

PJQ5439E

30V P-Channel Enhancement Mode MOSFET

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

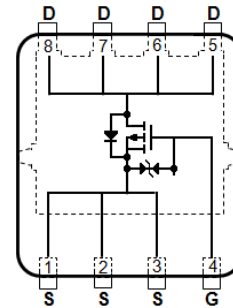
Features

- $R_{DS(ON)}$, $V_{GS}@-10V$, $I_D@-20A < 18.8m\Omega$
- $R_{DS(ON)}$, $V_{GS}@-4.5V$, $I_D@-10A < 30.7m\Omega$
- 100% UIS tested
- Reliable and Rugged
- Lead free in compliance with EU RoHS 2.0
- Green molding compound as per IEC 61249 standard

Mechanical Data

- Case : DFN5060X-8L Package
- Terminals : Solderable per MIL-STD-750, Method 2026
- Approx. Weight : 0.087 grams

DFN5060X-8L



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} | ±25 | |
| Continuous Drain Current ^(Note 3) | T _C =25°C | I _D | -30 | A |
| | T _C =100°C | | -19 | |
| Pulsed Drain Current ^(Note 1) | T _C =25°C | I _{DM} | -98 | |
| Power Dissipation | T _C =25°C | P _D | 28 | W |
| | T _C =100°C | | 11 | |
| Continuous Drain Current ^(Note 4) | T _A =25°C | I _D | -9.6 | A |
| | T _A =70°C | | -7.7 | |
| Power Dissipation | T _A =25°C | P _D | 2.8 | W |
| | T _A =70°C | | 1.8 | |
| Single Pulse Avalanche Energy ^(Note 5) | | E _{AS} | 42 | mJ |
| Operating Junction and Storage Temperature Range | | T _J , T _{STG} | -55~150 | °C |
| Thermal Resistance ^(Note 4) | Junction to Case | R _{θJC} | 4.5 | °C/W |
| | Junction to Ambient | R _{θJA} | 45 | |

PJQ5439E

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 | -1.8 | -2.5 | |
| Drain-Source On-State Resistance | R _{DS(on)} | V _{GS} =-10V, I _D =-20A | - | 15 | 18.8 | mΩ |
| | | V _{GS} =-4.5V, I _D =-10A | - | 23.6 | 30.7 | |
| Zero Gate Voltage Drain Current | I _{DSS} | V _{DS} =-30V, V _{GS} =0V | - | - | -1 | uA |
| Gate-Source Leakage Current | I _{GSS} | V _{GS} =±25V, V _{DS} =0V | - | - | ±10 | uA |
| | | V _{GS} =±10V, V _{DS} =0V | - | - | ±1 | |
| Dynamic (Note 6) | | | | | | |
| Total Gate Charge | Q _g | V _{DS} =-24V, I _D =-20A, V _{GS} =-10V | - | 22 | - | nC |
| Gate-Source Charge | Q _{gs} | | - | 3 | - | |
| Gate-Drain Charge | Q _{gd} | | - | 7 | - | |
| Input Capacitance | C _{iss} | V _{DS} =-25V, V _{GS} =0V, f=1MHz | - | 1009 | - | pF |
| Output Capacitance | C _{oss} | | - | 143 | - | |
| Reverse Transfer Capacitance | C _{rss} | | - | 119 | - | |
| Gate resistance | R _g | f=1MHz | - | 10.4 | - | Ω |
| Turn-On Delay Time | t _{d(on)} | V _{DS} =-24V, I _D =-20A, V _{GS} =-10V, R _G =3Ω (Note 2) | - | 7 | - | ns |
| Turn-On Rise Time | t _r | | - | 3 | - | |
| Turn-Off Delay Time | t _{d(off)} | | - | 36 | - | |
| Turn-Off Fall Time | t _f | | - | 40 | - | |
| Drain-Source Diode | | | | | | |
| Diode Forward Current | I _s | T _C =25°C | - | - | -30 | A |
| Pulsed Diode Forward Current | I _{SM} | | - | - | -98 | |
| Diode Forward Voltage | V _{SD} | I _S =-20A, V _{GS} =0V | - | -0.9 | -1.3 | V |
| Reverse Recovery Time | T _{rr} | V _{GS} =0V, I _S =-20A | - | 16 | - | ns |
| Reverse Recovery Charge | Q _{rr} | dI _S /dt=100A/us | - | 8 | - | nC |

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. 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.
5. The test condition is L=0.5mH, I_{AS}=-13A, V_{DD}=-30V, V_{GS}=-10V, Starting T_J=25°C.
6. Guaranteed by design, not subject to production testing.

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TYPICAL CHARACTERISTIC CURVES

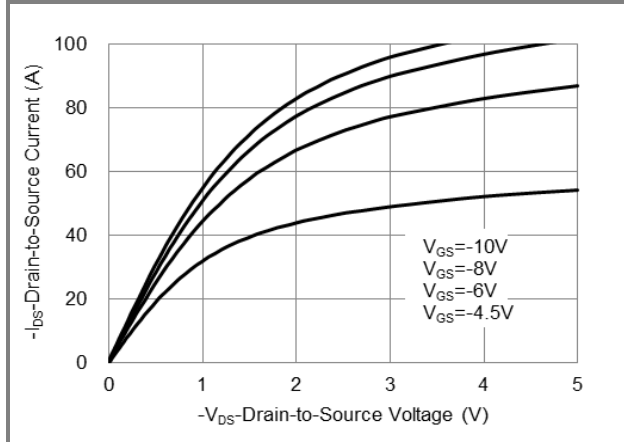


Fig.1 On-Region Characteristics

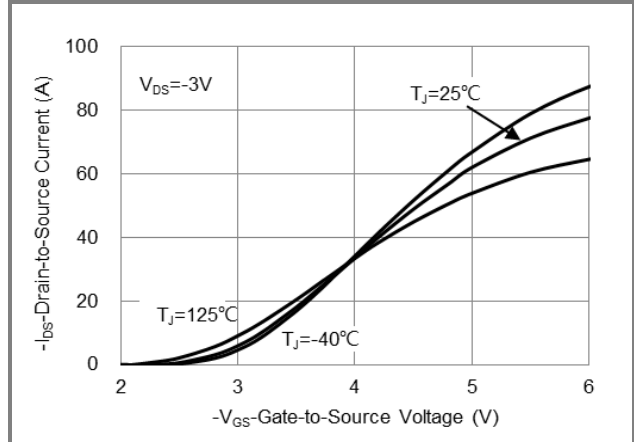


Fig.2 Transfer Characteristics

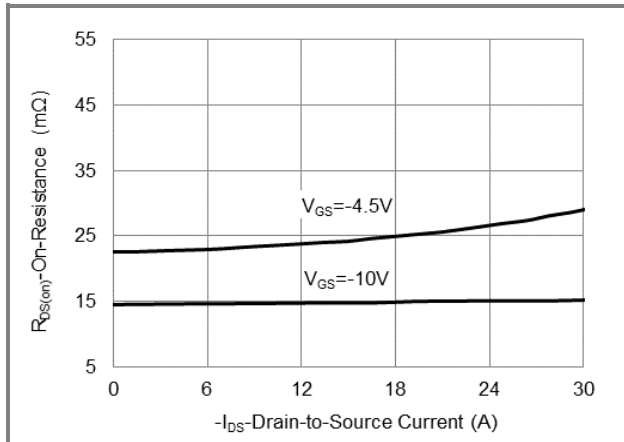


Fig.3 On-Resistance vs. Drain Current

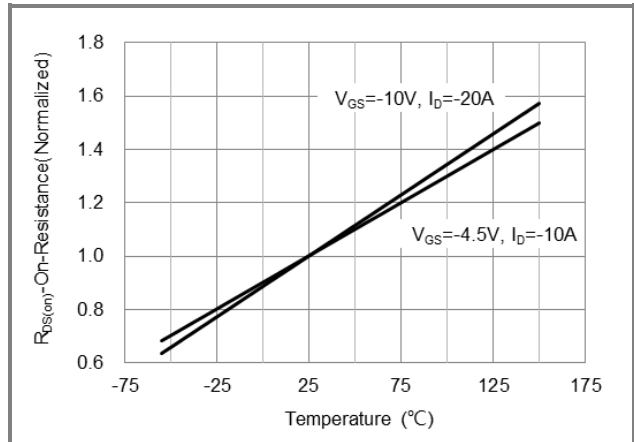


Fig.4 On-Resistance vs. Junction temperature

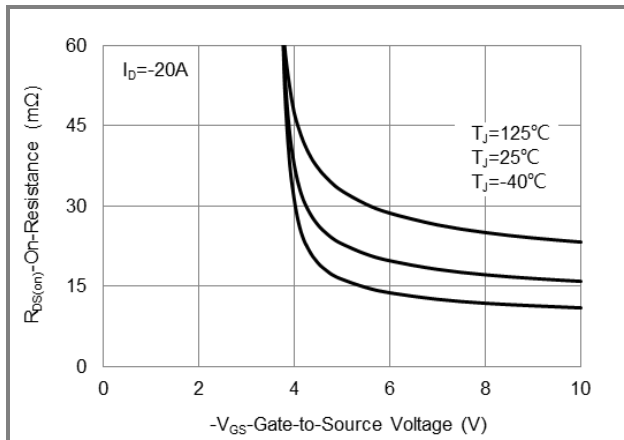


Fig.5 On-Resistance Variation with V_{GS}

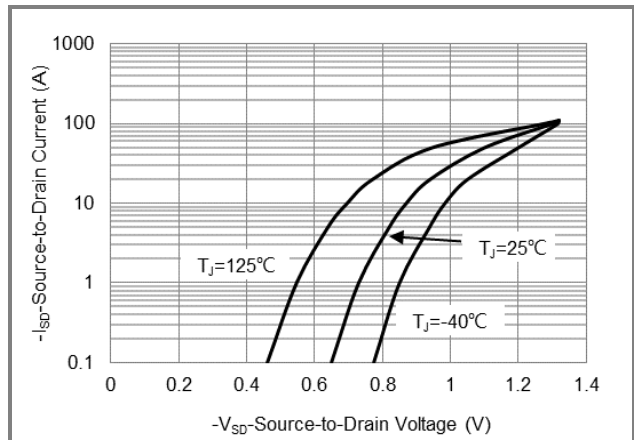


Fig.6 Source-Drain Diode Forward Voltage

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TYPICAL CHARACTERISTIC CURVES

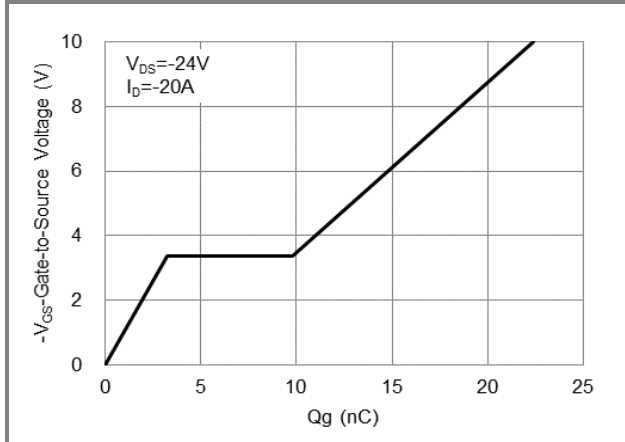


Fig.7 Gate-Charge Characteristics

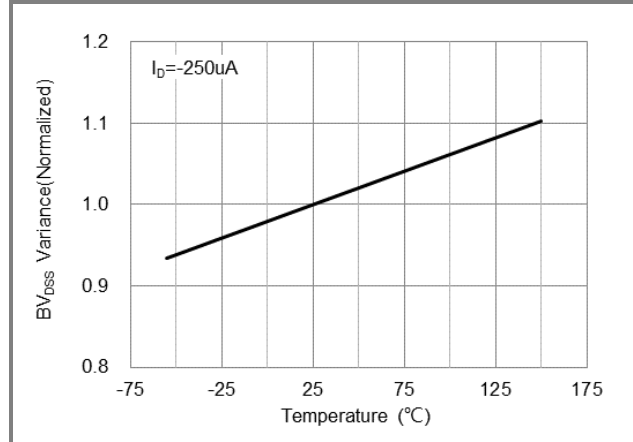


Fig.8 Breakdown Voltage Variation vs. Temperature

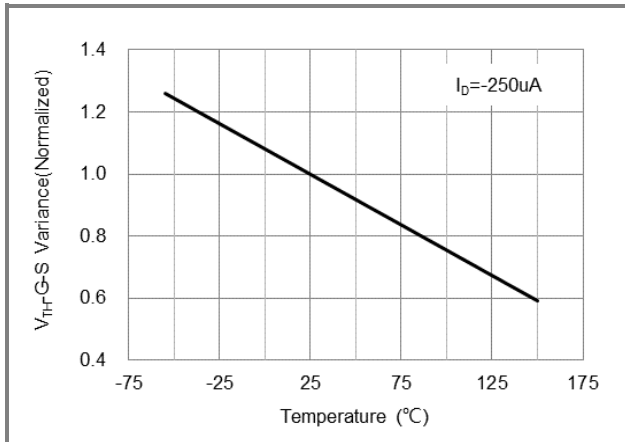


Fig.9 Threshold Voltage Variation with Temperature

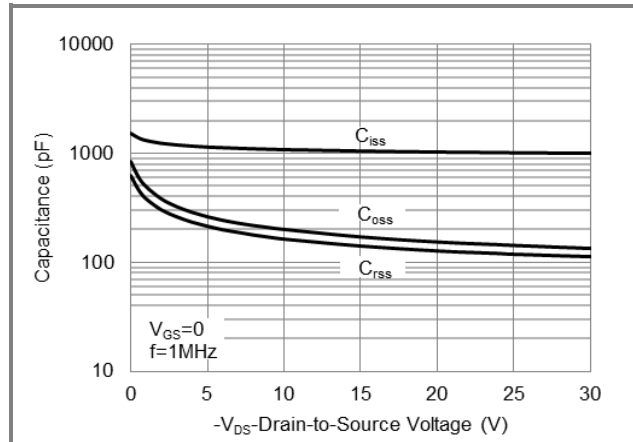


Fig.10 Capacitance vs. Drain-Source Voltage

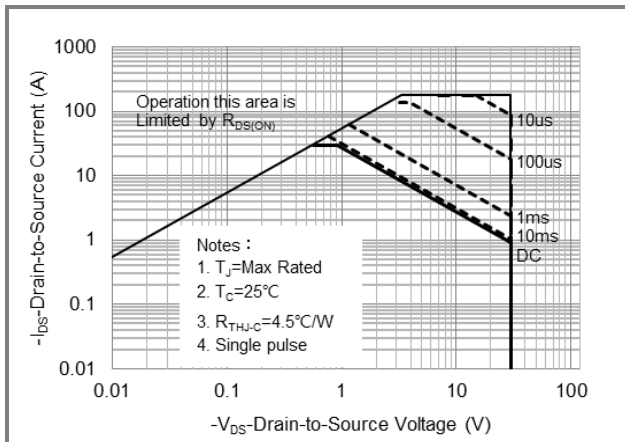


Fig.11 Maximum Safe Operating Area

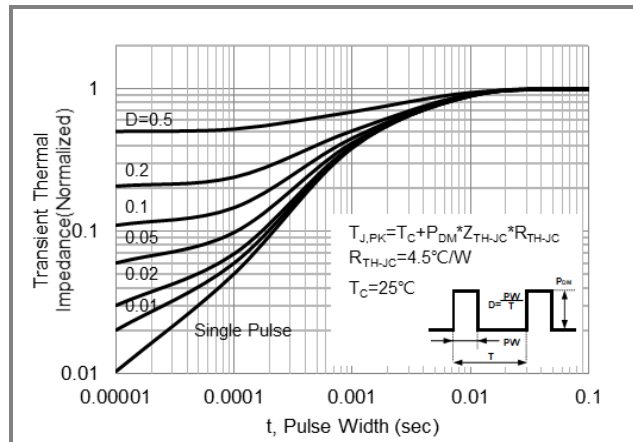


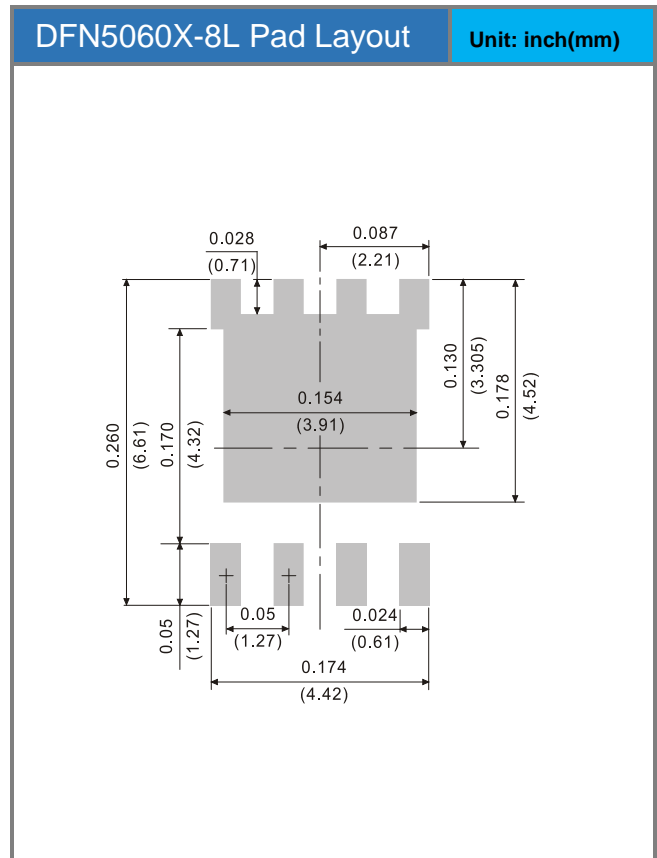
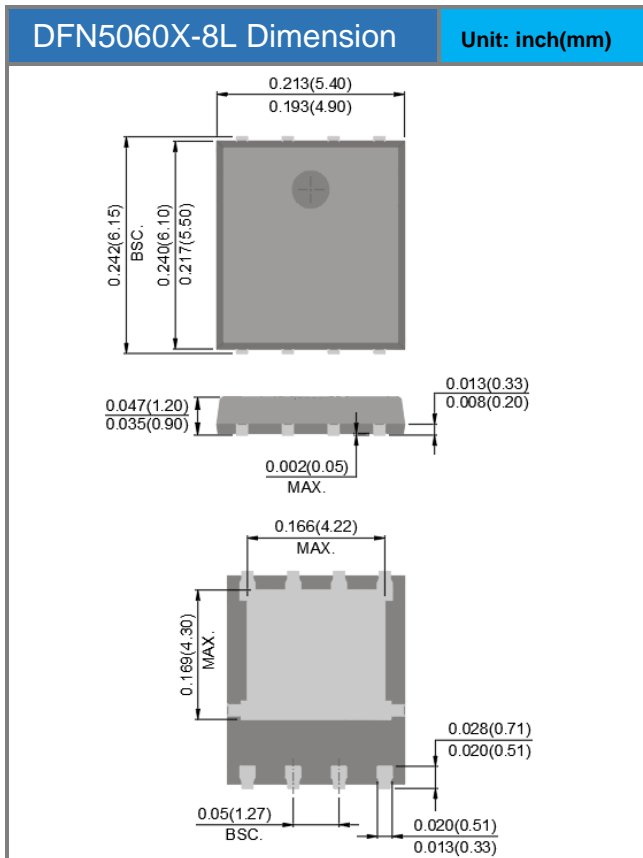
Fig.12 Normalized Transient Thermal Impedance

PJQ5439E

Product and Packing Information

| Part No. | Package Type | Packing Type | Marking |
|----------|--------------|-------------------|---------|
| PJQ5439E | DFN5060X-8L | 3K pcs / 13" reel | Q5439E |

Packaging Information & Mounting Pad Layout



PJQ5439E

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