GS} = 0$ $di_F/dt = 100 \text{ A}/\mu\text{s}$ |

Notes: 4. Pulse test

Package Dimensions



Ordering Information

| Part No. | Quantity | Shipping Container |
|------------------|----------|--------------------|
| RJK4014DPK-00-T0 | 360 pcs | Box (Tube) |

Notes:

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