



# PJA3471

## 100V P-Channel Enhancement Mode MOSFET

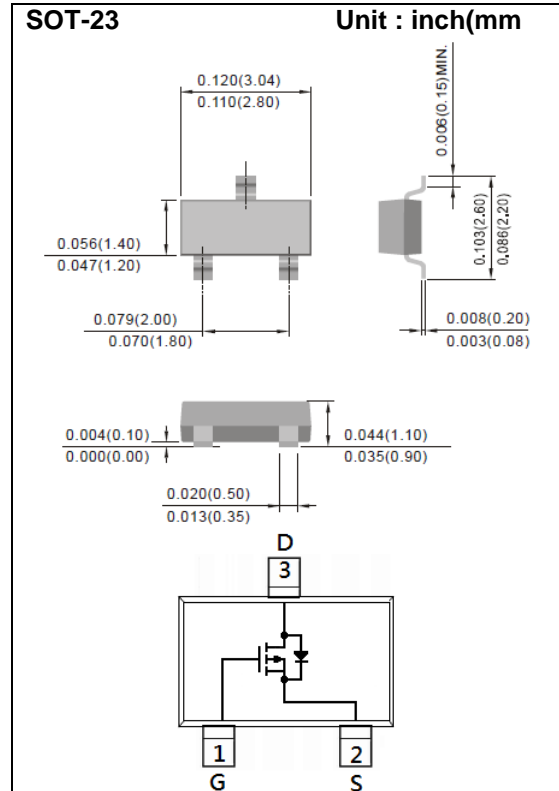
**Voltage**    **-100 V**    **Current**    **-0.9 A**

### Features

- $R_{DS(ON)}$ ,  $V_{GS}@-10V$ ,  $I_D@-0.9A < 650m\Omega$
- $R_{DS(ON)}$ ,  $V_{GS}@-4.5V$ ,  $I_D@-0.45A < 700m\Omega$
- Advanced Trench Process Technology
- Specially Designed for Switch Load, PWM Application, etc
- Lead free in compliance with EU RoHS 2.0
- Green molding compound as per IEC 61249 standard

### Mechanical Data

- Case : SOT-23 Package
- Terminals : Solderable per MIL-STD-750, Method 2026
- Approx. Weight : 0.0003 ounces, 0.0084 grams



### Maximum Ratings and Thermal Characteristics ( $T_A=25^\circ C$ unless otherwise noted)

| PARAMETER  | SYMBOL          | LIMIT            | UNITS        |
|--|-----------------|------------------|--------------|
| Drain-Source Voltage                             | $V_{DS}$        | -100             | V            |
| Gate-Source Voltage                              | $V_{GS}$        | $\pm 20$         |              |
| Continuous Drain Current (Note 4)                | $I_D$           | $T_A=25^\circ C$ | A            |
|  |                 | $T_A=70^\circ C$ |              |
| Pulsed Drain Current (Note 1)                    | $I_{DM}$        | -3.6             |              |
| Power Dissipation                                | $P_D$           | $T_A=25^\circ C$ | W            |
|  |                 | $T_A=70^\circ C$ |              |
| Single Pulse Avalanche Energy (Note 6)           | $E_{AS}$        | 0.2              | mJ           |
| Operating Junction and Storage Temperature Range | $T_J, T_{STG}$  | -55~150          | $^\circ C$   |
| Typical Thermal resistance                       | $R_{\theta JA}$ | 100              | $^\circ C/W$ |
| - Junction to Ambient (Note 4,5)                 |                 |                  |              |



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## Electrical Characteristics (T<sub>A</sub>=25°C unless otherwise noted)

| PARAMETER   | SYMBOL              | TEST CONDITION  | MIN. | TYP.  | MAX. | UNITS |
|---|---------------------|---|------|-------|------|-------|
| <b>Static</b>   |                     |   |      |       |      |       |
| Drain-Source Breakdown Voltage                        | BV <sub>DSS</sub>   | V <sub>GS</sub> =0V, I <sub>D</sub> =-250uA   | -100 | -     | -    | V     |
| Gate Threshold Voltage                                | V <sub>GS(th)</sub> | V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =-250uA   | -1   | -2    | -2.5 |       |
| Drain-Source On-State Resistance                      | R <sub>DS(on)</sub> | V <sub>GS</sub> =-10V, I <sub>D</sub> =-0.9A  | -    | 500   | 650  | mΩ    |
|   |                     | V <sub>GS</sub> =-4.5V, I <sub>D</sub> =-0.45A  | -    | 560   | 700  |       |
| Zero Gate Voltage Drain Current                       | I <sub>DSS</sub>    | V <sub>DS</sub> =-80V, V <sub>GS</sub> =0V  | -    | -     | -1   | uA    |
| Gate-Source Leakage Current                           | I <sub>GSS</sub>    | V <sub>GS</sub> =±20V, V <sub>DS</sub> =0V  | -    | -     | ±100 | nA    |
| <b>Dynamic</b> (Note 7)                               |                     |   |      |       |      |       |
| Total Gate Charge                                     | Q <sub>g</sub>      | V <sub>DS</sub> =-50V, I <sub>D</sub> =-1A,<br>V <sub>GS</sub> =-10V (Note 2,3)                         | -    | 8     | -    | nC    |
| Gate-Source Charge                                    | Q <sub>gs</sub>     |   | -    | 1.8   | -    |       |
| Gate-Drain Charge                                     | Q <sub>gd</sub>     |   | -    | 1.4   | -    |       |
| Input Capacitance                                     | C <sub>iss</sub>    | V <sub>DS</sub> =-15V, V <sub>GS</sub> =0V,<br>f=1MHZ   | -    | 448   | -    | pF    |
| Output Capacitance                                    | C <sub>oss</sub>    |   | -    | 28    | -    |       |
| Reverse Transfer Capacitance                          | C <sub>rss</sub>    |   | -    | 21    | -    |       |
| Turn-On Delay Time                                    | t <sub>d(on)</sub>  | V <sub>DS</sub> =-50V, I <sub>D</sub> =1A,<br>V <sub>GS</sub> =-10V, R <sub>G</sub> =6.2Ω<br>(Note 2,3) | -    | 3.7   | -    | ns    |
| Turn-On Rise Time                                     | t <sub>r</sub>      |   | -    | 25    | -    |       |
| Turn-Off Delay Time                                   | t <sub>d(off)</sub> |   | -    | 21    | -    |       |
| Turn-Off Fall Time                                    | t <sub>f</sub>      |   | -    | 22    | -    |       |
| <b>Drain-Source Diode</b>                             |                     |   |      |       |      |       |
| Maximum Continuous Drain-Source Diode Forward Current | I <sub>S</sub>      | ---   | -    | -     | -1.5 | A     |
| Diode Forward Voltage                                 | V <sub>SD</sub>     | I <sub>S</sub> =-1A, V <sub>GS</sub> =0V  | -    | -0.82 | -1.2 | V     |

**NOTES :**

1. Pulse width ≤ 300us, Duty cycle ≤ 2%
2. Essentially independent of operating temperature typical characteristics.
3. The maximum current rating is package limited.
4. Repetitive rating, pulse width limited by junction temperature T<sub>J(MAX)</sub>=150°C. Ratings are based on low frequency and duty cycles to keep initial T<sub>J</sub> = 25°C.
5. The test condition is L=0.1mH, I<sub>AS</sub>=-2A, V<sub>DD</sub>=-25V, V<sub>GS</sub>=-10V
6. R<sub>ΘJA</sub> is the sum of the junction-to-case and case-to-ambient thermal resistance where the case thermal reference is defined as the solder mounting surface of the drain pins. Mounted on a 1 inch<sup>2</sup> with 2oz.square pad of copper.
7. Guaranteed by design, not subject to production testing.



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## TYPICAL CHARACTERISTIC CURVES

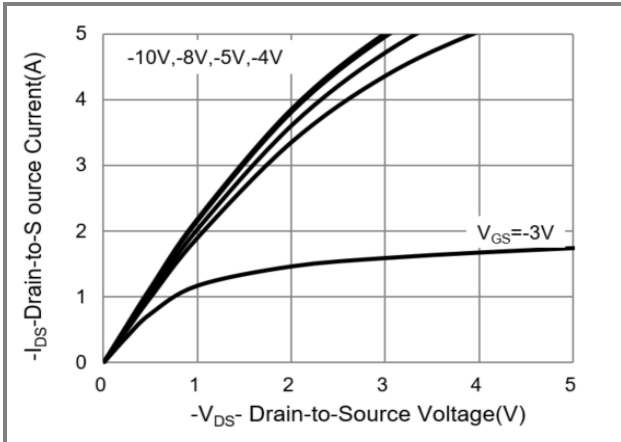


Fig.1 On-Region Characteristics

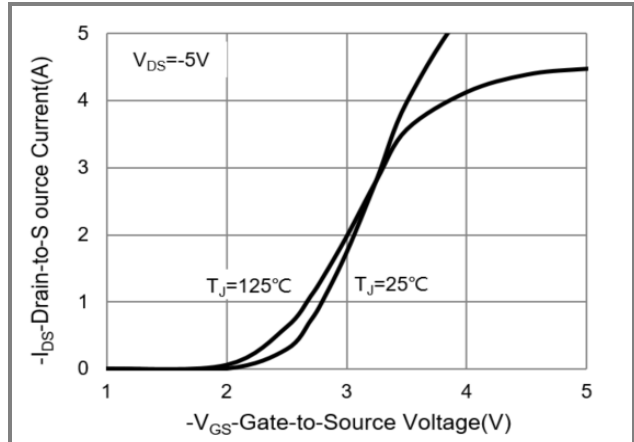


Fig.2 Transfer Characteristics

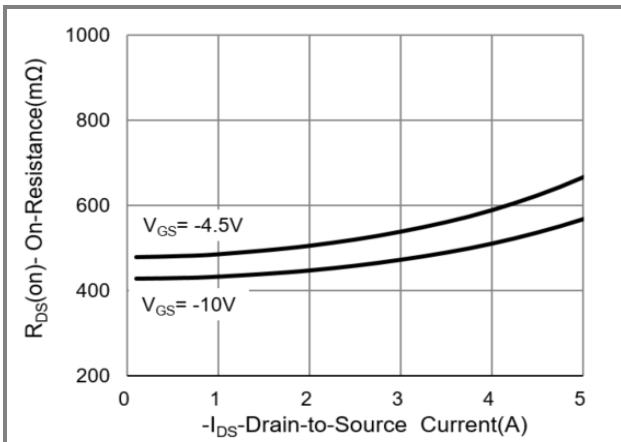


Fig.3 On-Resistance vs. Drain Current

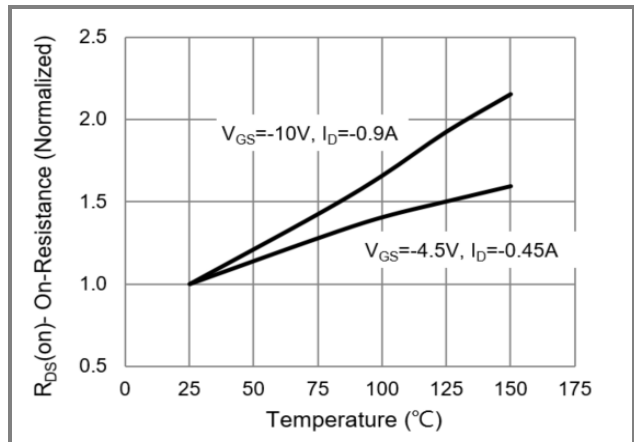


Fig.4 On-Resistance vs. Junction temperature

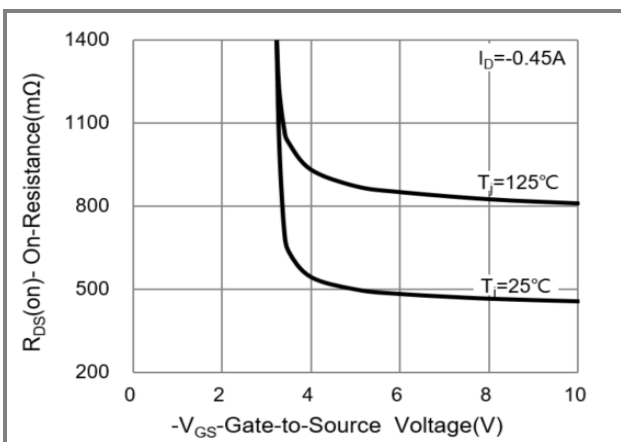


Fig.5 On-Resistance Variation with  $V_{GS}$

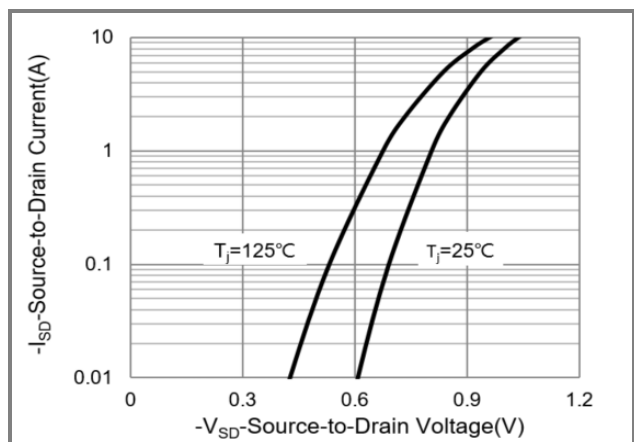


Fig.6 Body Diode Characteristics



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## TYPICAL CHARACTERISTIC CURVES

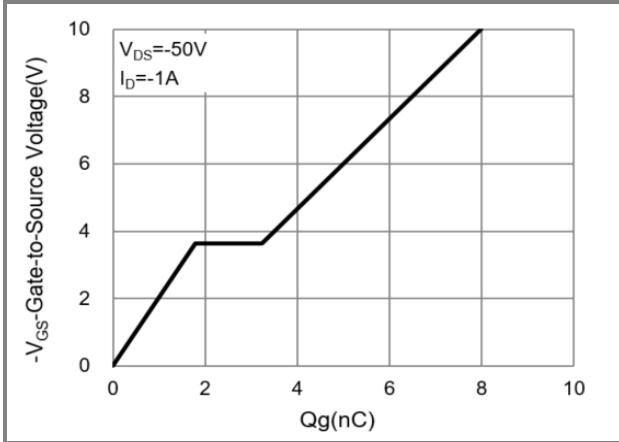


Fig.7 Gate-Charge Characteristics

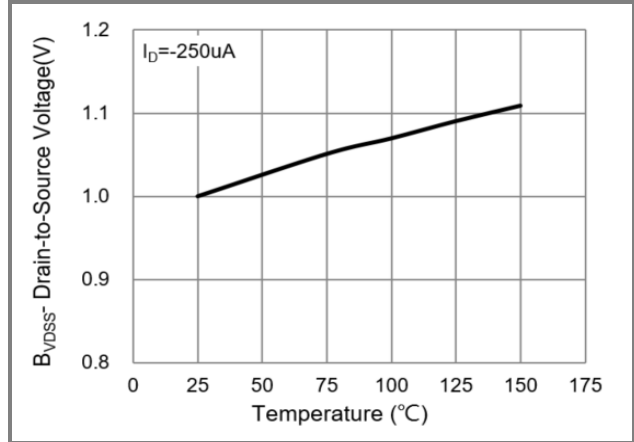


Fig.8 Breakdown Voltage Variation vs. Temperature

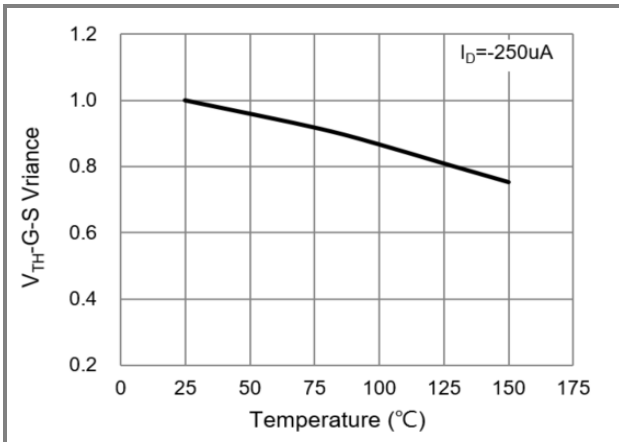


Fig.9 Threshold Voltage Variation with Temperature

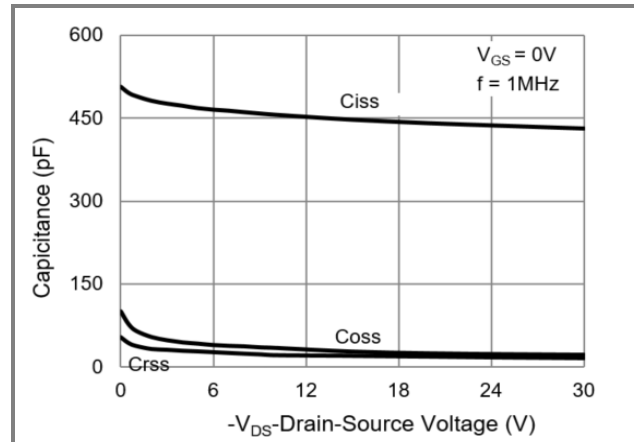


Fig.10 Capacitance vs. Drain-Source Voltage

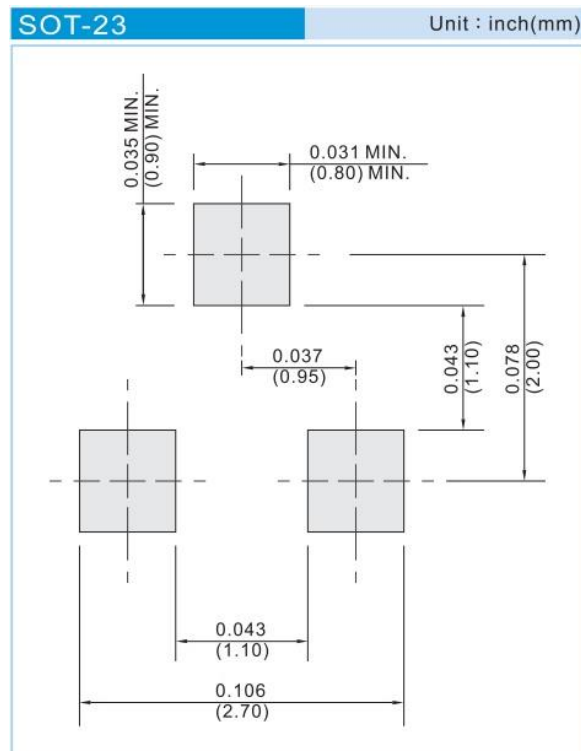


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## Part No Packing Code Version

| Part No Packing Code | Package Type | Packing Type     | Marking | Version      |
|----------------------|--------------|------------------|---------|--------------|
| PJA3471_R1_00001     | SOT-23       | 3K pcs / 7" reel | A71     | Halogen free |

## Mounting Pad Layout





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