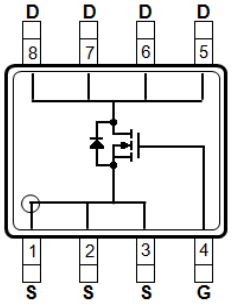
# PJL9412

## 30V N-Channel Enhancement Mode MOSFET

| Voltage | 30 V | Current | 10 A |
|---|---|---|---|

**SOP-8**




### Features

- $R_{DS(ON)}$, $V_{GS}$@10V, $I_D$@6A<10mΩ
- $R_{DS(ON)}$, $V_{GS}$@4.5V, $I_D$@3A<14mΩ
- High switching speed
- Improved dv/dt capability
- Low Gate Charge
- Low reverse transfer capacitance
- Lead free in compliance with EU RoHS 2.0
- Green molding compound as per IEC 61249 standard

### Mechanical Data

- Case : SOP-8 package
- Terminals : Solderable per MIL-STD-750, Method 2026
- Approx. Weight : 0.0029 ounces, 0.083 grams

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

| PARAMETER | | SYMBOL | LIMIT | UNITS |
|---|---|---|---|---|
| Drain-Source Voltage | | $V_{DS}$ | 30 | V |
| Gate-Source Voltage | | $V_{GS}$ | ±20 | |
| Continuous Drain Current (Note 4) | $T_A$=25°C | $I_D$ | 10 | A |
| | $T_A$=70°C | | 8 | |
| Pulsed Drain Current (Note 1) | | $I_{DM}$ | 50 | |
| Power Dissipation | $T_A$=25°C | $P_D$ | 2.1 | W |
| | $T_A$=70°C | | 1.3 | |
| Operating Junction and Storage Temperature Range | | $T_J$,$T_{STG}$ | -55~150 | °C |
| Typical Thermal Resistance<br>- Junction to Ambient (Note 4,5) | | $R_{\theta JA}$ | 59.5 | °C/W |

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## Electrical Characteristics ($T_A$=25°C unless otherwise noted)

| PARAMETER | SYMBOL | TEST CONDITION | MIN. | TYP. | MAX. | UNITS |
|---|---|---|---|---|---|---|
| **Static** | | | | | | |
| Drain-Source Breakdown Voltage | $BV_{DSS}$ | $V_{GS}$=0V, $I_D$=250uA | 30 | - | - | V |
| Gate Threshold Voltage | $V_{GS(th)}$ | $V_{DS}$=$V_{GS}$, $I_D$=250uA | 1 | 1.6 | 2.5 | |
| Drain-Source On-State Resistance | $R_{DS(on)}$ | $V_{GS}$=10V, $I_D$=6A | - | 7.5 | 10 | mΩ |
| | | $V_{GS}$=4.5V, $I_D$=3A | - | 11 | 14 | |
| Zero Gate Voltage Drain Current | $I_{DSS}$ | $V_{DS}$=30V, $V_{GS}$=0V | - | - | 1 | uA |
| Gate-Source Leakage Current | $I_{GSS}$ | $V_{GS}$=±20V, $V_{DS}$=0V | - | - | ±100 | nA |
| **Dynamic** (Note 6) | | | | | | |
| Total Gate Charge | $Q_g$ | $V_{DS}$=15V, $I_D$=10A, $V_{GS}$=4.5V (Note 2,3) | - | 6.9 | - | nC |
| Gate-Source Charge | $Q_{gs}$ | | - | 2.7 | - | |
| Gate-Drain Charge | $Q_{gd}$ | | - | 1.8 | - | |
| Input Capacitance | Ciss | $V_{DS}$=15V, $V_{GS}$=0V, f=1MHZ | - | 781 | - | pF |
| Output Capacitance | Coss | | - | 158 | - | |
| Reverse Transfer Capacitance | Crss | | - | 92 | - | |
| Turn-On Delay Time | $td_{(on)}$ | $V_{DD}$=15V, $I_D$=10A, $V_{GS}$=10V, $R_G$=3.3Ω (Note 2,3) | - | 5.4 | - | ns |
| Turn-On Rise Time | tr | | - | 86 | - | |
| Turn-Off Delay Time | $td_{(off)}$ | | - | 20 | - | |
| Turn-Off Fall Time | tf | | - | 10 | - | |
| **Drain-Source Diode** | | | | | | |
| Maximum Continuous Drain-Source Diode Forward Current | $I_S$ | --- | - | - | 10 | A |
| Diode Forward Voltage | $V_{SD}$ | $I_S$=1A, $V_{GS}$=0V | - | 0.7 | 1 | V |

NOTES :

1. Pulse width≤300us, Duty cycle≤2%.
2. Essentially independent of operating temperature typical characteristics.
3. Repetitive rating, pulse width limited by junction temperature $T_{J(MAX)}$=150°C. Ratings are based on low frequency and duty cycles to keep initial $T_J$ =25°C.
4. The maximum current rating is package limited.
5. $R_{\Theta JA}$ 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 $inch^2$ with 2oz.square pad of copper.
6. Guaranteed by design, not subject to production testing.

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## TYPICAL CHARACTERISTIC CURVES

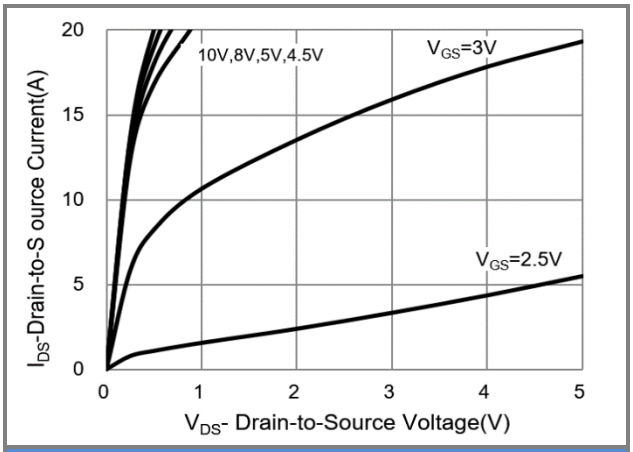


Fig.1 On-Region Characteristics

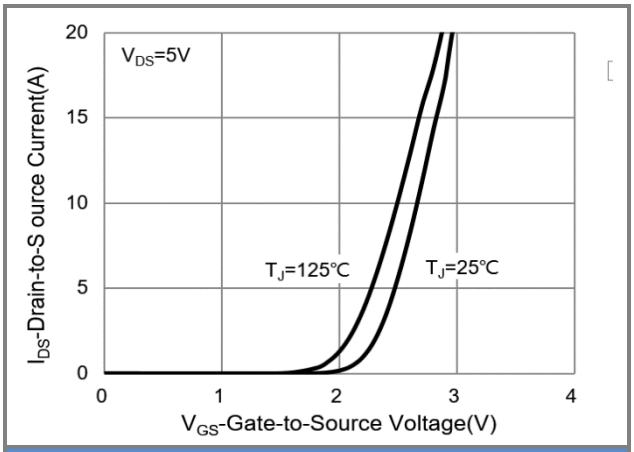


Fig.2 Transfer Characteristics

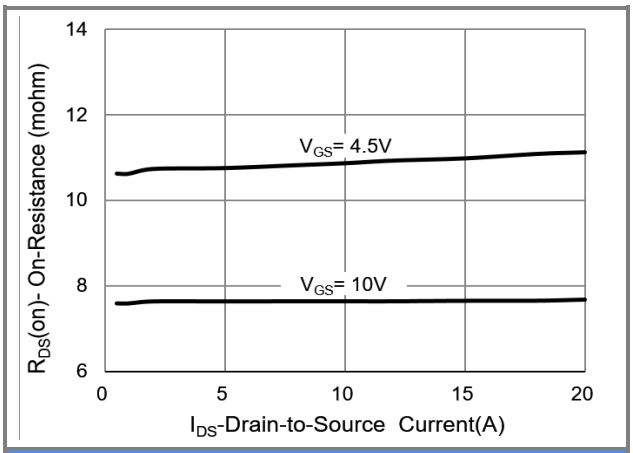


Fig.3 On-Resistance vs. Drain Current

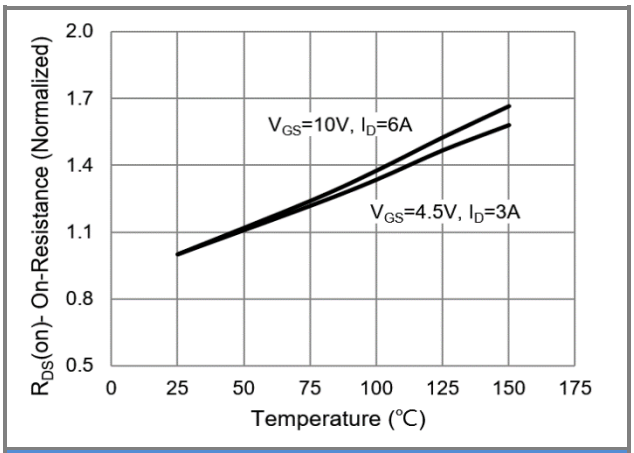


Fig.4 On-Resistance vs. Junction temperature

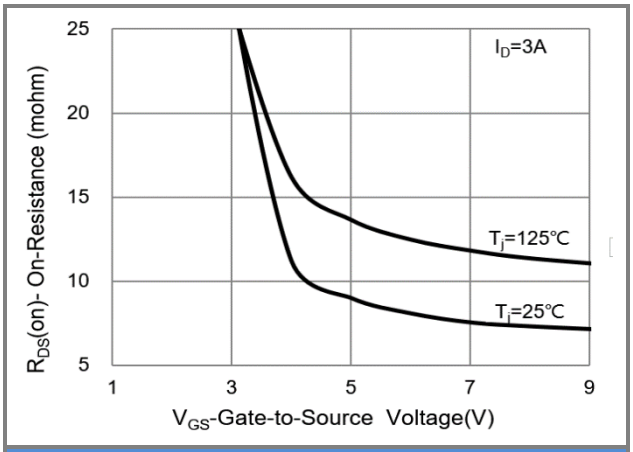


Fig.5 On-Resistance Variation with $V_{GS}$

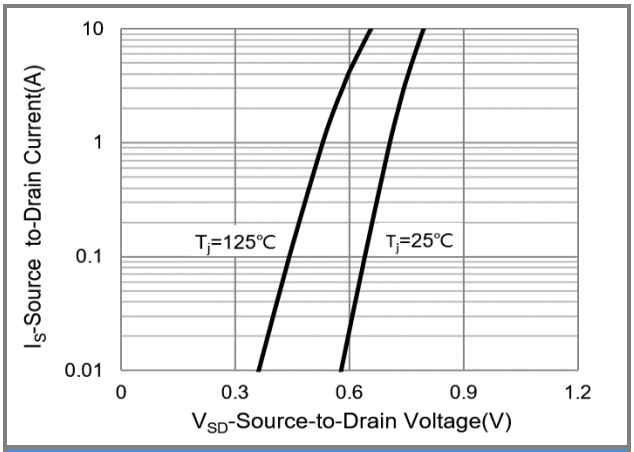


Fig.6 Body Diode Characteristics

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## TYPICAL CHARACTERISTIC CURVES

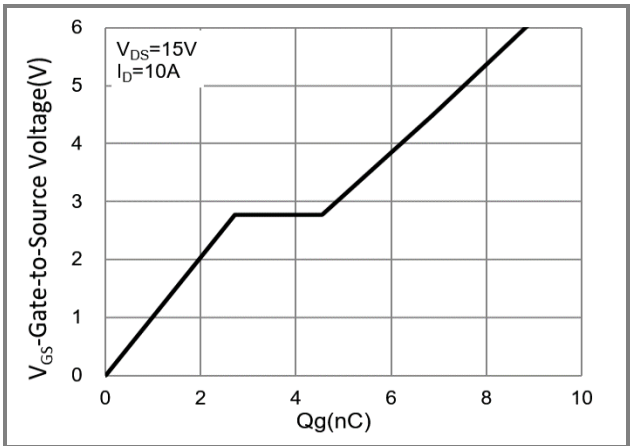



Fig.7 Gate-Charge Characteristics

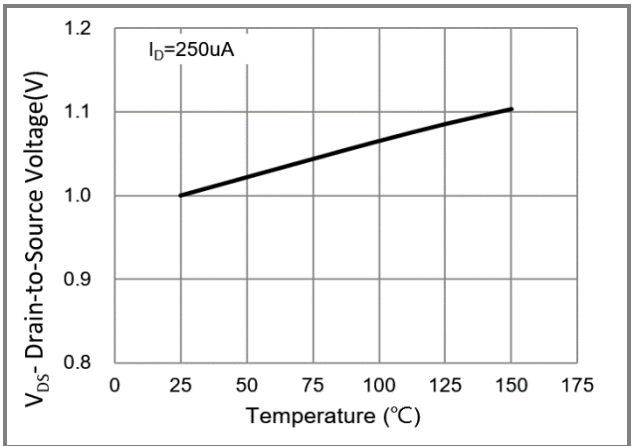



Fig.8 Breakdown Voltage Variation vs. Temperature

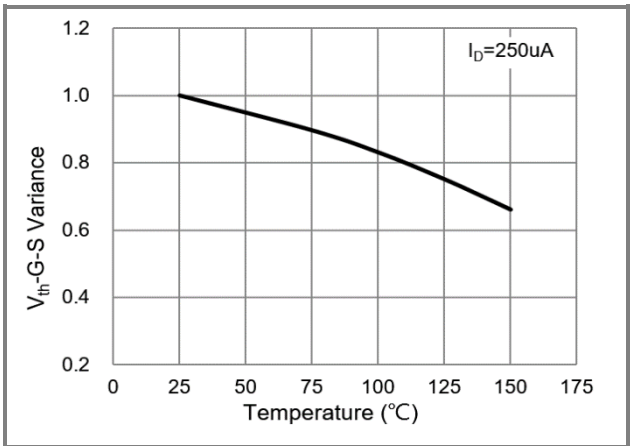



Fig.9 Threshold Voltage Variation with Temperature

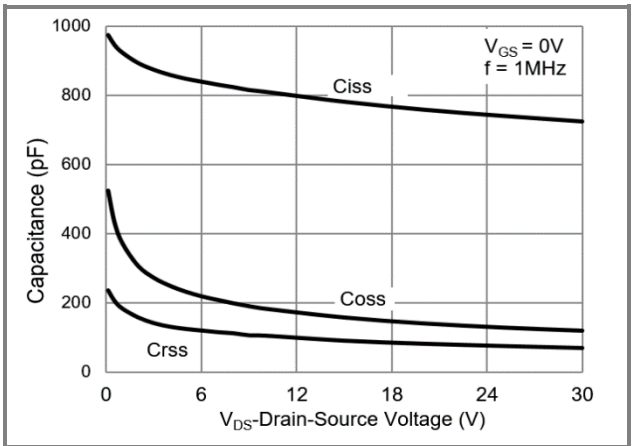



Fig.10 Capacitance vs. Drain-Source Voltage

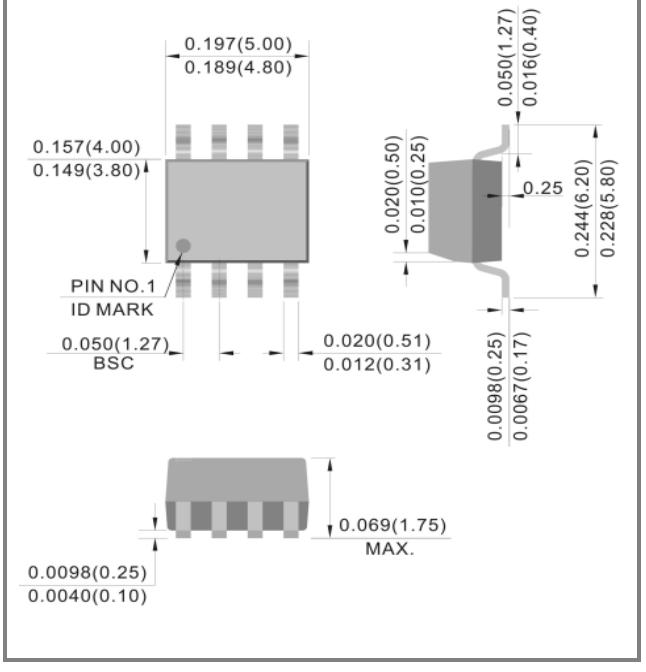
# PJL9412

## Part No Packing Code Version

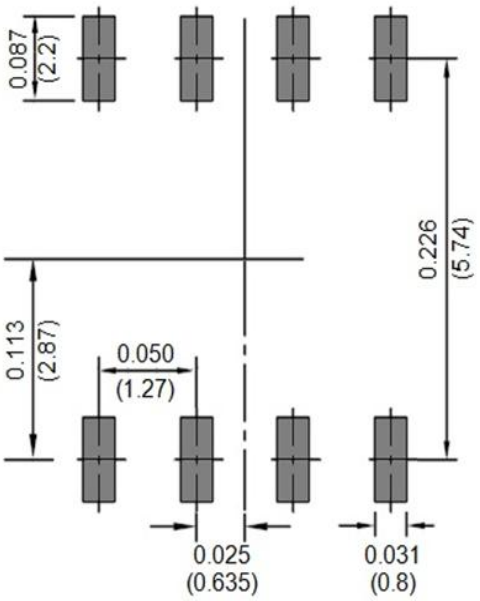
| Part No Packing Code | Package Type | Packing Type | Marking | Version |
|---|---|---|---|---|
| PJL9412_R2_00001 | SOP-8 | 2.5K pcs / 13” reel | L9412 | Halogen free |

## Packaging Information & Mounting Pad Layout

SOP-8 Dimension — Unit: inch(mm)




SOP-8 Pad Layout — Unit: inch(mm)



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