



PJQ5462A-AU

60V N-Channel Enhancement Mode MOSFET

Voltage

60 V

Current

42 A

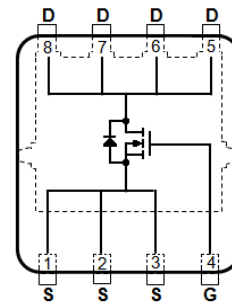
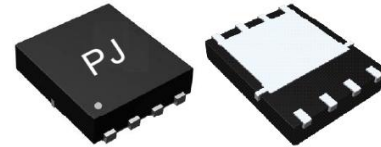
Features

- $R_{DS(ON)}$, $V_{GS}@10V$, $I_D@20A < 12m\Omega$
- $R_{DS(ON)}$, $V_{GS}@4.5V$, $I_D@10A < 15m\Omega$
- High switching speed
- Low reverse transfer capacitance
- AEC-Q101 qualified
- Lead free in compliance with EU RoHS 2.0
- Green molding compound as per IEC 61249 standard

Mechanical Data

- Case: DFN5060-8L Package
- Terminals: Solderable per MIL-STD-750, Method 2026
- Approx. Weight: 0.0028 ounces, 0.08 grams

DFN5060-8L



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

| PARAMETER | | SYMBOL | LIMIT | UNITS |
|--|-------------------------|-----------------|----------|--------------------|
| Drain-Source Voltage | | V_{DS} | 60 | V |
| Gate-Source Voltage | | V_{GS} | ± 20 | |
| Continuous Drain Current (Note 4) | $T_C=25^\circ\text{C}$ | I_D | 42 | A |
| | $T_C=100^\circ\text{C}$ | | 26 | |
| Pulsed Drain Current (Note 1) | $T_C=25^\circ\text{C}$ | I_{DM} | 84 | |
| Power Dissipation | $T_C=25^\circ\text{C}$ | P_D | 71.4 | W |
| | $T_C=100^\circ\text{C}$ | | 35.7 | |
| Continuous Drain Current (Note 4) | $T_A=25^\circ\text{C}$ | I_D | 8.5 | A |
| | $T_A=70^\circ\text{C}$ | | 6.8 | |
| Power Dissipation | $T_A=25^\circ\text{C}$ | P_D | 2.4 | W |
| | $T_A=70^\circ\text{C}$ | | 1.6 | |
| Single Pulse Avalanche Energy (Note 6) | | E_{AS} | 72 | mJ |
| Operating Junction and Storage Temperature Range | | T_J, T_{STG} | -55~175 | $^\circ\text{C}$ |
| Typical Thermal Resistance (Note 4,5) | Junction to Case | $R_{\theta JC}$ | 2.1 | $^\circ\text{C/W}$ |
| | Junction to Ambient | $R_{\theta JA}$ | 62.5 | |

- Limited only By Maximum Junction Temperature



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

| PARAMETER | SYMBOL | TEST CONDITION | MIN. | TYP. | MAX. | UNITS |
|---|--------------|---|------|------|-----------|------------|
| Static | | | | | | |
| Drain-Source Breakdown Voltage | BV_{DSS} | $V_{GS}=0V, I_D=250\mu A$ | 60 | - | - | V |
| Gate Threshold Voltage | $V_{GS(th)}$ | $V_{DS}=V_{GS}, I_D=250\mu A$ | 1 | 1.7 | 2.5 | |
| Drain-Source On-State Resistance | $R_{DS(on)}$ | $V_{GS}=10V, I_D=20A$ | - | 10 | 12 | m Ω |
| | | $V_{GS}=4.5V, I_D=10A$ | - | 11 | 15 | |
| Zero Gate Voltage Drain Current | I_{DSS} | $V_{DS}=60V, V_{GS}=0V$ | - | - | 1 | μA |
| Gate-Source Leakage Current | I_{GSS} | $V_{GS}=\pm 20V, V_{DS}=0V$ | - | - | ± 100 | nA |
| Dynamic (Note 7) | | | | | | |
| Total Gate Charge | Q_g | $V_{DS}=30V, I_D=10A,$ $V_{GS}=10V$ (Note 2,3) | - | 40 | - | nC |
| Gate-Source Charge | Q_{gs} | | - | 6.0 | - | |
| Gate-Drain Charge | Q_{gd} | | - | 7.2 | - | |
| Input Capacitance | C_{iss} | $V_{DS}=25V, V_{GS}=0V,$ $f=1\text{MHz}$ | - | 2142 | - | pF |
| Output Capacitance | C_{oss} | | - | 149 | - | |
| Reverse Transfer Capacitance | C_{rss} | | - | 86 | - | |
| Turn-On Delay Time | $t_{d(on)}$ | $V_{DD}=15V, I_D=10A,$ $V_{GS}=10V, R_G=6\Omega$ (Note 2,3) | - | 14 | - | ns |
| Turn-On Rise Time | t_r | | - | 25 | - | |
| Turn-Off Delay Time | $t_{d(off)}$ | | - | 58 | - | |
| Turn-Off Fall Time | t_f | | - | 18 | - | |
| Drain-Source Diode | | | | | | |
| Maximum Continuous Drain-Source Diode Forward Current | I_S | --- | - | - | 42 | A |
| Diode Forward Voltage | V_{SD} | $I_S=1A, V_{GS}=0V$ | - | 0.67 | 1 | V |

NOTES :

1. Pulse width $\leq 300\mu s$, Duty cycle $\leq 2\%$
2. Essentially independent of operating temperature typical characteristics.
3. 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 $T_J=25^\circ\text{C}$.
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 inch² with 2oz. square pad of copper.
6. The test condition is $L=0.5\text{mH}, I_{AS}=17A, V_{DD}=25V, V_{GS}=10V$
7. Guaranteed by design, not subject to production testing.



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TYPICAL CHARACTERISTIC CURVES

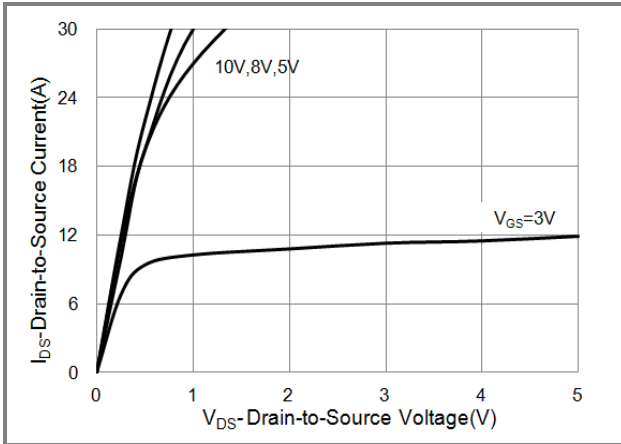


Fig.1 Output Characteristics

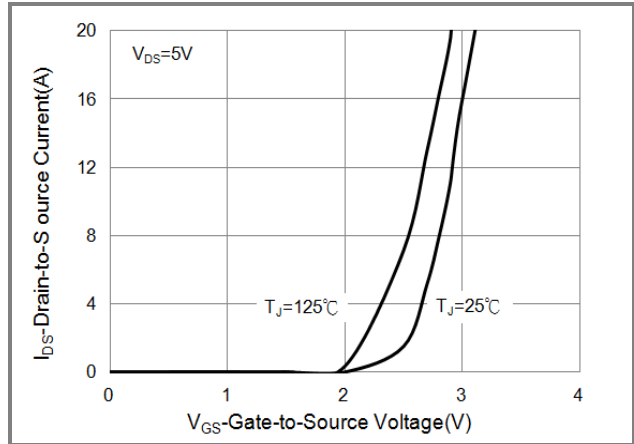


Fig.2 Transfer Characteristics

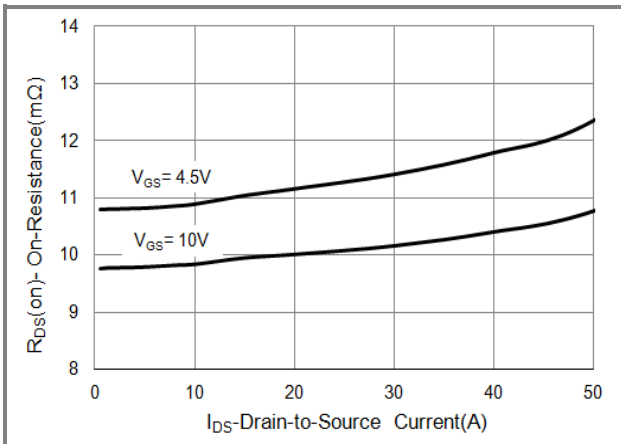


Fig.3 On-Resistance vs. Drain Current

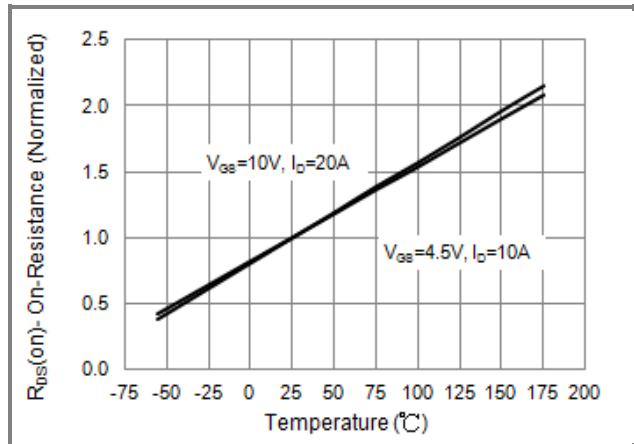


Fig.4 On-Resistance vs. Junction temperature

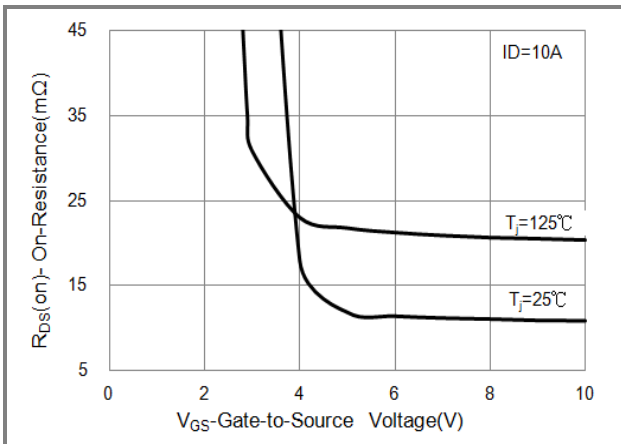


Fig.5 On-Resistance Variation with VGS

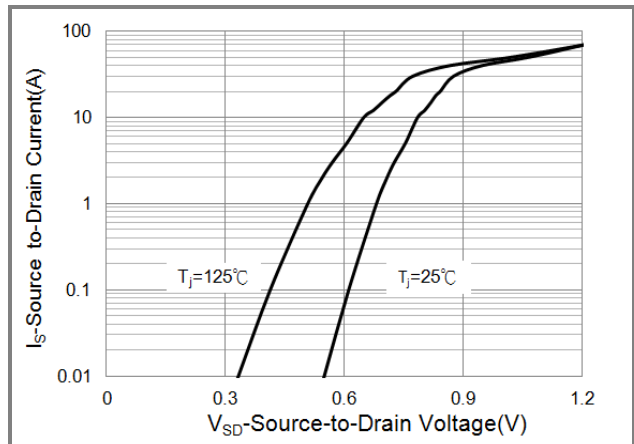


Fig.6 Source-Drain Diode Forward Voltage



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TYPICAL CHARACTERISTIC CURVES

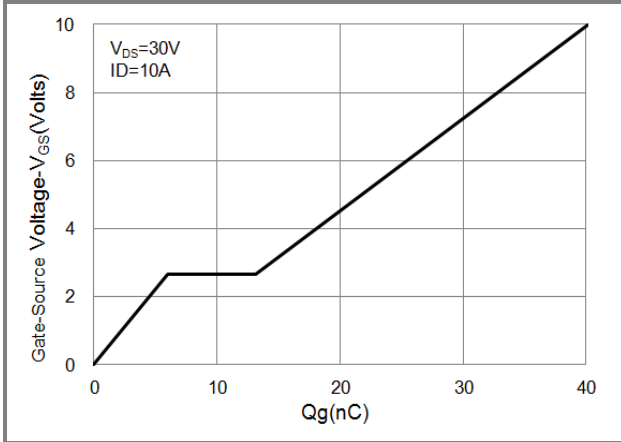


Fig.7 Gate-Charge Characteristics

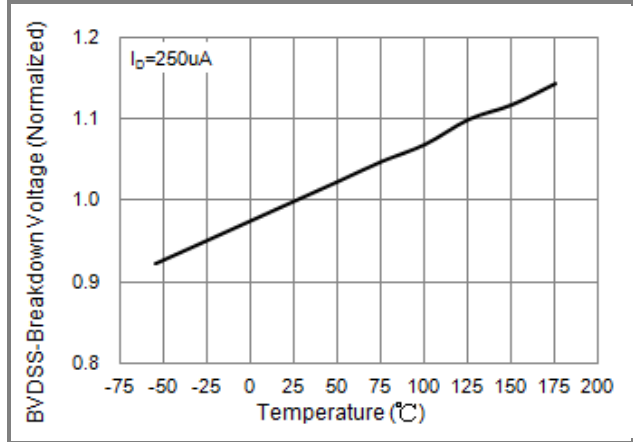


Fig.8 Breakdown Voltage Variation vs. Temperature

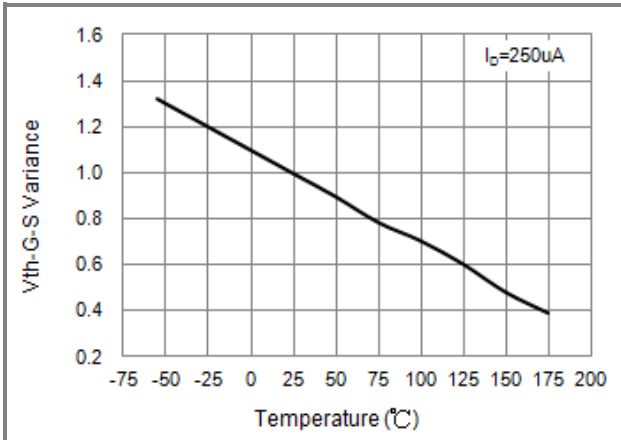


Fig.9 Threshold Voltage Variation with Temperature

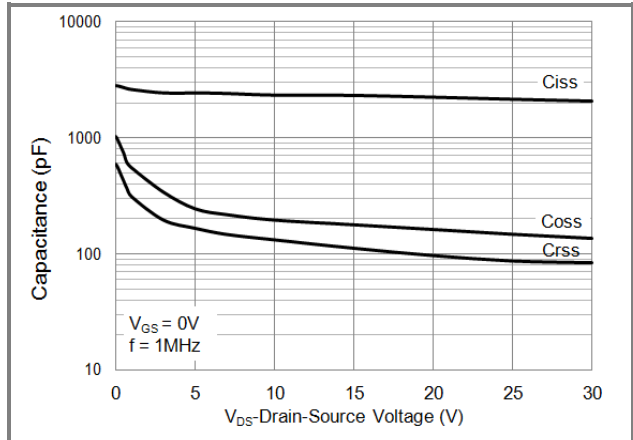


Fig.10 Capacitance vs. Drain-Source Voltage

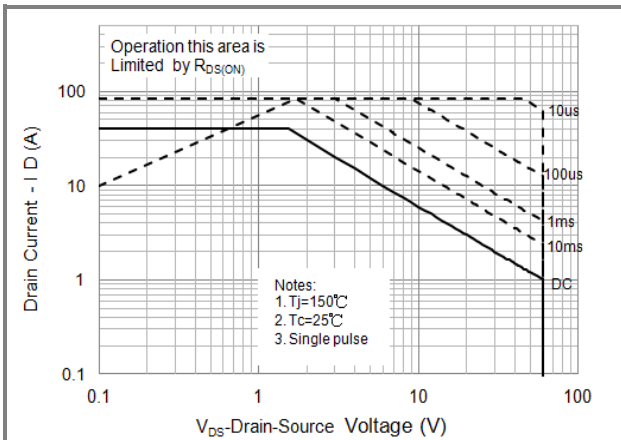


Fig.11 Maximum Safe Operating Area



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TYPICAL CHARACTERISTIC CURVES

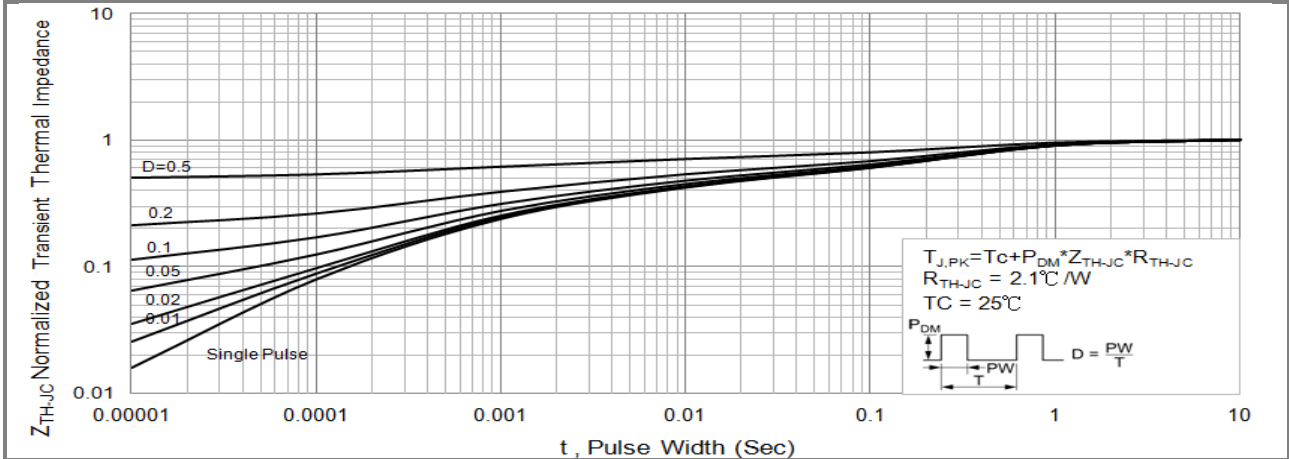


Fig.12 Normalized Transient Thermal Impedance vs. Pulse Width

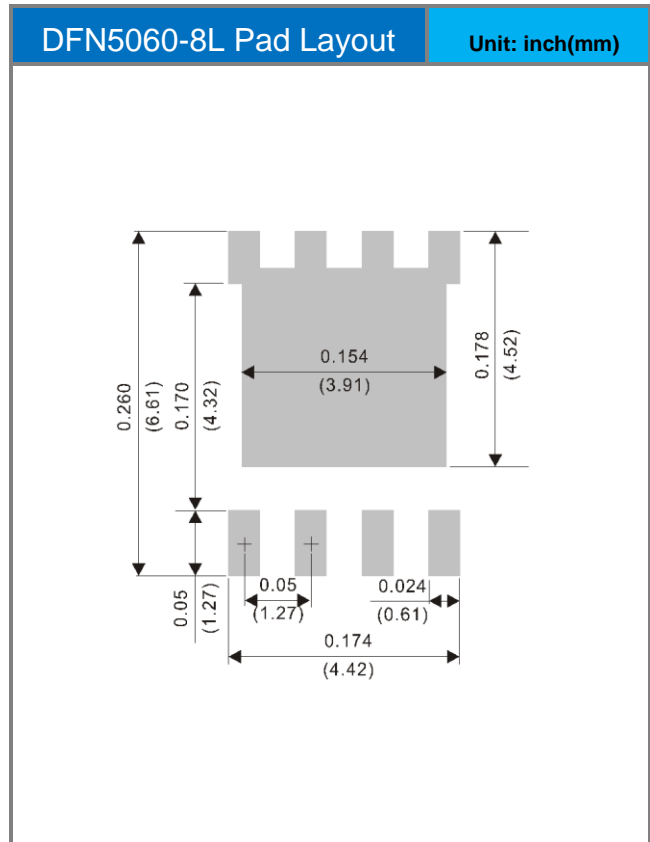
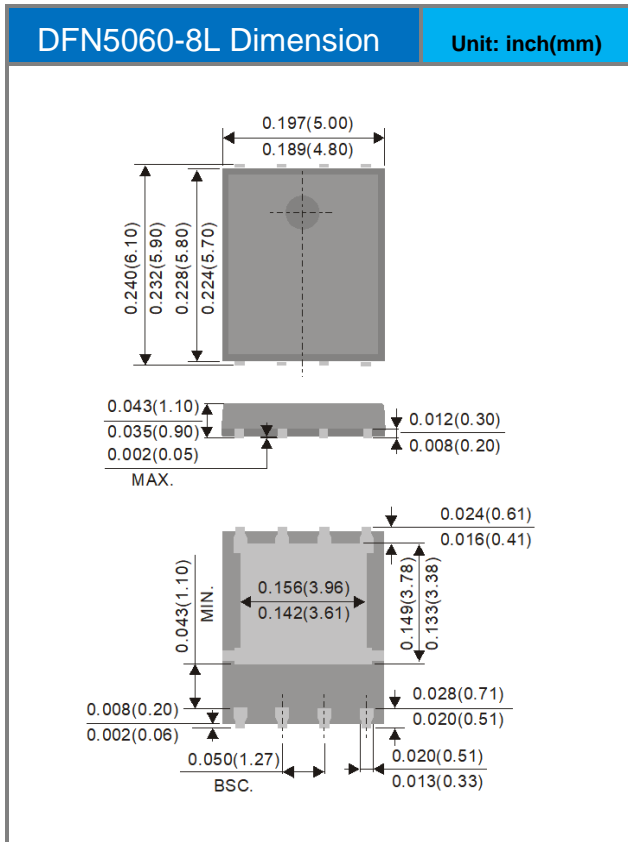


PJQ5462A-AU

Part No Packing Code Version

| Part No Packing Code | Package Type | Packing Type | Marking | Version |
|----------------------|--------------|--------------------|---------|--------------|
| PJQ5462A-AU_R2_000A1 | DFN5060-8L | 3000pcs / 13" reel | Q5462A | Halogen free |

Packaging Information & Mounting Pad Layout





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