



PJL9409

30V P-Channel Enhancement Mode MOSFET

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

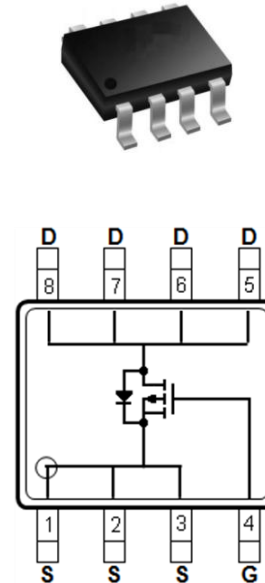
Features

- $R_{DS(ON)}$, $V_{GS}@-10V$, $I_D@-4A < 30m\Omega$
- $R_{DS(ON)}$, $V_{GS}@-4.5V$, $I_D@-2A < 45m\Omega$
- 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 | $T_A=25^\circ\text{C}$ | I_D | -6.0 | A |
| | $T_A=70^\circ\text{C}$ | | -4.8 | |
| Pulsed Drain Current ^(Note 1) | | I_{DM} | -26 | |
| Power Dissipation | $T_A=25^\circ\text{C}$ | P_D | 1.7 | W |
| | $T_A=70^\circ\text{C}$ | | 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) | | | | |



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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 | -1.0 | -1.6 | -2.5 | |
| Drain-Source On-State Resistance | R _{DS(on)} | V _{GS} =-10V, I _D =-4A | - | 26 | 30 | mΩ |
| Drain-Source On-State Resistance | R _{DS(on)} | V _{GS} =-4.5V, I _D =-2A | - | 36 | 45 | |
| Zero Gate Voltage Drain Current | I _{DSS} | V _{DS} =-30V, V _{GS} =0V | - | - | -1.0 | 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 =-5A, V _{GS} =-4.5V (Note 1,2) | - | 7.8 | - | nC |
| Gate-Source Charge | Q _{gs} | | - | 2.7 | - | |
| Gate-Drain Charge | Q _{gd} | | - | 2.8 | - | |
| Input Capacitance | C _{iss} | V _{DS} =-15V, V _{GS} =0V, f=1.0MHZ | - | 870 | - | pF |
| Output Capacitance | C _{oss} | | - | 130 | - | |
| Reverse Transfer Capacitance | C _{rss} | | - | 93 | - | |
| Turn-On Delay Time | t _{d(on)} | V _{DS} =-15V, I _D =-1A, V _{GS} =-10V, R _G =6Ω (Note 1,2) | - | 6.5 | - | ns |
| Turn-On Rise Time | t _r | | - | 8.8 | - | |
| Turn-Off Delay Time | t _{d(off)} | | - | 73 | - | |
| Turn-Off Fall Time | t _f | | - | 44 | - | |
| Drain-Source Diode | | | | | | |
| Maximum Continuous Drain-Source Diode Forward Current | I _S | --- | - | - | -6 | A |
| Diode Forward Voltage | V _{SD} | I _S =-1A, V _{GS} =0V | - | -0.75 | -1.0 | 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_{J(MAX)}=150°C. Ratings are based on low frequency and duty cycles to keep initial T_J = 25°C.
5. R_{θJA} 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

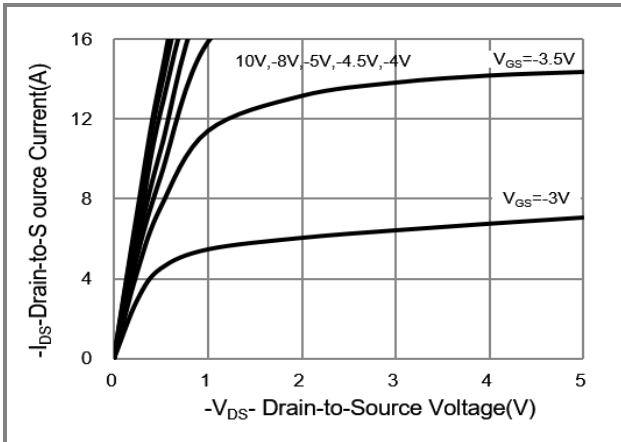


Fig.1 On-Region Characteristics

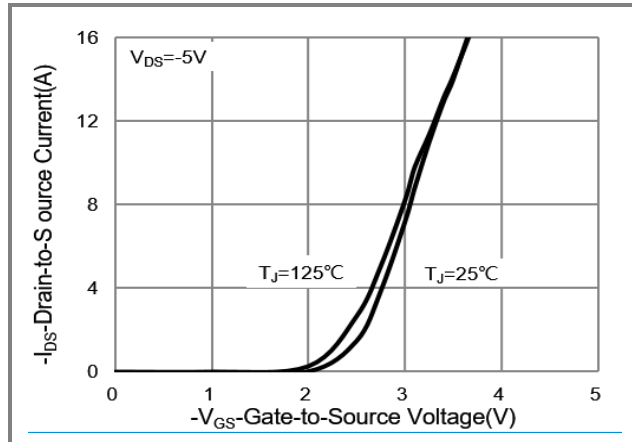


Fig.2 Transfer Characteristics

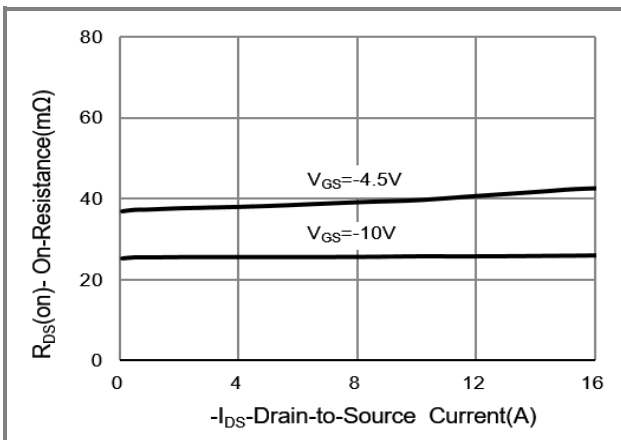


Fig.3 On-Resistance vs. Drain Current

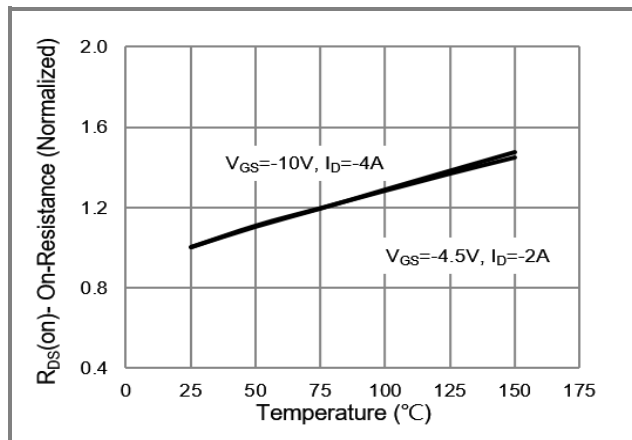


Fig.4 On-Resistance vs. Junction temperature

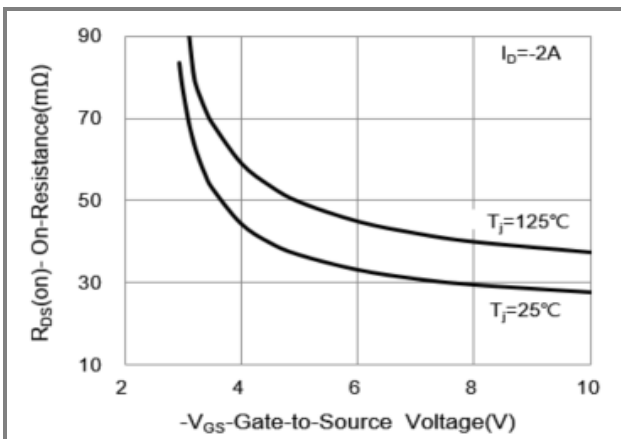


Fig.5 On-Resistance Variation with V_{GS} .

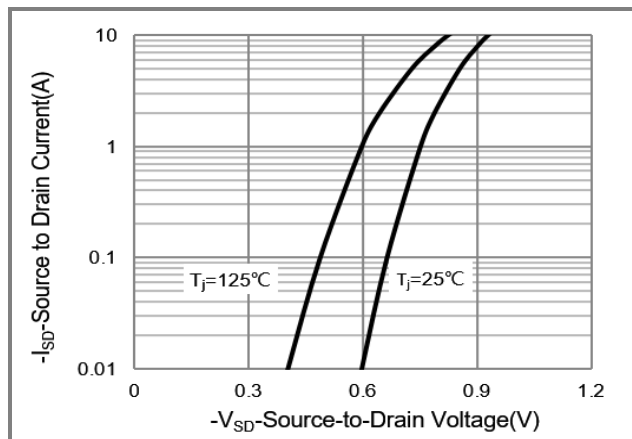


Fig.6 Body Diode Characteristics



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TYPICAL CHARACTERISTIC CURVES

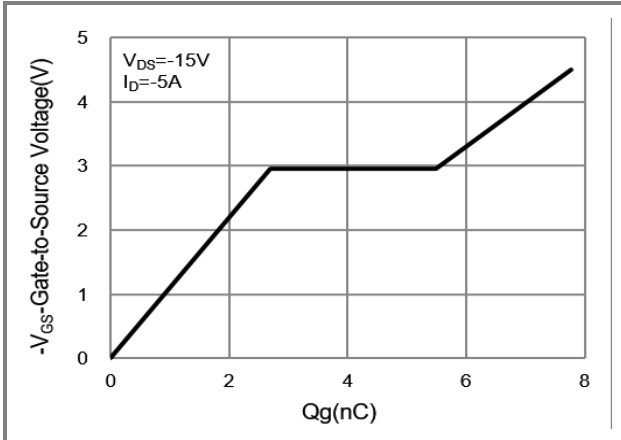


Fig.7 Gate-Charge Characteristics

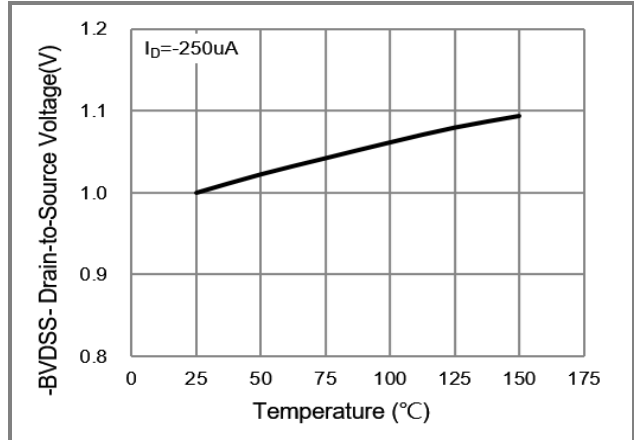


Fig.8 Breakdown Voltage Variation vs. Temperature

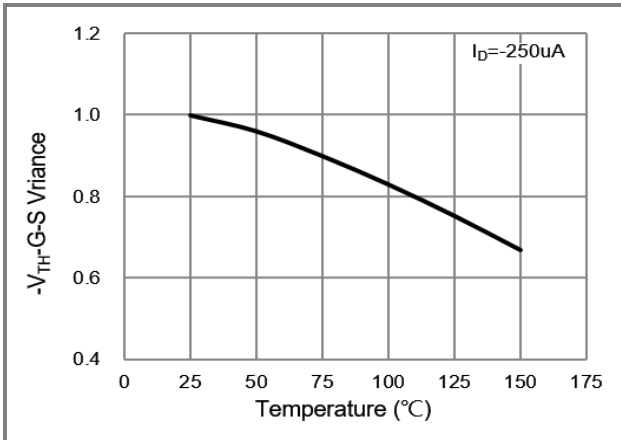


Fig.9 Threshold Voltage Variation with Temperature.

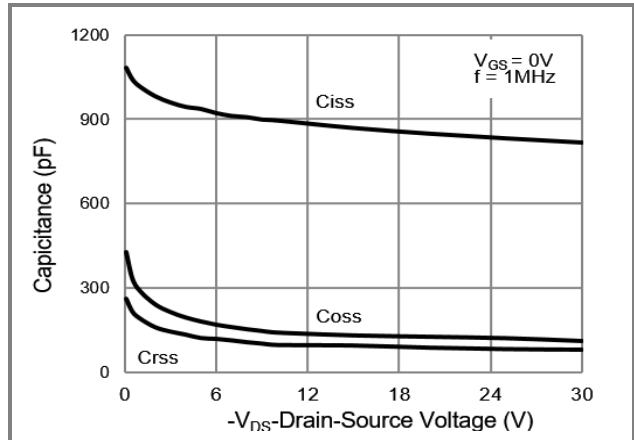


Fig.10 Capacitance vs. Drain-Source Voltage.

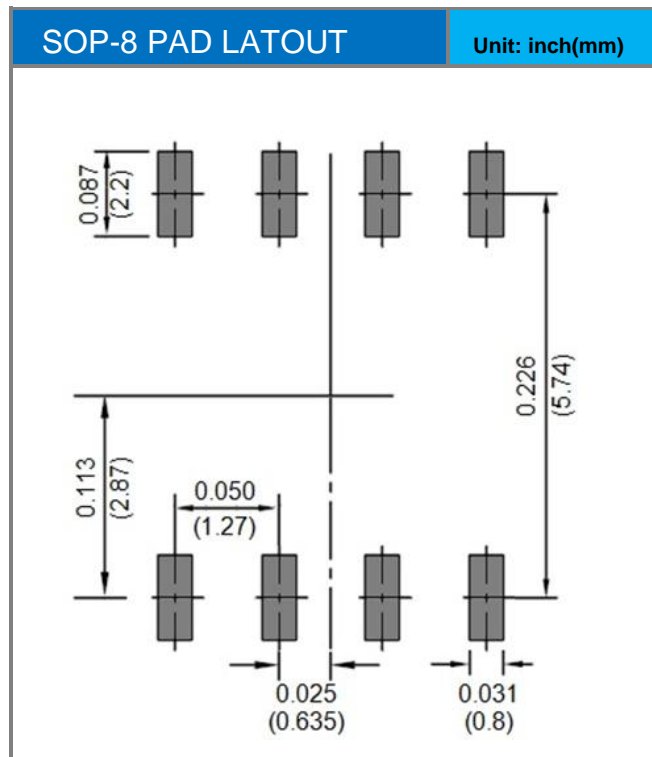
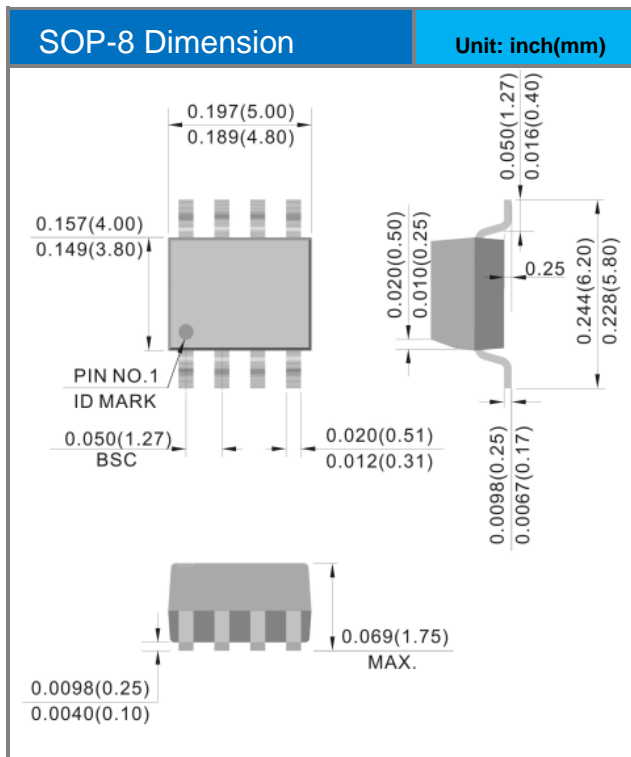


PJL9409

Part No Packing Code Version

| Part No Packing Code | Package Type | Packing Type | Marking | Version |
|----------------------|--------------|---------------------|---------|--------------|
| PJL9409_R2_00001 | SOP-8 | 2.5K pcs / 13" reel | L9409 | Halogen free |

Packaging Information & Mounting Pad Layout





PJL9409

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