



PJQ5433E-AU

30V P-Channel Enhancement Mode MOSFET

Voltage

-30 V

Current

-75 A

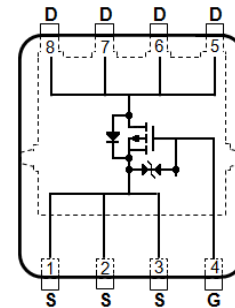
Features

- $R_{DS(ON)}$, $V_{GS}@-10V$, $I_D@-20A < 8.4m\Omega$
- $R_{DS(ON)}$, $V_{GS}@-4.5V$, $I_D@-10A < 13.5m\Omega$
- 100% UIS tested
- Reliable and Rugged
- 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 : 0.08 grams

DFN5060-8L



Maximum Ratings and Thermal Characteristics ($T_A=25^\circ C$ 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) | $T_C=25^\circ C$ | I_D | -75 | A |
| | $T_C=100^\circ C$ | | -53 | |
| Pulsed Drain Current ^(Note 1) | $T_C=25^\circ C$ | I_{DM} | -215 | |
| Power Dissipation | $T_C=25^\circ C$ | P_D | 75 | W |
| | $T_C=100^\circ C$ | | 38 | |
| Continuous Drain Current ^(Note 4) | $T_A=25^\circ C$ | I_D | -15.7 | A |
| | $T_A=70^\circ C$ | | -13.2 | |
| Power Dissipation | $T_A=25^\circ C$ | P_D | 3.3 | W |
| | $T_A=70^\circ C$ | | 2.3 | |
| Single Pulse Avalanche Energy ^(Note 5) | | E_{AS} | 121 | mJ |
| Operating Junction and Storage Temperature Range | | T_J, T_{STG} | -55~175 | $^\circ C$ |
| Thermal Resistance ^(Note 4) | Junction to Case | $R_{\theta JC}$ | 2 | $^\circ C/W$ |
| | Junction to Ambient | $R_{\theta JA}$ | 45 | |



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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 | -1.7 | -2.5 | |
| Drain-Source On-State Resistance | R _{DS(on)} | V _{GS} =-10V, I _D =-20A | - | 6.7 | 8.4 | mΩ |
| | | V _{GS} =-4.5V, I _D =-10A | - | 10.4 | 13.5 | |
| 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 | - | 54 | - | nC |
| Gate-Source Charge | Q _{gs} | | - | 6 | - | |
| Gate-Drain Charge | Q _{gd} | | - | 17 | - | |
| Input Capacitance | C _{iss} | V _{DS} =-25V, V _{GS} =0V, f=1MHz | - | 2310 | - | pF |
| Output Capacitance | C _{oss} | | - | 332 | - | |
| Reverse Transfer Capacitance | C _{rss} | | - | 256 | - | |
| Gate resistance | R _g | f=1MHz | - | 2.3 | - | Ω |
| Turn-On Delay Time | t _{d(on)} | V _{DS} =-24V, I _D =-20A, V _{GS} =-10V, R _G =3Ω (Note 2) | - | 11 | - | ns |
| Turn-On Rise Time | t _r | | - | 9 | - | |
| Turn-Off Delay Time | t _{d(off)} | | - | 37 | - | |
| Turn-Off Fall Time | t _f | | - | 21 | - | |
| Drain-Source Diode | | | | | | |
| Diode Forward Current | I _s | T _C =25°C | - | - | -75 | A |
| Pulsed Diode Forward Current | I _{SM} | | - | - | -215 | |
| Diode Forward Voltage | V _{SD} | I _S =-20A, V _{GS} =0V | - | -0.85 | -1.3 | V |
| Reverse Recovery Time | T _{rr} | V _{GS} =0V, I _S =-20A | - | 22 | - | ns |
| Reverse Recovery Charge | Q _{rr} | dI _S /dt=100A/us | - | 10 | - | 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}=-22A, V_{DD}=-30V, V_{GS}=-10V, Starting T_J=25°C.
6. Guaranteed by design, not subject to production testing.



PJQ5433E-AU

TYPICAL CHARACTERISTIC CURVES

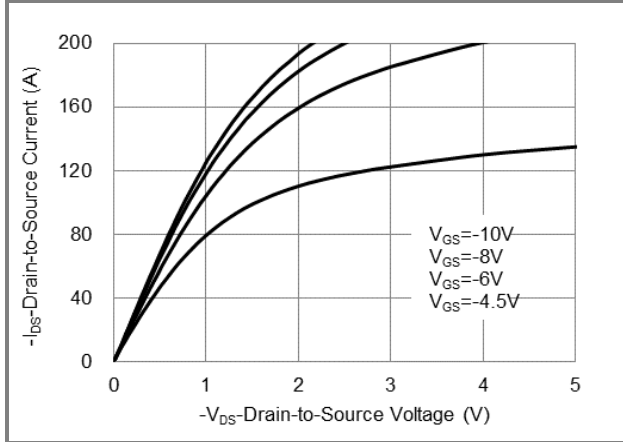


Fig.1 On-Region Characteristics

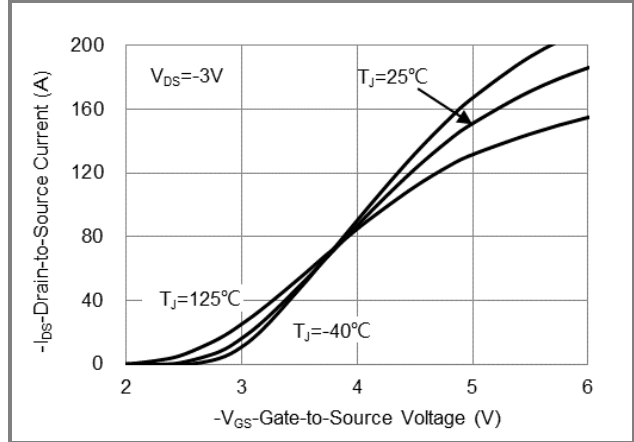


Fig.2 Transfer Characteristics

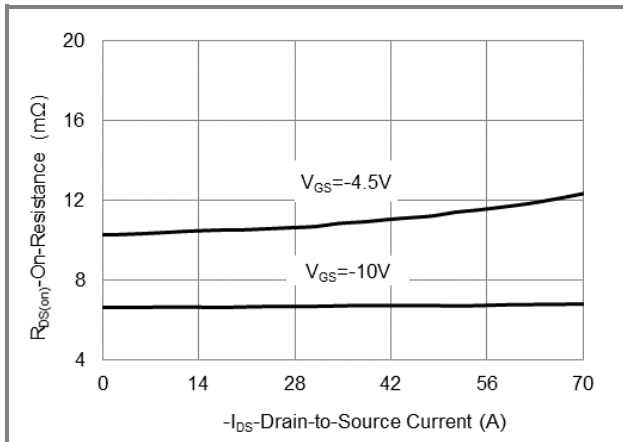


Fig.3 On-Resistance vs. Drain Current

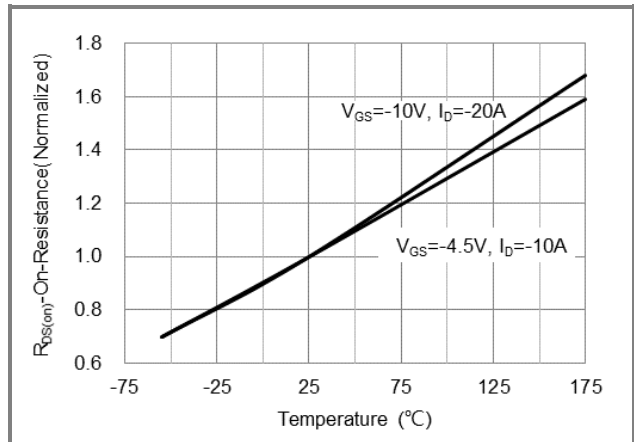


Fig.4 On-Resistance vs. Junction temperature

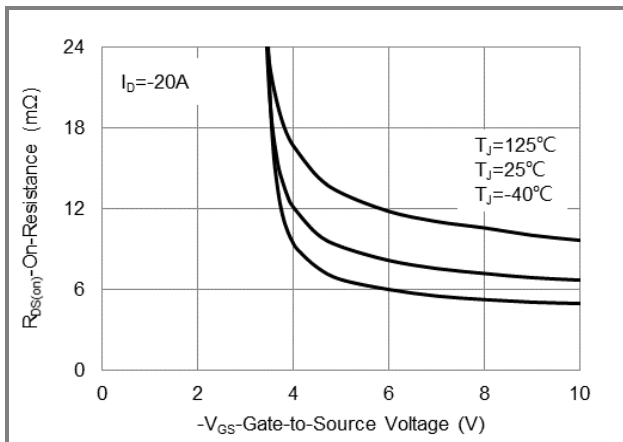


Fig.5 On-Resistance Variation with V_{GS}

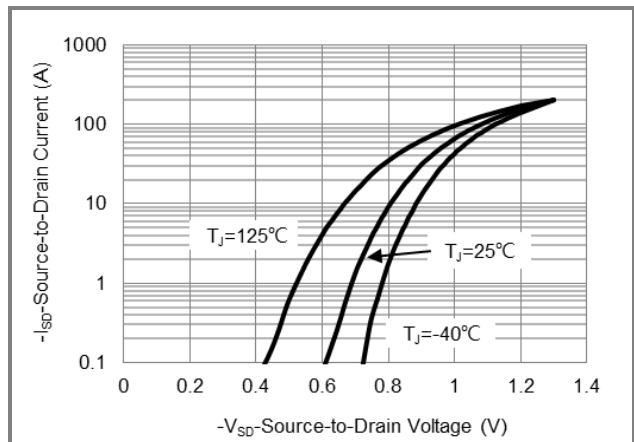


Fig.6 Source-Drain Diode Forward Voltage



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TYPICAL CHARACTERISTIC CURVES

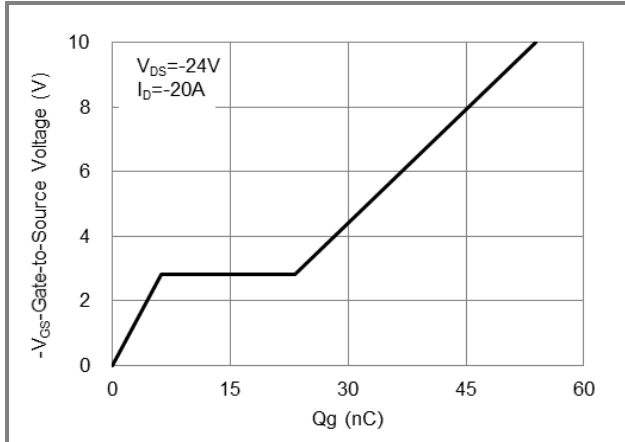


Fig.7 Gate-Charge Characteristics

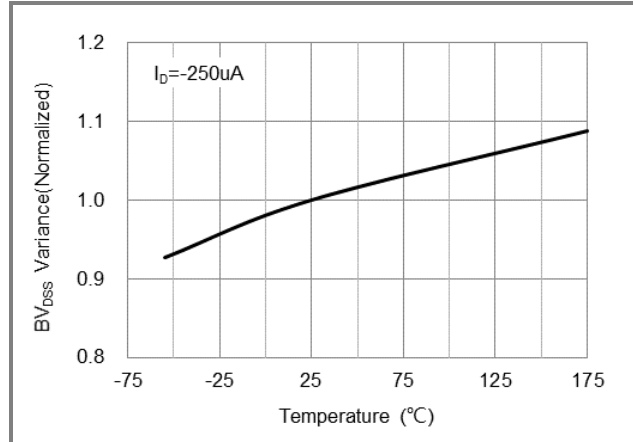


Fig.8 Breakdown Voltage Variation vs. Temperature

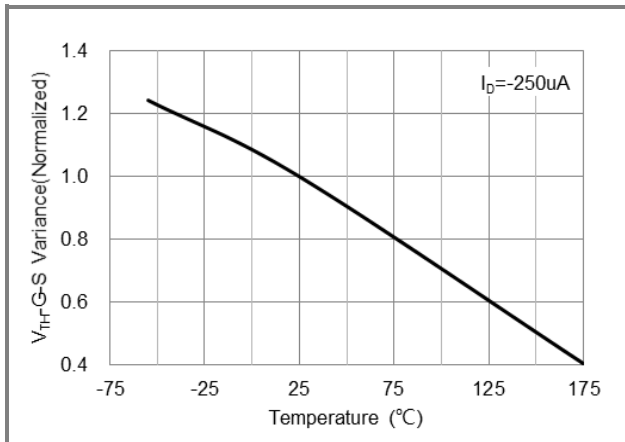


Fig.9 Threshold Voltage Variation with Temperature

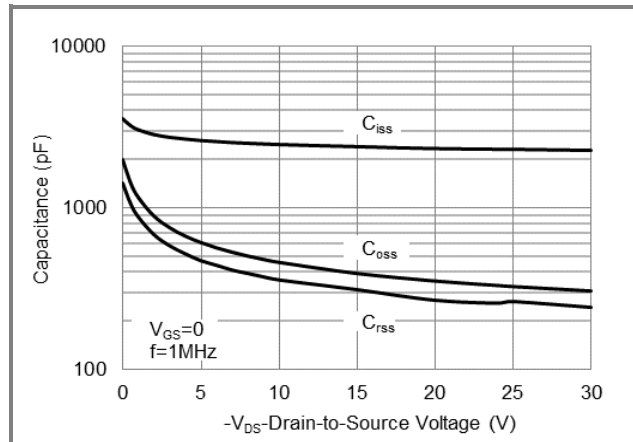


Fig.10 Capacitance vs. Drain-Source Voltage

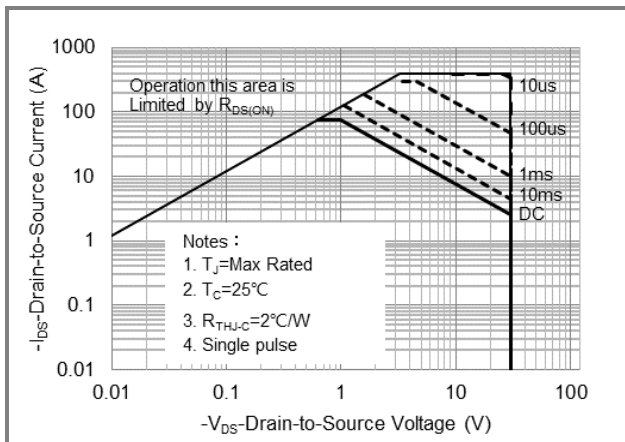


Fig.11 Maximum Safe Operating Area

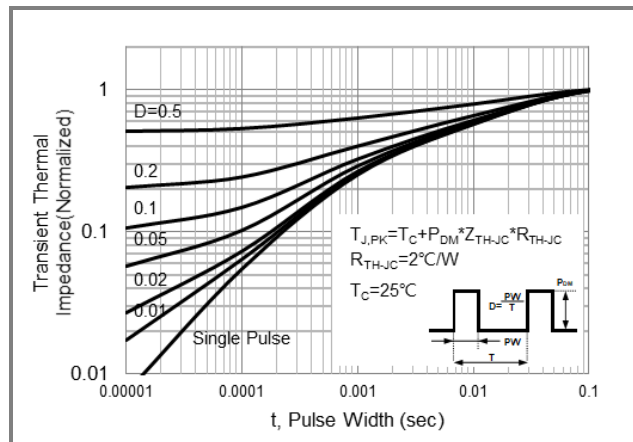


Fig.12 Normalized Transient Thermal Impedance

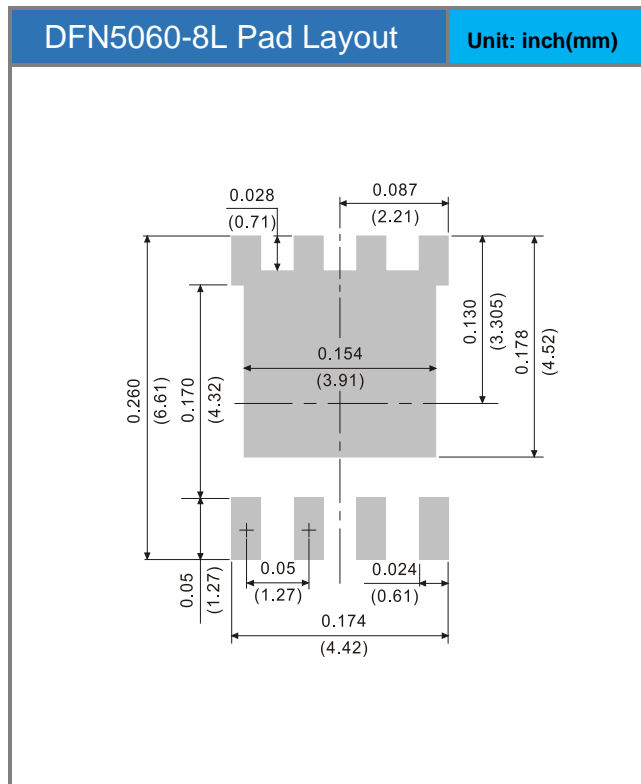
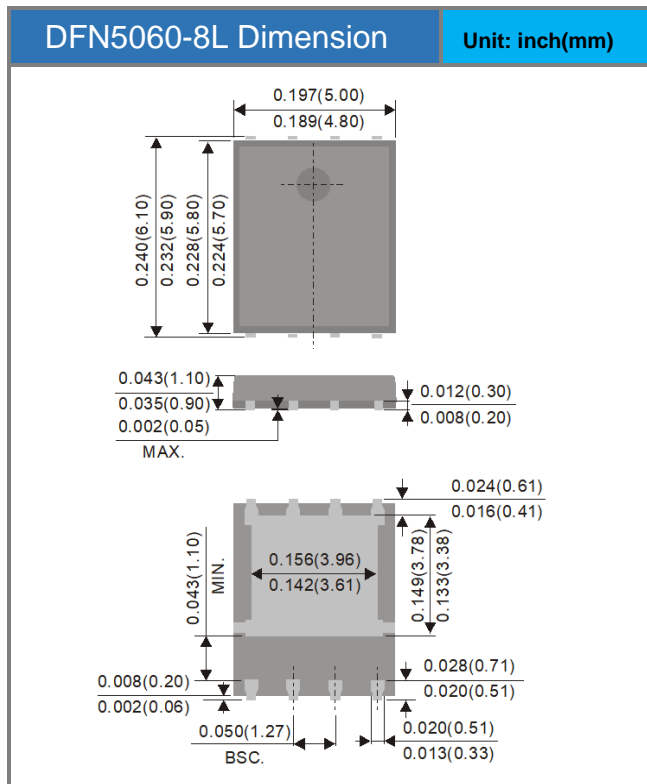


PJQ5433E-AU

Product and Packing Information

| Part No. | Package Type | Packing Type | Marking |
|-------------|--------------|-------------------|---------|
| PJQ5433E-AU | DFN5060-8L | 3K pcs / 13" reel | Q5433E |

Packaging Information & Mounting Pad Layout





PJQ5433E-AU

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