



PJQ4407P

30V P-Channel Enhancement Mode MOSFET

Voltage **-30 V** **Current** **-30 A**

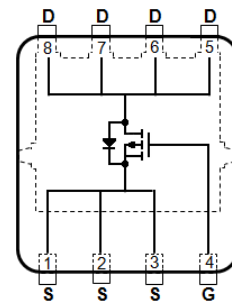
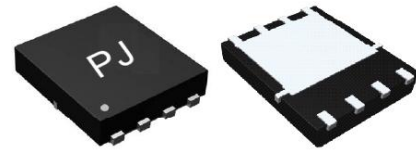
Features

- $R_{DS(ON)}$, $V_{GS}@-10V, I_D@-8A < 20m\Omega$
- $R_{DS(ON)}$, $V_{GS}@-4.5V, I_D@-6A < 32m\Omega$
- 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: DFN3333-8L Package
- Terminals: Solderable per MIL-STD-750, Method 2026
- Approx. Weight: 0.001 ounces, 0.03 grams

DFN3333-8L



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 | $T_C=25^\circ\text{C}$ | I_D | -30 | A |
| | $T_C=100^\circ\text{C}$ | | -19 | |
| Pulsed Drain Current (Note 1) | $T_C=25^\circ\text{C}$ | I_{DM} | -120 | |
| Power Dissipation | $T_C=25^\circ\text{C}$ | P_D | 27 | W |
| | $T_C=100^\circ\text{C}$ | | 11 | |
| Continuous Drain Current | $T_A=25^\circ\text{C}$ | I_D | -8.5 | A |
| | $T_A=70^\circ\text{C}$ | | -6.9 | |
| Power Dissipation | $T_A=25^\circ\text{C}$ | P_D | 2.0 | W |
| Power Dissipation | $T_A=70^\circ\text{C}$ | | 1.3 | |
| Operating Junction and Storage Temperature Range | | T_J, T_{STG} | -55~150 | $^\circ\text{C}$ |
| Typical Thermal Resistance (Note 4,5) | Junction to Case | $R_{\theta JC}$ | 4.6 | $^\circ\text{C/W}$ |
| | Junction to Ambient | $R_{\theta JA}$ | 62.5 | |

- Limited only By Maximum Junction Temperature



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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 | -1.5 | -2.5 | |
| Drain-Source On-State Resistance | R _{DS(on)} | V _{GS} =-10V, I _D =-8A | - | 17 | 20 | mΩ |
| | | V _{GS} =-4.5V, I _D =-6A | - | 26 | 32 | |
| 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) | - | 11 | - | nC |
| Gate-Source Charge | Q _{gs} | | - | 3.2 | - | |
| Gate-Drain Charge | Q _{gd} | | - | 3.9 | - | |
| Input Capacitance | C _{iss} | V _{DS} =-15V, V _{GS} =0V, f=1.0MHZ | - | 1169 | - | pF |
| Output Capacitance | C _{oss} | | - | 180 | - | |
| Reverse Transfer Capacitance | C _{rss} | | - | 132 | - | |
| Turn-On Delay Time | t _{d(on)} | V _{DS} =-15V, I _D =-1A, V _{GS} =-10V, R _G =6Ω (Note 1,2) | - | 5.9 | - | ns |
| Turn-On Rise Time | t _r | | - | 33 | - | |
| Turn-Off Delay Time | t _{d(off)} | | - | 55 | - | |
| Turn-Off Fall Time | t _f | | - | 34 | - | |
| Drain-Source Diode | | | | | | |
| Maximum Continuous Drain-Source Diode Forward Current | I _S | --- | - | - | -30 | A |
| Diode Forward Voltage | V _{SD} | I _S =-1A, V _{GS} =0V | - | -0.73 | -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_{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

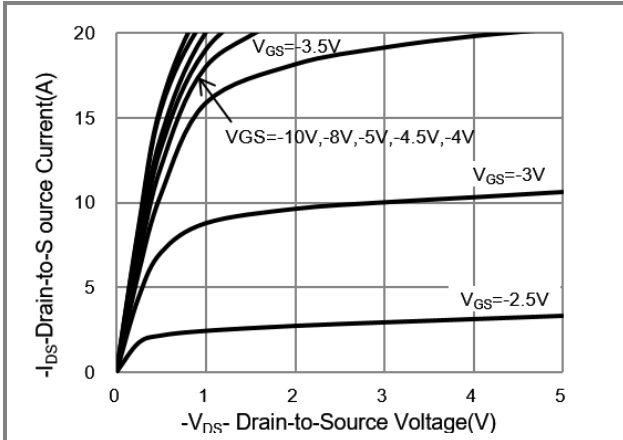


Fig.1 On-Region Characteristics

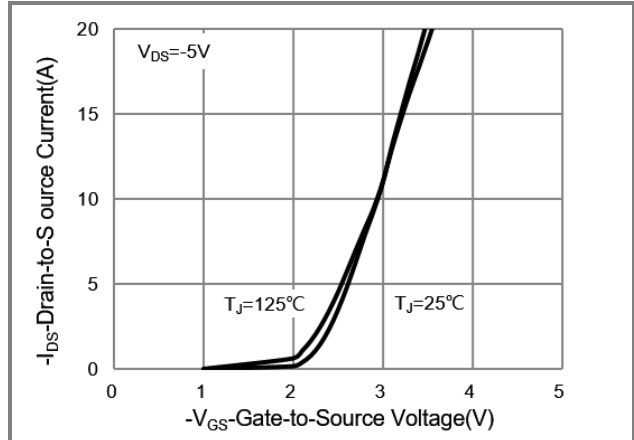


Fig.2 Transfer Characteristics

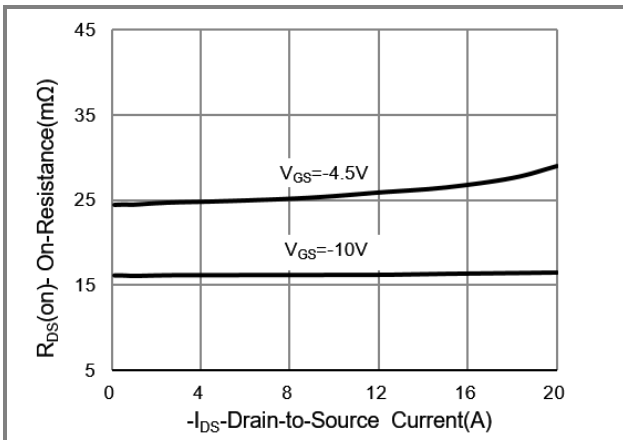


Fig.3 On-Resistance vs. Drain Current

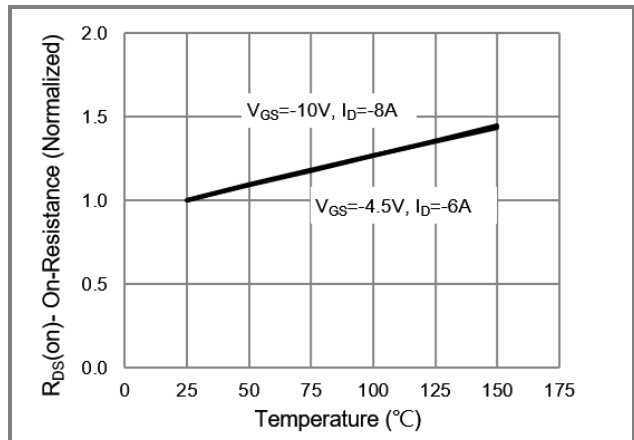


Fig.4 On-Resistance vs. Junction temperature

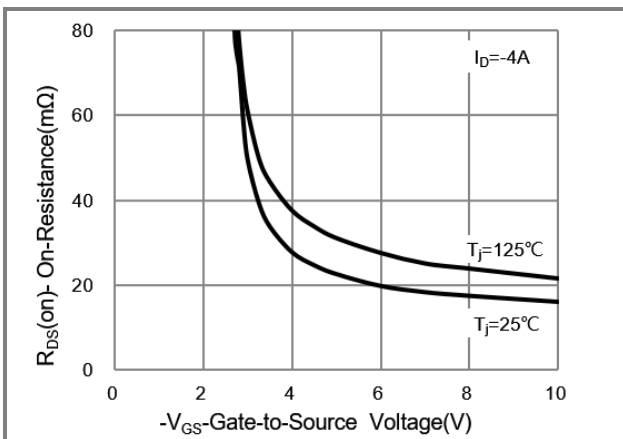


Fig.5 On-Resistance Variation with V_{GS} .

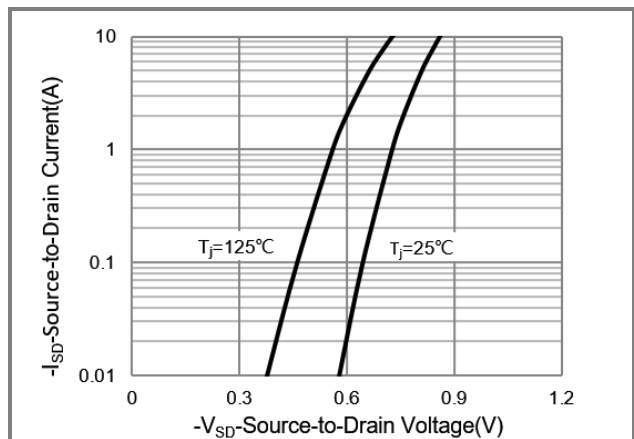


Fig.6 Source-Drain Diode Forward Voltage



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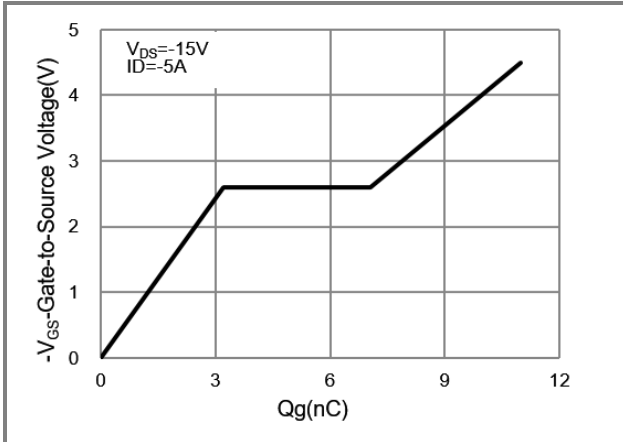


Fig.7 Gate-Charge Characteristics

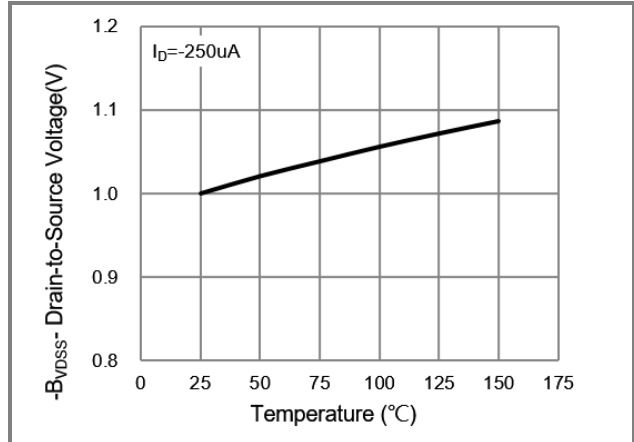


Fig.8 Breakdown Voltage Variation vs. Temperature.

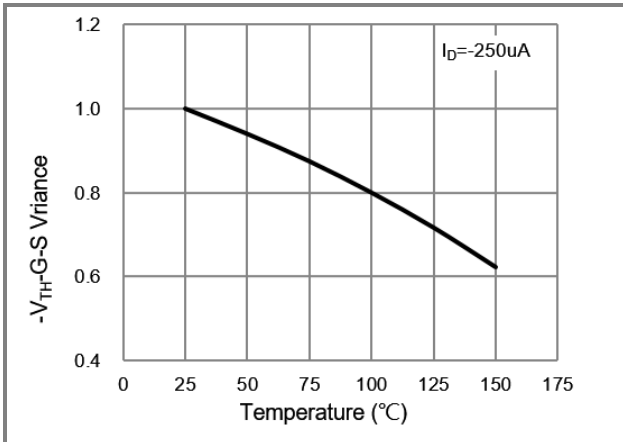


Fig.9 Threshold Voltage Variation with Temperature

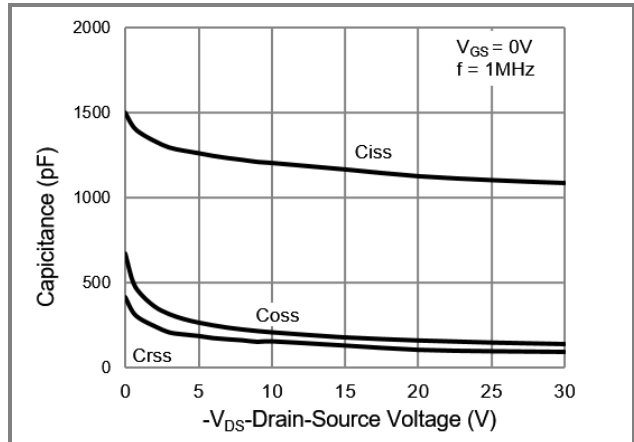


Fig.10 Capacitance vs. Drain-Source Voltage

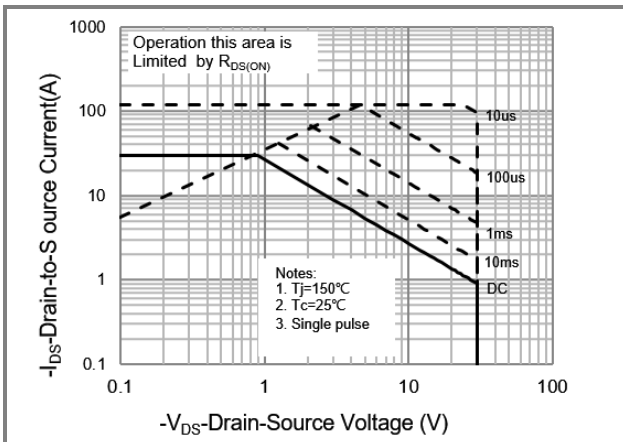


Fig.11 Maximum Safe Operating Area



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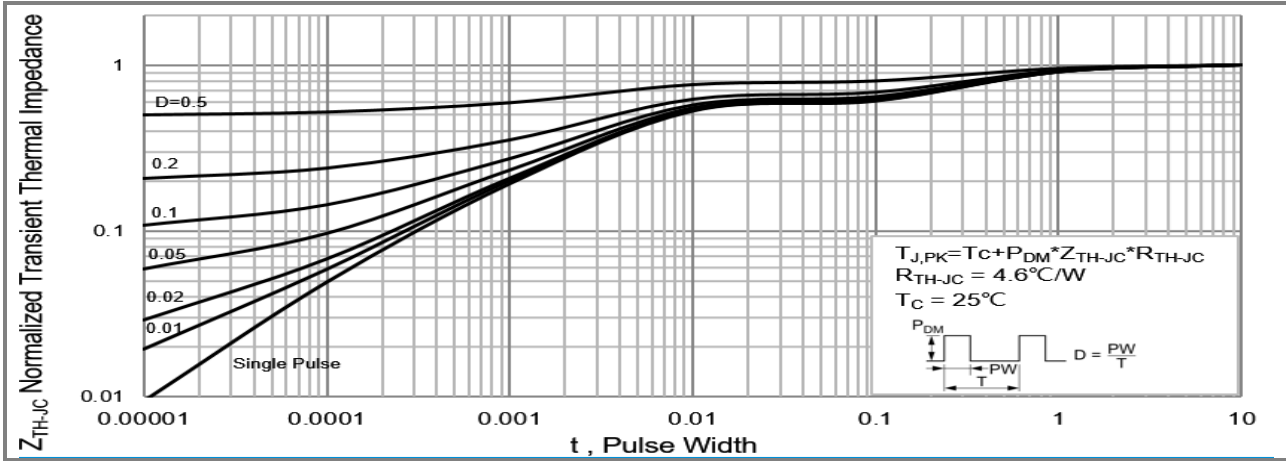


Fig.12 Normalized Transient Thermal Impedance vs. Pulse Width



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