# PJU1N60

## 600V N-Channel Enhancement Mode MOSFET

### FEATURES

- 1A, 600V, $R_{DS(ON)}$=11Ω@$V_{GS}$=10V, $I_D$=0.5A

- Low ON Resistance
- Fast Switching
- Low Gate Charge
- Fully Characterized Avalanche Voltage and Current
- Specially Desigened for AC Adapter, Battery Charge and SMPS
- In compliance with EU RoHs 2002/95/EC Directives

### MECHANICAL DATA

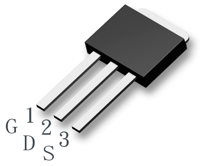
- Case: TO-220AB / TO-251 Molded Plastic
- Terminals : Solderable per MIL-STD-750,Method 2026

### ORDERING INFORMATION

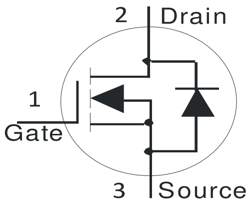
| TYPE | MARKING | PACKAGE | PACKING |
|---|---|---|---|
| PJU1N60 | U1N60 | TO-251 | 80PCS/TUBE |

### TO-251

TO-251



INTERNAL SCHEMATIC DIAGRAM



### Maximum RATINGS and Thermal Characteristics ($T_A$=25°C unless otherwise noted )

| PARAMETER | Symbol | PJU1N60 | Units |
|---|---|---|---|
| Drain-Source Voltage | $V_{DS}$ | 600 | V |
| Gate-Source Voltage | $V_{GS}$ | ±30 | V |
| Continuous Drain Current | $I_D$ | 1 | A |
| Pulsed Drain Current [1)] | $I_{DM}$ | 4.6 | A |
| Maximum Power Dissipation $T_A$=25°C<br>Derating Factor | $P_D$ | 28<br>0.22 | W |
| Operating Junction and Storage Temperature Range | $T_J, T_{STG}$ | -55 to +150 | °C |
| Avalanche Energy with Single Pulse<br>$I_{AS}$=1.1A, VDD=50V, L=95mH | $E_{AS}$ | 58 | mJ |
| Junction-to-Case Thermal Resistance | $R_{\theta JC}$ | 4.5 | °C/W |
| Junction-to Ambient Thermal Resistance | $R_{\theta JA}$ | 100 | °C/W |

**Note :** 1. Maximum DC current limited by the package

## 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 | 600 | - | - | V |
| Gate Threshold Voltage | $V_{GS(th)}$ | $V_{DS}=V_{GS}$, $I_D$=250uA | 2.0 | - | 4.0 | V |
| Drain-Source On-State Resistance | $R_{DS(on)}$ | $V_{GS}$= 10V, $I_D$= 0.5A | - | 8.3 | 11 | Ω |
| Zero Gate Voltage Drain Current | $I_{DSS}$ | $V_{DS}$=600V, $V_{GS}$=0V | - | - | 10 | uA |
| Gate Body Leakage | $I_{GSS}$ | $V_{GS}=\pm30V$, $V_{DS}$=0V | - | - | ±100 | nA |
| Dynamic | | | | | | |
| Total Gate Charge | $Q_g$ | $V_{DS}$=480V, $I_D$=1.0A<br>$V_{GS}$=10V | - | 6.2 | 7.8 | nC |
| Gate-Source Charge | $Q_{gs}$ | | - | 1.44 | - | |
| Gate-Drain Charge | $Q_{gd}$ | | - | 3.32 | - | |
| Turn-On Delay Time | $t_{d(on)}$ | $V_{DD}$=300V, $I_D$=1.0A<br>$R_G$=25Ω, $V_{GS}$=10V | - | 10.2 | 14.8 | ns |
| Turn-On Rise Time | $t_r$ | | - | 5.6 | 8.0 | |
| Turn-Off Delay Time | $t_{d(off)}$ | | - | 16 | 22 | |
| Turn-Off Fall Time | $t_f$ | | - | 10.2 | 16 | |
| Input Capacitance | $C_{iss}$ | $V_{DS}$=25V, $V_{GS}$=0V<br>f=1.0MH$_Z$ | - | 165 | 220 | pF |
| Output Capacitance | $C_{oss}$ | | - | 17 | 28 | |
| Reverse Transfer Capacitance | $C_{rss}$ | | - | 1.65 | 4.2 | |
| Source-Drain Diode | | | | | | |
| Max. Diode Forward Current | $I_S$ | - | - | - | 1.0 | A |
| Max.Pulsed Source Current | $I_{SM}$ | - | - | - | 4.6 | A |
| Diode Forward Voltage | $V_{SD}$ | $I_S$=1A , $V_{GS}$=0V | - | - | 1.5 | V |
| Reverse Recovery Time | $t_{rr}$ | $V_{GS}$=0V, $I_F$=1A<br>di/dt=100A/us | - | 190 | - | ns |
| Reverse Recovery Charge | $Q_{rr}$ | | - | 0.5 | - | uC |

**NOTE :** Plus Test: Pluse Width $\leq$ 300us, Duty Cycle $\leq$ 2%.

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## Typical Characteristics Curves ( Ta=25℃, unless otherwise noted)

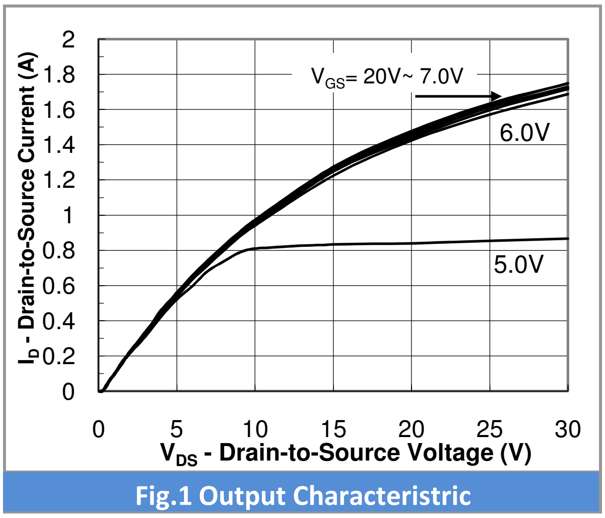

Fig.1 Output Characteristic

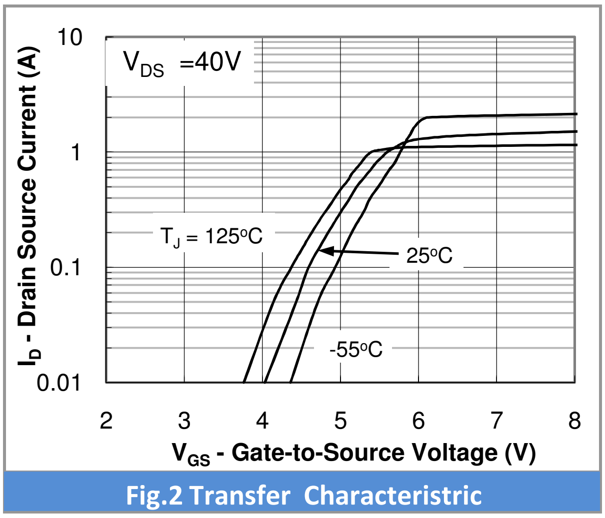

Fig.2 Transfer Characteristic

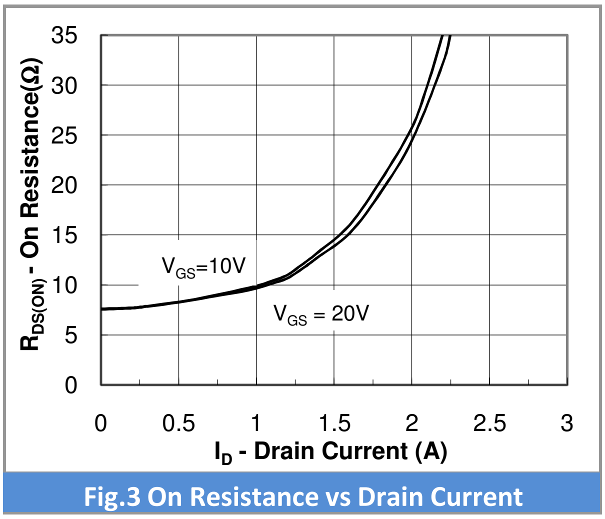

Fig.3 On Resistance vs Drain Current

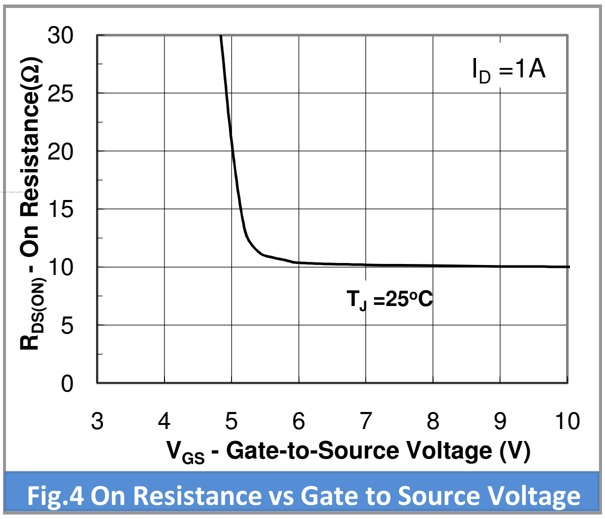

Fig.4 On Resistance vs Gate to Source Voltage

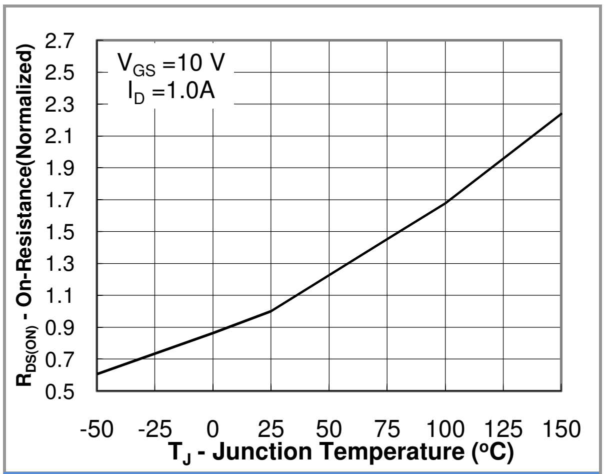

Fig.5 On Resistance vs Junction Temperature

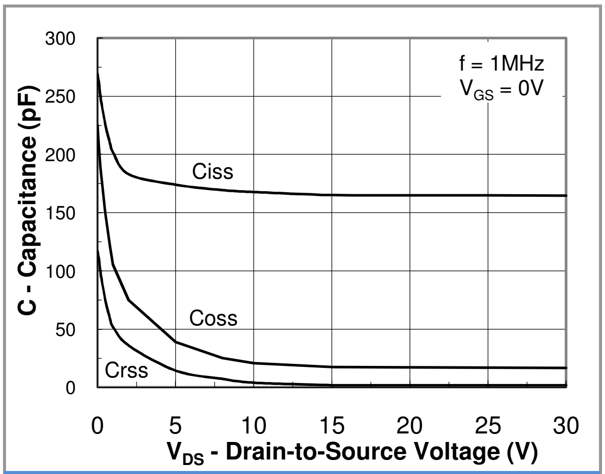

Fig.6 Capacitance

Typical Characteristics Curves ( Ta=25℃, unless otherwise

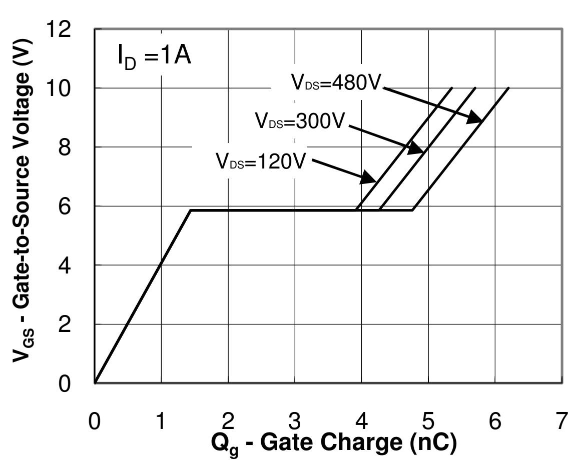

Fig. 7 Gate Charge Waveform

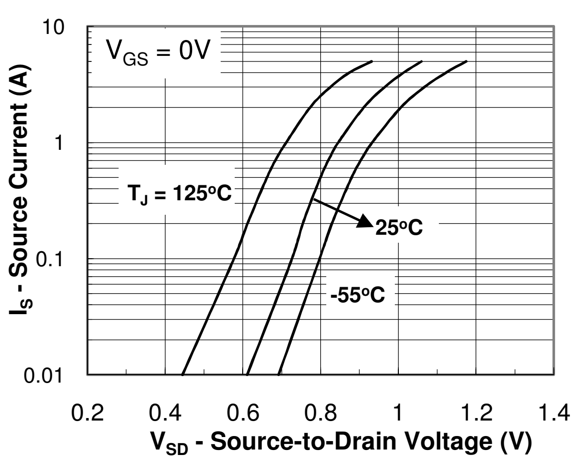

Fig.8 Source-Drain Diode Forward Voltage

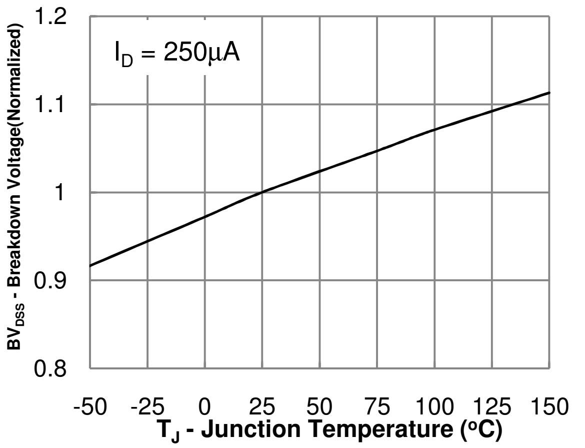

Fig.9 Breakdown Voltage vs Junction Temperature

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## LEGALSTATEMENT