



PJL9404

30V N-Channel Enhancement Mode MOSFET

| | | | |
|----------------|-------------|----------------|------------|
| Voltage | 30 V | Current | 6 A |
|----------------|-------------|----------------|------------|

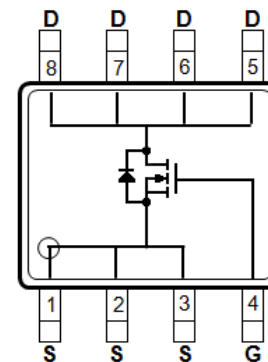
Features

- $R_{DS(ON)}$, $V_{GS}@10V, I_D@6A < 28m\Omega$
- $R_{DS(ON)}$, $V_{GS}@4.5V, I_D@4A < 43m\Omega$
- High switching speed
- Improved dv/dt capability
- Low Gate Charge
- Low reverse transfer capacitance
- Lead free in compliance with EU RoHS2.0 (2011/65/EU & 2015/865/EU directive)
- Green molding compound as per IEC61249 Std.. (Halogen Free)

Mechanical Data

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

SOP-8



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

| PARAMETER | SYMBOL | LIMIT | UNITS |
|--|-----------------|------------------------|--------------------|
| Drain-Source Voltage | V_{DS} | 30 | V |
| Gate-Source Voltage | V_{GS} | +20 | V |
| Continuous Drain Current | I_D | $T_A=25^\circ\text{C}$ | 6.0 |
| | | $T_A=70^\circ\text{C}$ | 4.8 |
| Pulsed Drain Current ^(Note 1) | I_{DM} | 15.4 | A |
| Power Dissipation | P_D | $T_A=25^\circ\text{C}$ | 1.7 |
| | | $T_A=70^\circ\text{C}$ | 1.1 |
| Operating Junction and Storage Temperature Range | T_J, T_{STG} | -55~150 | $^\circ\text{C}$ |
| Typical Thermal Resistance | $R_{\theta JA}$ | 73.5 | $^\circ\text{C/W}$ |
| - Junction to Ambient ^(Note 5) | | | |



PJL9404

Electrical Characteristics ($T_A=25^\circ\text{C}$ unless otherwise noted)

| PARAMETER | SYMBOL | TEST CONDITION | MIN. | TYP. | MAX. | UNITS |
|---|--------------|--|------|------|-----------|------------|
| Static | | | | | | |
| Drain-Source Breakdown Voltage | BV_{DSS} | $V_{GS}=0V, I_D=250\mu A$ | 30 | - | - | V |
| Gate Threshold Voltage | $V_{GS(th)}$ | $V_{DS}=V_{GS}, I_D=250\mu A$ | 1.0 | 1.3 | 2.1 | V |
| Drain-Source On-State Resistance | $R_{DS(on)}$ | $V_{GS}=10V, I_D=6A$ | - | 24 | 28 | m Ω |
| Drain-Source On-State Resistance | $R_{DS(on)}$ | $V_{GS}=4.5V, I_D=4A$ | - | 37 | 43 | m Ω |
| Zero Gate Voltage Drain Current | I_{DSS} | $V_{DS}=30V, V_{GS}=0V$ | - | - | 1.0 | μA |
| Gate-Source Leakage Current | I_{GSS} | $V_{GS}=\pm 20V, V_{DS}=0V$ | - | - | ± 100 | nA |
| Dynamic (Note 6) | | | | | | |
| Total Gate Charge | Q_g | $V_{DS}=15V, I_D=6A,$ $V_{GS}=10V$ (Note 3) | - | 7.8 | - | nC |
| Gate-Source Charge | Q_{gs} | | - | 1.2 | - | |
| Gate-Drain Charge | Q_{gd} | | - | 1.5 | - | |
| Input Capacitance | C_{iss} | $V_{DS}=15V, V_{GS}=0V,$ $f=1.0\text{MHz}$ | - | 343 | - | pF |
| Output Capacitance | C_{oss} | | - | 48 | - | |
| Reverse Transfer Capacitance | C_{rss} | | - | 34 | - | |
| Turn-On Delay Time | $t_{d(on)}$ | $V_{DD}=15V, I_D=6A,$ $V_{GS}=10V, R_G=3\Omega$ (Note 3) | - | 3 | - | ns |
| Turn-On Rise Time | t_r | | - | 40 | - | |
| Turn-Off Delay Time | $t_{d(off)}$ | | - | 38 | - | |
| Turn-Off Fall Time | t_f | | - | 39 | - | |
| Drain-Source Diode | | | | | | |
| Maximum Continuous Drain-Source Diode Forward Current | I_S | --- | - | - | 6.0 | A |
| Diode Forward Voltage | V_{SD} | $I_S=1.0A, V_{GS}=0V$ | - | 0.78 | 1.2 | V |

NOTES :

1. Pulse width $\leq 300\mu s$, Duty cycle $\leq 2\%$
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 $T_{J(MAX)}=150^\circ\text{C}$. Ratings are based on low frequency and duty cycles to keep initial $T_J=25^\circ\text{C}$.
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 inch² with 2oz.square pad of copper.
6. Guaranteed by design, not subject to production testing.



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TYPICAL CHARACTERISTIC CURVES

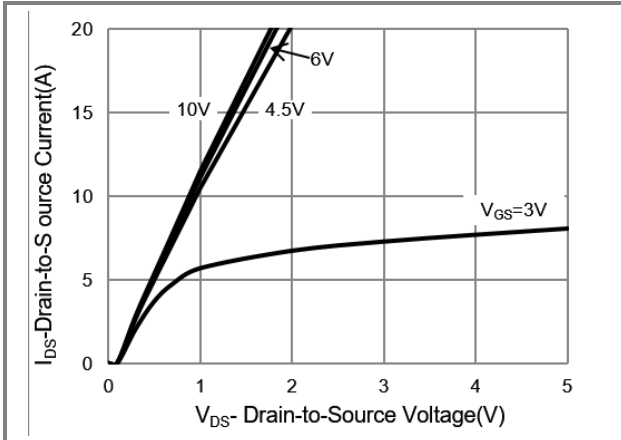


Fig.1 On-Region Characteristics

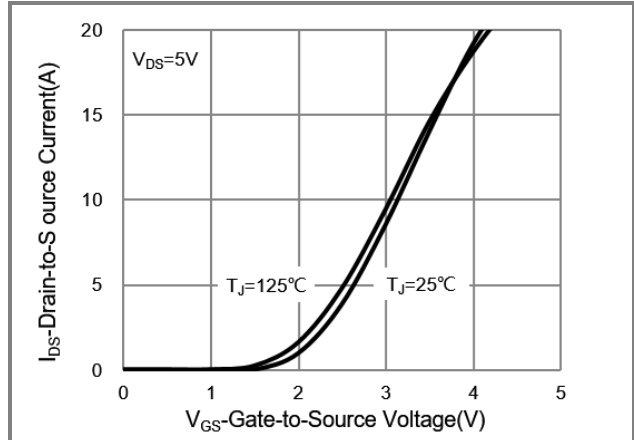


Fig.2 Transfer Characteristics

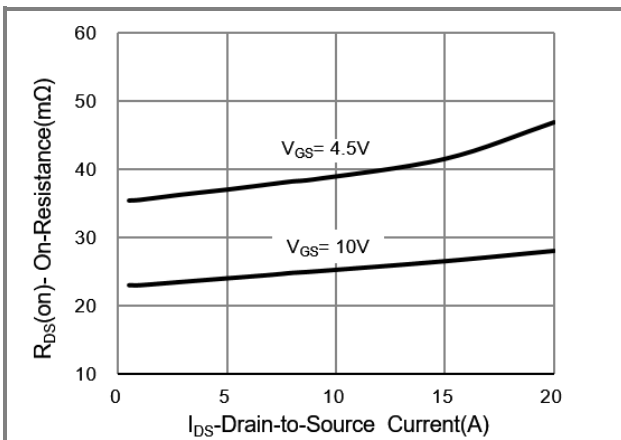


Fig.3 On-Resistance vs. Drain Current

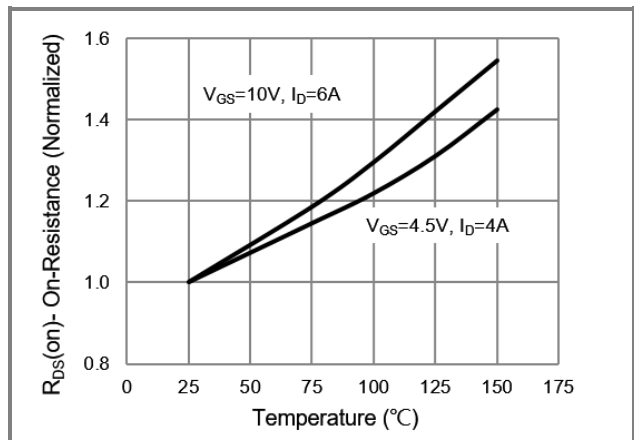


Fig.4 On-Resistance vs. Junction temperature

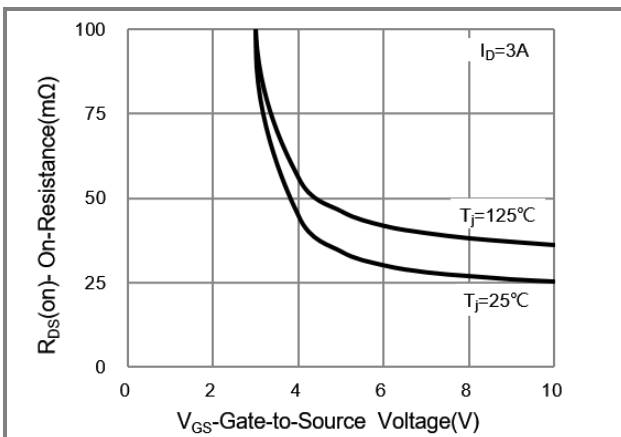


Fig.5 On-Resistance Variation with VGS.

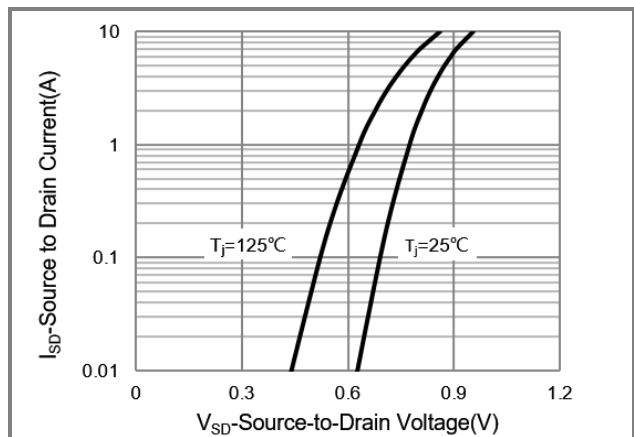


Fig.6 Body Diode Characteristics



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TYPICAL CHARACTERISTIC CURVES

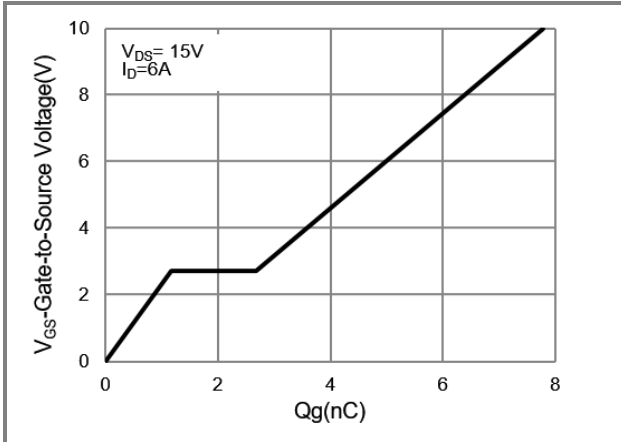


Fig.7 Gate-Charge Characteristics

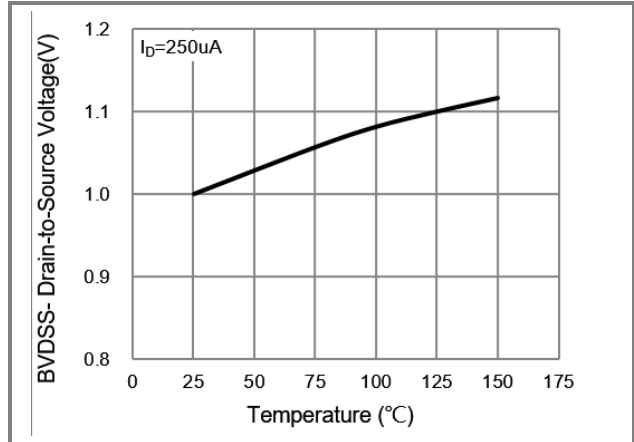


Fig.8 Breakdown Voltage Variation vs. Temperature

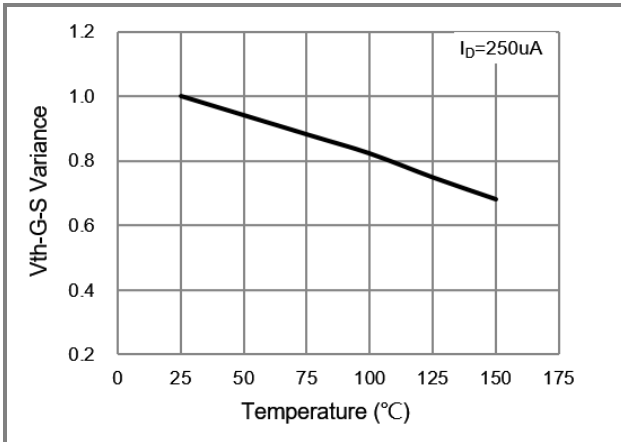


Fig.9 Threshold Voltage Variation with Temperature.

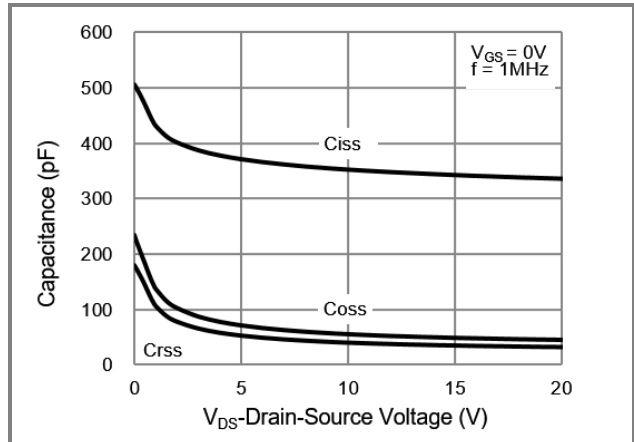


Fig.10 Capacitance vs. Drain-Source Voltage.

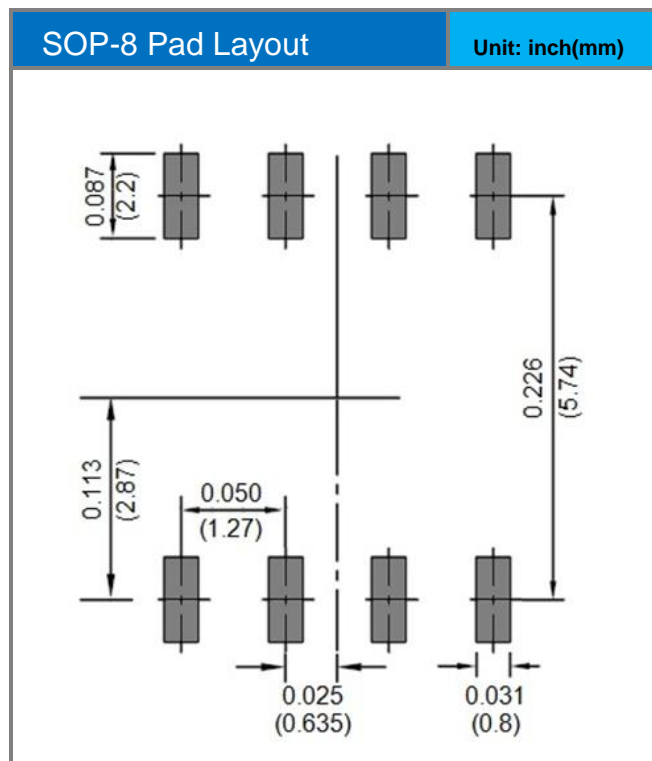
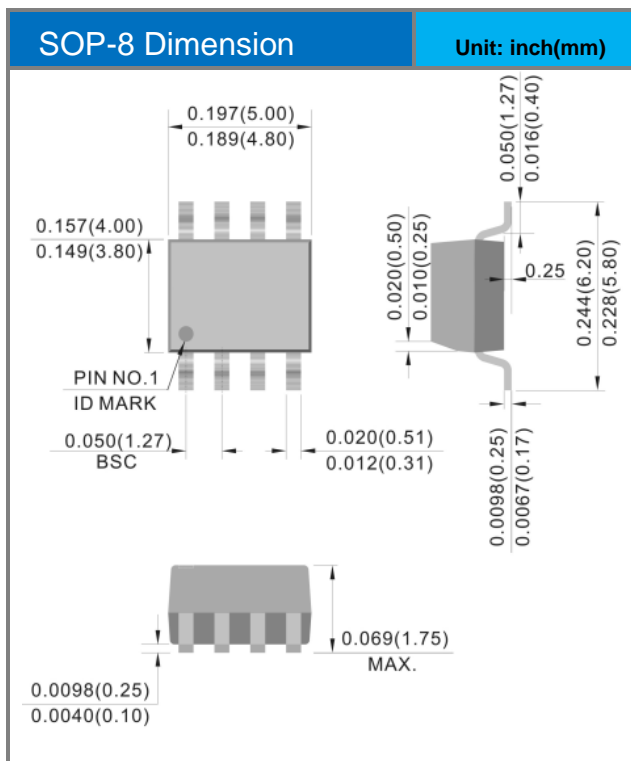


PJL9404

Part No Packing Code Version

| Part No Packing Code | Package Type | Packing Type | Marking | Version |
|----------------------|--------------|---------------------|---------|--------------|
| PJL9404_R2_00001 | SOP-8 | 2.5K pcs / 13" reel | L9404 | Halogen free |

Packaging Information & Mounting Pad Layout





PJL9404

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