

To our customers,

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## Old Company Name in Catalogs and Other Documents

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April 1<sup>st</sup>, 2010  
Renesas Electronics Corporation

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## 3SK317

Silicon N-Channel Dual Gate MOS FET  
UHF / VHF RF Amplifier

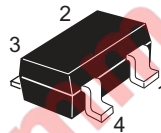
REJ03G1247-0200  
(Previous: ADE-208-778)  
Rev.2.00  
Aug. 10, 2005

### Features

- Low noise characteristics;  
(NF = 1.0 dB typ. at f = 200 MHz)
- High power gain characteristics;  
(PG = 27.6 dB typ. at f = 200 MHz)

### Outline

RENESAS Package code: PTSP0004ZA-A  
(Package name: CMPAK-4)



1. Source
2. Gate1
3. Gate2
4. Drain

Note: Marking is "ZR-".

Not recommended  
for new design

## Absolute Maximum Ratings

(Ta = 25°C)

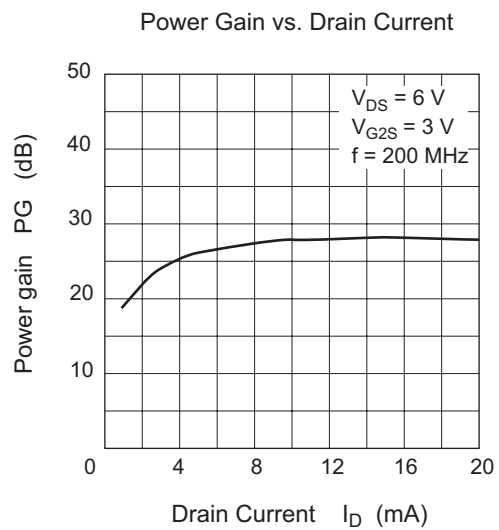
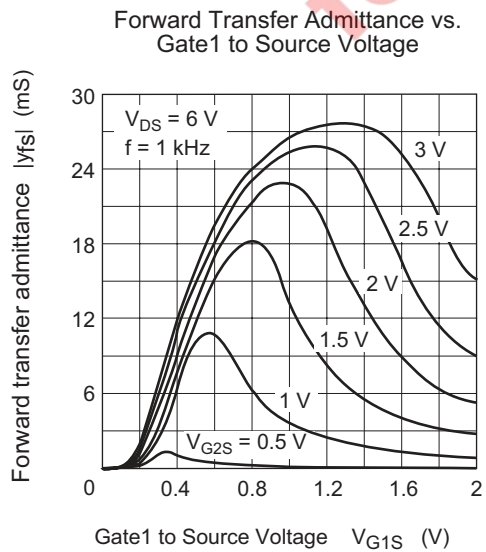
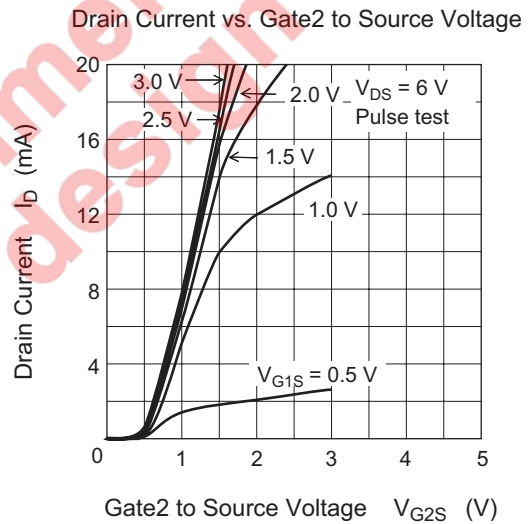
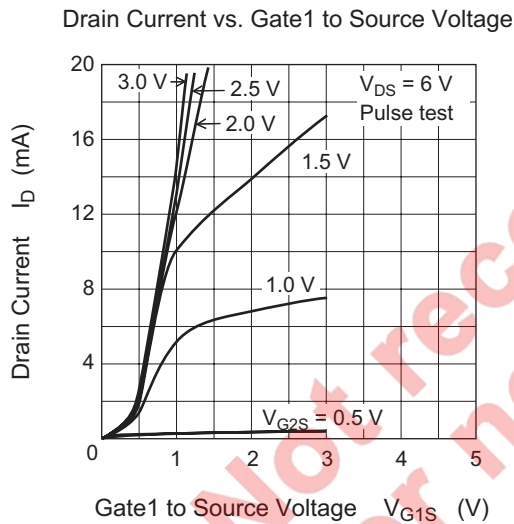
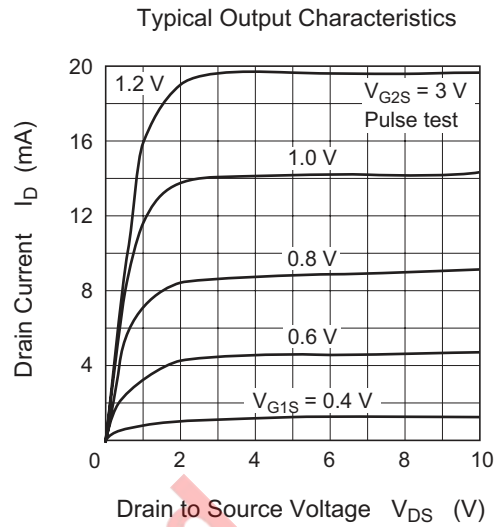
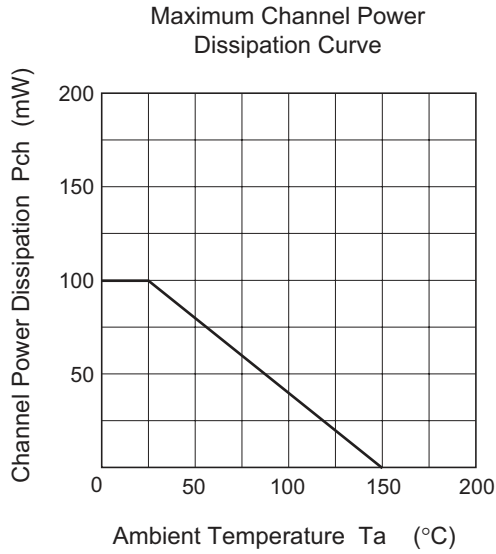
| Item                      | Symbol           | Ratings     | Unit |
|---------------------------|------------------|-------------|------|
| Drain to source voltage   | V <sub>DS</sub>  | 14          | V    |
| Gate1 to source voltage   | V <sub>G1S</sub> | ±8          | V    |
| Gate2 to source voltage   | V <sub>G2S</sub> | ±8          | V    |
| Drain current             | I <sub>D</sub>   | 25          | mA   |
| Channel power dissipation | P <sub>ch</sub>  | 100         | mW   |
| Channel temperature       | T <sub>ch</sub>  | 150         | °C   |
| Storage temperature       | T <sub>stg</sub> | -55 to +150 | °C   |

## Electrical Characteristics

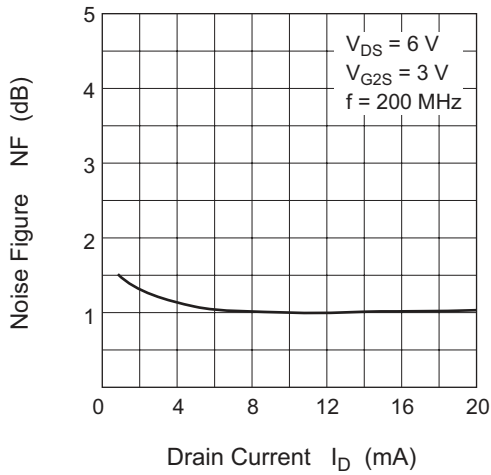
(Ta = 25°C)

| Item                              | Symbol                | Min | Typ   | Max  | Unit | Test Conditions   |
|-----------------------------------|-----------------------|-----|-------|------|------|---|
| Drain to source breakdown voltage | V <sub>(BR)DSS</sub>  | 14  | —     | —    | V    | I <sub>D</sub> = 200 $\mu$ A, V <sub>G1S</sub> = V <sub>G2S</sub> = -3 V              |
| Gate1 to source breakdown voltage | V <sub>(BR)G1SS</sub> | ±8  | —     | —    | V    | I <sub>G1</sub> = ±10 $\mu$ A, V <sub>G2S</sub> = V <sub>DS</sub> = 0                 |
| Gate2 to source breakdown voltage | V <sub>(BR)G2SS</sub> | ±8  | —     | —    | V    | I <sub>G2</sub> = ±10 $\mu$ A, V <sub>G1S</sub> = V <sub>DS</sub> = 0                 |
| Gate1 to source cutoff current    | I <sub>G1SS</sub>     | —   | —     | ±100 | nA   | V <sub>G1S</sub> = ±6 V, V <sub>G2S</sub> = V <sub>DS</sub> = 0                       |
| Gate2 to source cutoff current    | I <sub>G2SS</sub>     | —   | —     | ±100 | nA   | V <sub>G2S</sub> = ±6 V, V <sub>G1S</sub> = V <sub>DS</sub> = 0                       |
| Gate1 to source cutoff voltage    | V <sub>G1S(off)</sub> | 0   | 0.2   | 1    | V    | V <sub>DS</sub> = 10 V, V <sub>G2S</sub> = 3 V,<br>I <sub>D</sub> = 100 $\mu$ A       |
| Gate2 to source cutoff voltage    | V <sub>G2S(off)</sub> | 0   | 0.3   | 1    | V    | V <sub>DS</sub> = 10 V, V <sub>G1S</sub> = 3 V,<br>I <sub>D</sub> = 100 $\mu$ A       |
| Drain current                     | I <sub>D(op)</sub>    | 4   | 8     | 14   | mA   | V <sub>DS</sub> = 6 V, V <sub>G1S</sub> = 0.75 V,<br>V <sub>G2S</sub> = 3 V           |
| Forward transfer admittance       | y <sub>fs</sub>       | 20  | 25    | —    | mS   | V <sub>DS</sub> = 6 V, V <sub>G2S</sub> = 3 V<br>I <sub>D</sub> = 10 mA, f = 1 kHz    |
| Input capacitance                 | C <sub>iss</sub>      | 2.4 | 3.1   | 3.5  | pF   | V <sub>DS</sub> = 6 V, V <sub>G2S</sub> = 3 V,<br>I <sub>D</sub> = 10 mA, f = 1 MHz   |
| Output capacitance                | C <sub>oss</sub>      | 0.8 | 1.1   | 1.4  | pF   |   |
| Reverse transfer capacitance      | C <sub>rss</sub>      | —   | 0.021 | 0.04 | pF   |   |
| Power gain                        | PG                    | 24  | 27.6  | —    | dB   | V <sub>DS</sub> = 6 V, V <sub>G2S</sub> = 3 V,<br>I <sub>D</sub> = 10 mA, f = 200 MHz |
| Noise figure                      | NF                    | —   | 1.0   | 1.5  | dB   | V <sub>DS</sub> = 6 V, V <sub>G2S</sub> = 3 V,<br>I <sub>D</sub> = 10 mA, f = 900 MHz |
| Power gain                        | PG                    | 12  | 15.6  | —    | dB   |   |
| Noise figure                      | NF                    | —   | 3     | 4    | dB   |   |
| Noise figure                      | NF                    | —   | 2.7   | 3.5  | dB   | V <sub>DS</sub> = 6 V, V <sub>G2S</sub> = 3 V<br>I <sub>D</sub> = 10 mA, f = 60 MHz   |

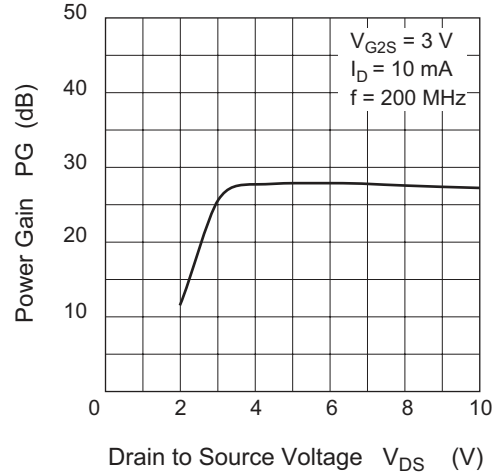
Main Characteristics



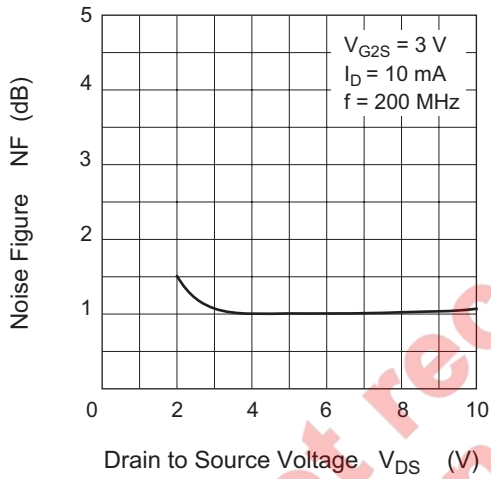
Noise Figure vs. Drain Current



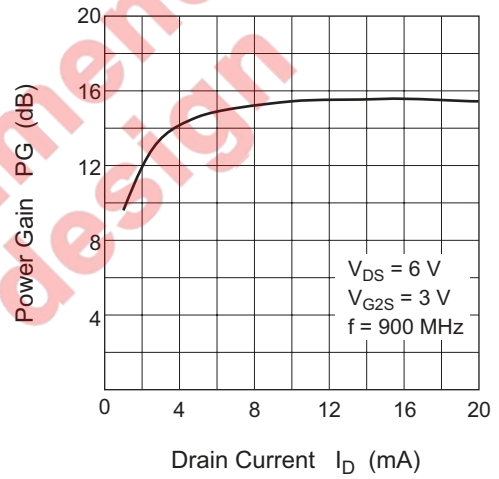
Power Gain vs. Drain to Source Voltage



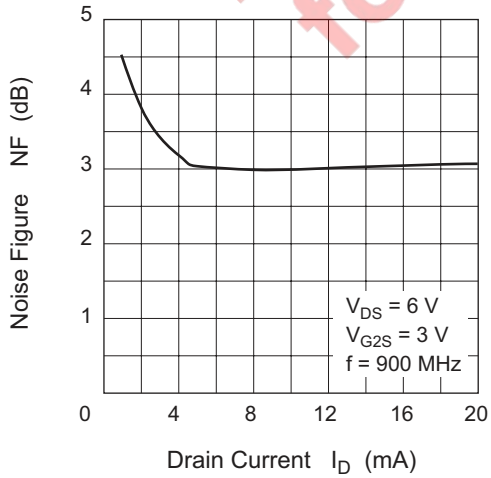
Noise Figure vs. Drain to Source Voltage



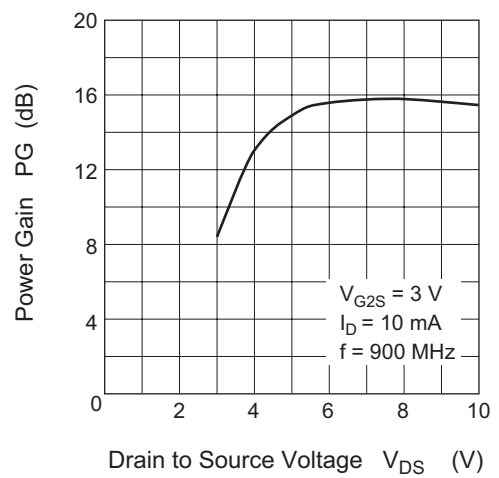
Power Gain vs. Drain Current



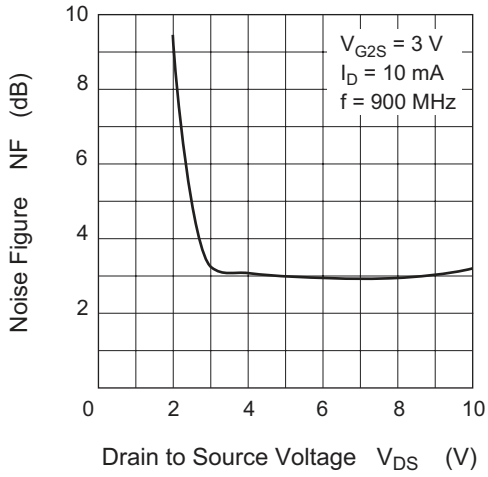
Noise Figure vs. Drain Current



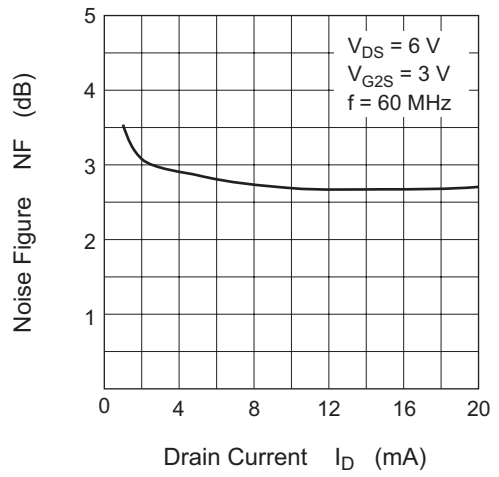
Power Gain vs. Drain to Source Voltage



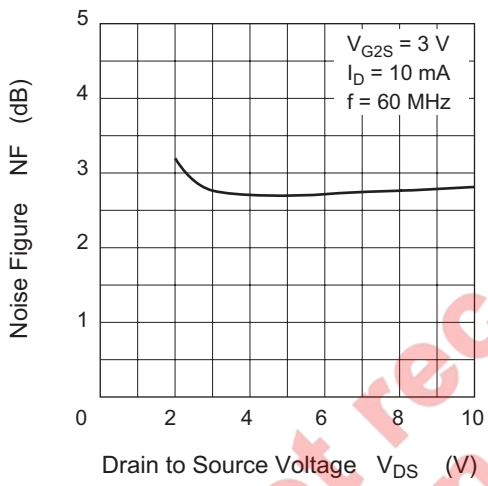
Noise Figure vs. Drain to Source Voltage



Noise Figure vs. Drain Current

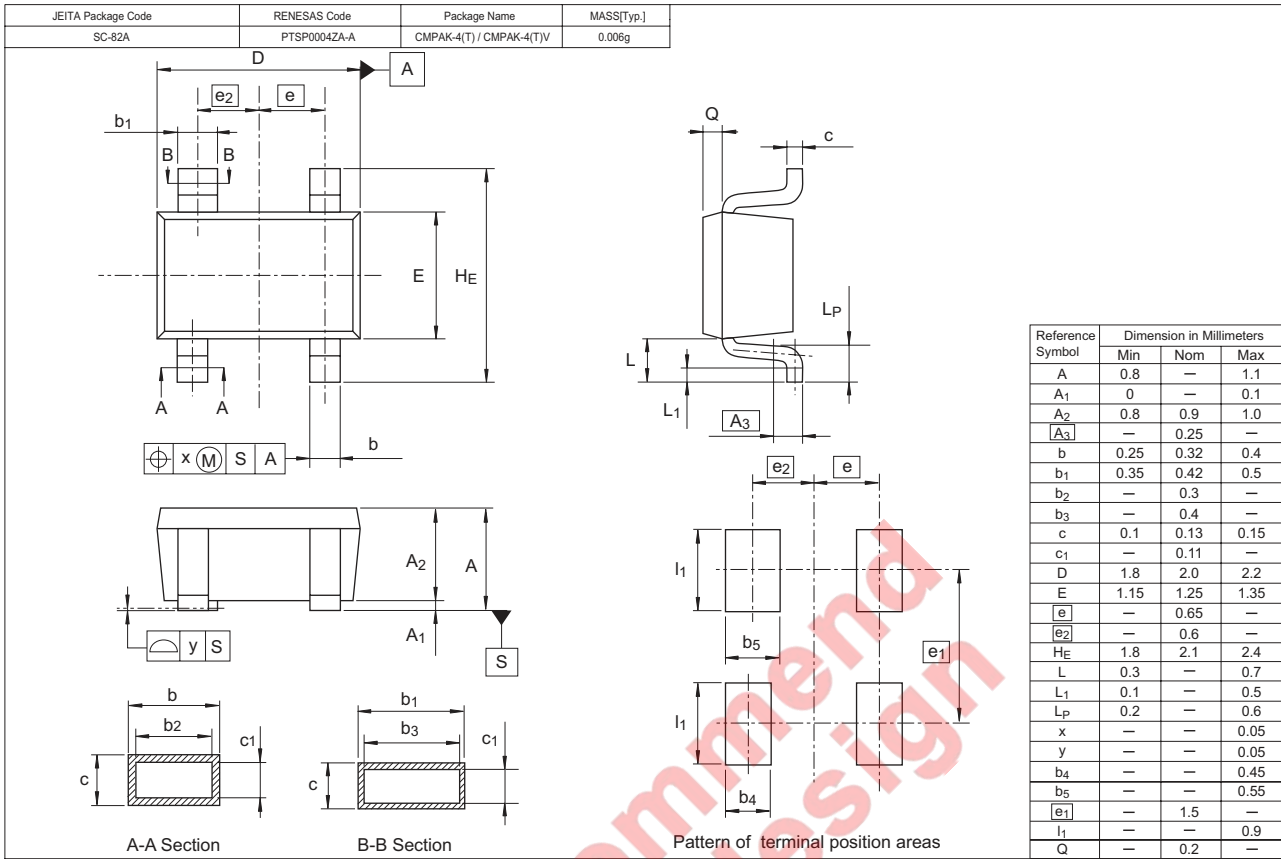


Noise Figure vs. Drain to Source Voltage



Not recommend  
for new design

### Package Dimensions



### Ordering Information

| Part Name     | Quantity | Shipping Container               |
|---------------|----------|----------------------------------|
| 3SK317ZR-TL-E | 3000     | φ178 mm Reel, 8 mm Emboss Taping |

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Tel: <82> 2-796-3115, Fax: <82> 2-796-2145

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