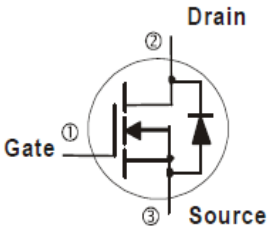
# PJD80N06

## 60V N-Channel Enhancement Mode MOSFET

| Voltage | 60 V | Current | 80 A |
|---|---|---|---|

TO-252




### Features

- $R_{DS(ON)}$ , $V_{GS}$@10V, ID@20A<7mΩ
- High switching speed
- Improved dv/dt capability
- Low reverse transfer capacitance
- Lead free in compliance with EU RoHS 2011/65/EU directive.
- Green molding compound as per IEC61249 Std. (Halogen Free)

### Mechanical Data

- Case : TO-252 Package
- Terminals : Solderable per MIL-STD-750, Method 2026
- Approx. Weight : 0.0104 ounces, 0.297grams

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

| PARAMETER | | SYMBOL | LIMIT | UNITS |
|---|---|---|---|---|
| Drain-Source Voltage | | $V_{DS}$ | 60 | V |
| Gate-Source Voltage | | $V_{GS}$ | ±20 | V |
| Continuous Drain Current | $T_C$=25°C | $I_D$ | 80 | A |
| | $T_C$=100°C | | 50 | |
| Pulsed Drain Current (Note 1) | $T_C$=25°C | $I_{DM}$ | 160 | |
| Power Dissipation | $T_C$=25°C | $P_D$ | 83 | W |
| | $T_C$=100°C | | 33 | |
| Continuous Drain Current | $T_A$=25°C | $I_D$ | 12 | A |
| | $T_A$=70°C | | 10 | A |
| Power Dissipation | $T_A$=25°C | $P_D$ | 2.0 | W |
| Power Dissipation | $T_A$=70°C | | 1.3 | |
| Single Pulse Avalanche Energy (Note 6) | | $E_{AS}$ | 135 | mJ |
| Operating Junction and Storage Temperature Range | | $T_J$,$T_{STG}$ | -55~150 | °C |
| Typical Thermal resistance(Note 4,5) | Junction to Case | $R_{\theta JC}$ | 1.5 | °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 | 60 | - | - | V |
| Gate Threshold Voltage | $V_{GS(th)}$ | $V_{DS}$=$V_{GS}$, $I_D$=250uA | 2.0 | 3.0 | 4.0 | V |
| Drain-Source On-State Resistance | $R_{DS(on)}$ | $V_{GS}$=10V,$I_D$=20A | - | 5 | 7 | mΩ |
| Zero Gate Voltage Drain Current | $I_{DSS}$ | $V_{DS}$=48V,$V_{GS}$=0V | - | - | 1.0 | uA |
| Gate-Source Leakage Current | $I_{GSS}$ | $V_{GS}$=±20V,$V_{DS}$=0V | - | - | ±100 | nA |
| **Dynamic** (Note 7) | | | | | | |
| Total Gate Charge | $Q_g$ | $V_{DS}$=48V, $I_D$=25A, $V_{GS}$=10V (Note 1,2) | - | 104 | - | nC |
| Gate-Source Charge | $Q_{gs}$ | | - | 33 | - | |
| Gate-Drain Charge | $Q_{gd}$ | | - | 26 | - | |
| Input Capacitance | Ciss | $V_{DS}$=25V, $V_{GS}$=0V, f=1.0MHZ | - | 6352 | - | pF |
| Output Capacitance | Coss | | - | 380 | - | |
| Reverse Transfer Capacitance | Crss | | - | 134 | - | |
| Turn-On Delay Time | $td_{(on)}$ | $V_{DD}$=30V, $I_D$=30A, $V_{GS}$=10V, $R_G$=3.3Ω (Note 1,2) | - | 83 | - | ns |
| Turn-On Rise Time | $t_r$ | | - | 184 | - | |
| Turn-Off Delay Time | $td_{(off)}$ | | - | 203 | - | |
| Turn-Off Fall Time | $t_f$ | | - | 113 | - | |
| **Drain-Source Diode** | | | | | | |
| Maximum Continuous Drain-Source Diode Forward Current | $I_S$ | --- | - | - | 80 | A |
| Diode Forward Voltage | $V_{SD}$ | $I_S$=1A,$V_{GS}$=0V | - | 0.7 | 1.3 | 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 TJ(MAX)=150°C. Ratings are based on low frequency and duty cycles to keep initial TJ =25°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 $inch^2$ with 2oz.square pad of copper.
6. The test condition is L=0.3mH, $I_{AS}$=30A, $V_{DD}$=25V, $V_{GS}$=10V
7. Guaranteed by design, not subject to production testing.

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## TYPICAL CHARACTERISTIC CURVES

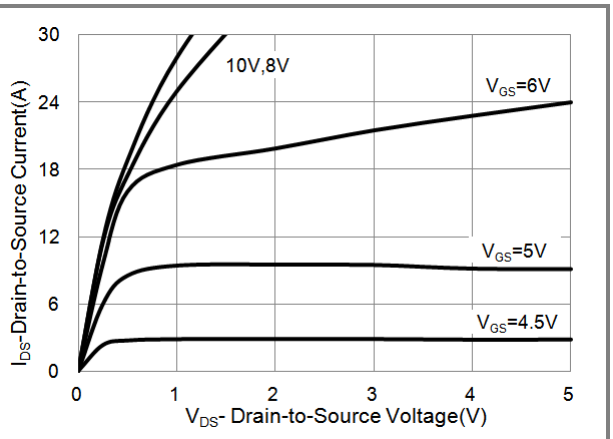


Fig.1 Output Characteristics

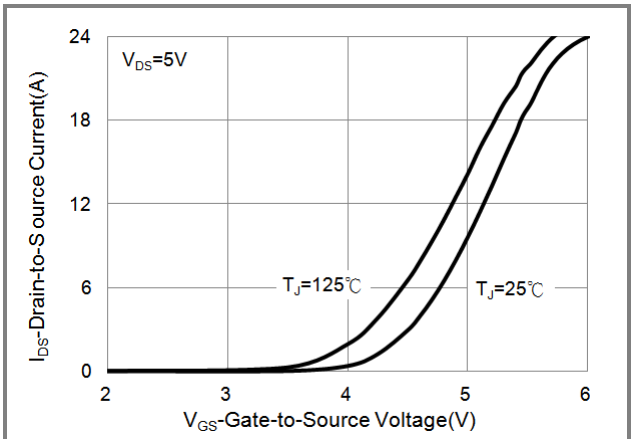


Fig.2 Transfer Characteristics

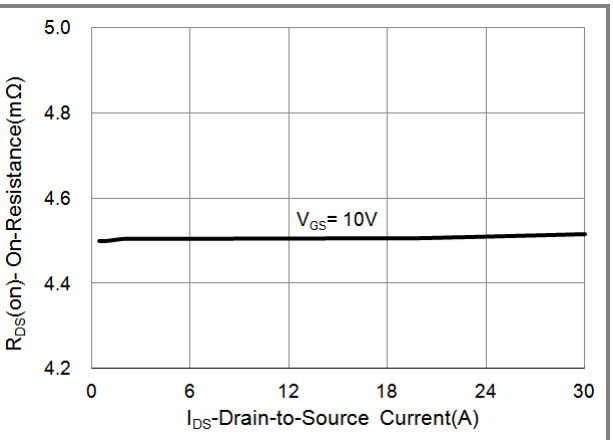


Fig.3 On-Resistance vs. Drain Current

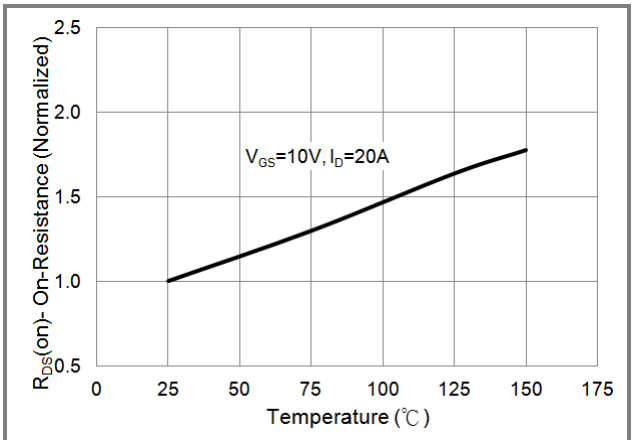


Fig.4 On-Resistance vs. Junction temperature

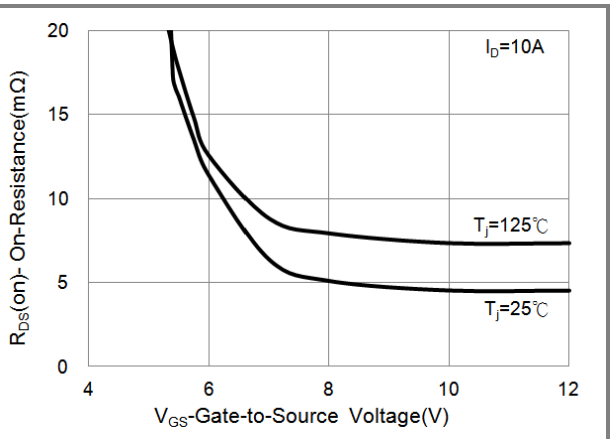


Fig.5 On-Resistance Variation with VGS.

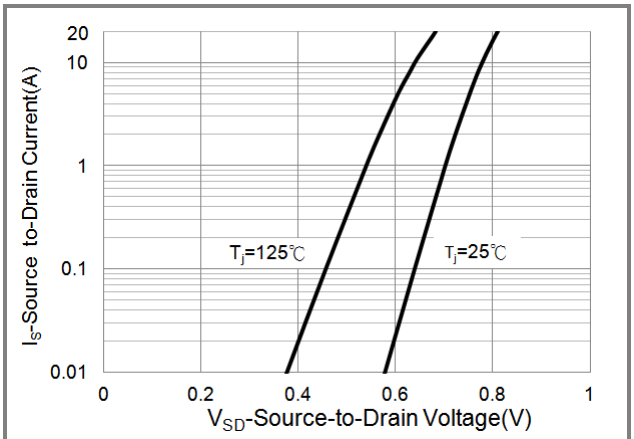


Fig.6 Source-Drain Diode Forward Voltage

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## TYPICAL CHARACTERISTIC CURVES

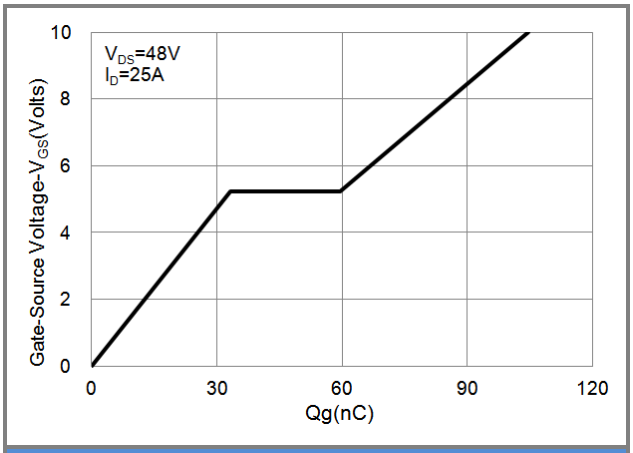


Fig.7 Gate-Charge Characteristics

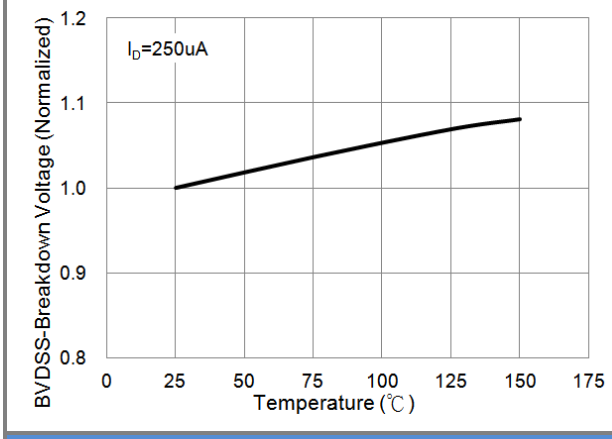


Fig.8 Breakdown Voltage Variation vs. Temperature

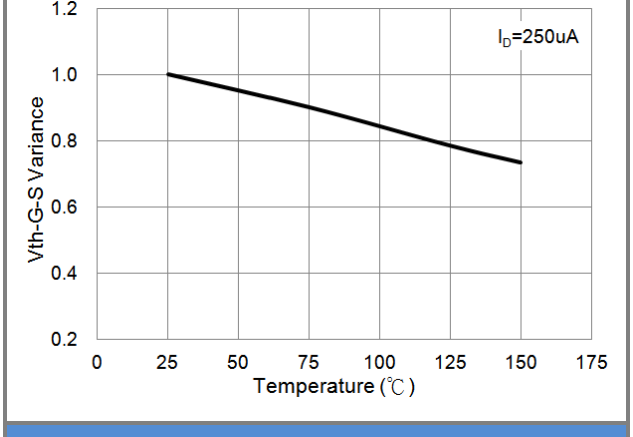


Fig.9 Threshold Voltage Variation with Temperature

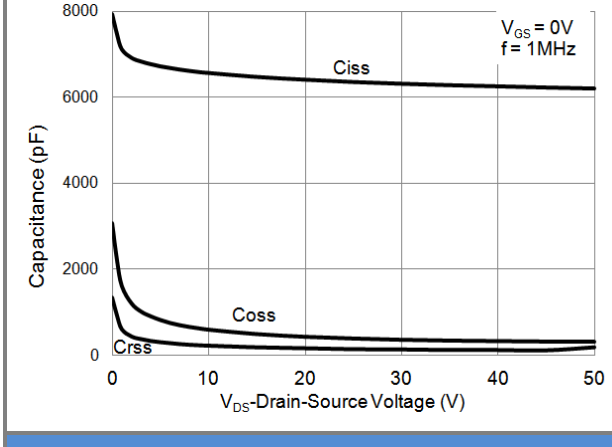


Fig.10 Capacitance vs. Drain-Source Voltage

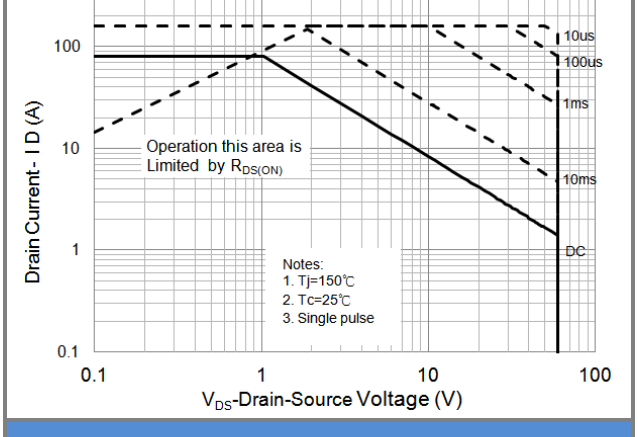


Fig.11 Maximum Safe Operating Area

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## TYPICAL CHARACTERISTIC CURVES

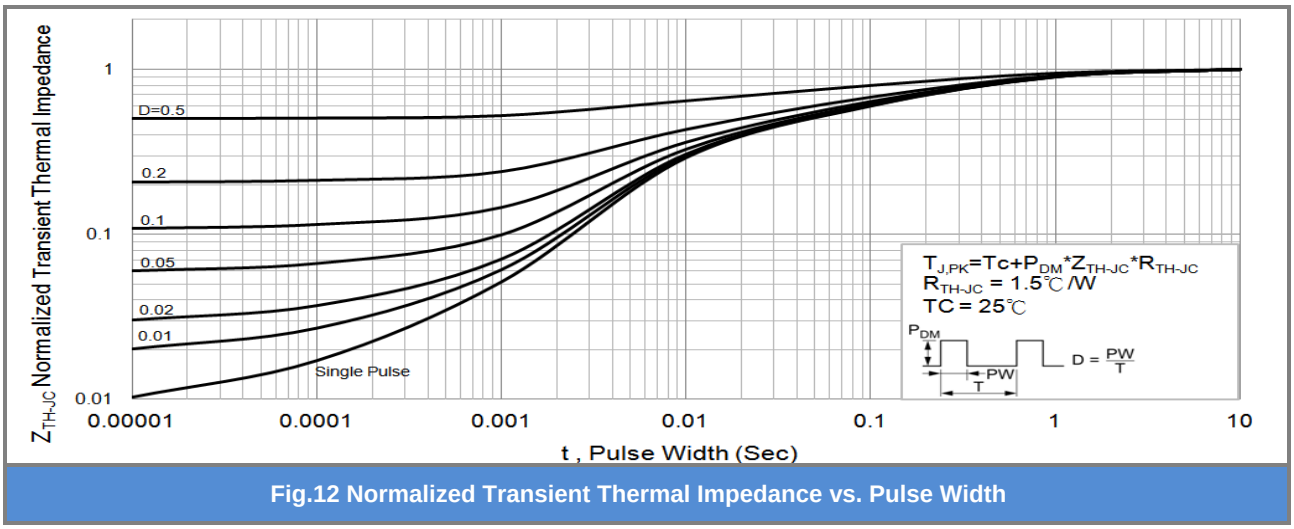


Fig.12 Normalized Transient Thermal Impedance vs. Pulse Width

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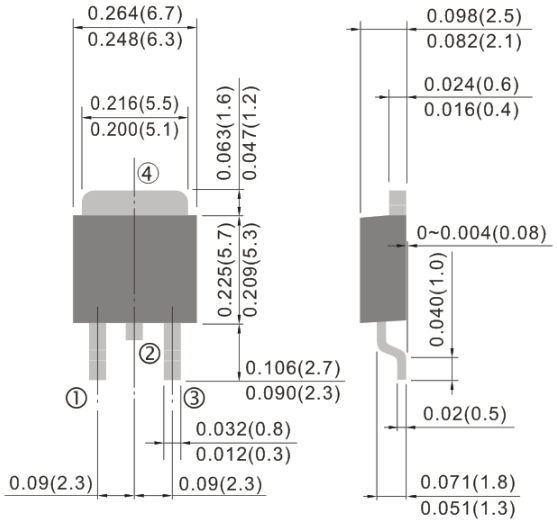
## Packaging Information .

TO-252 Dimension

Unit: mm

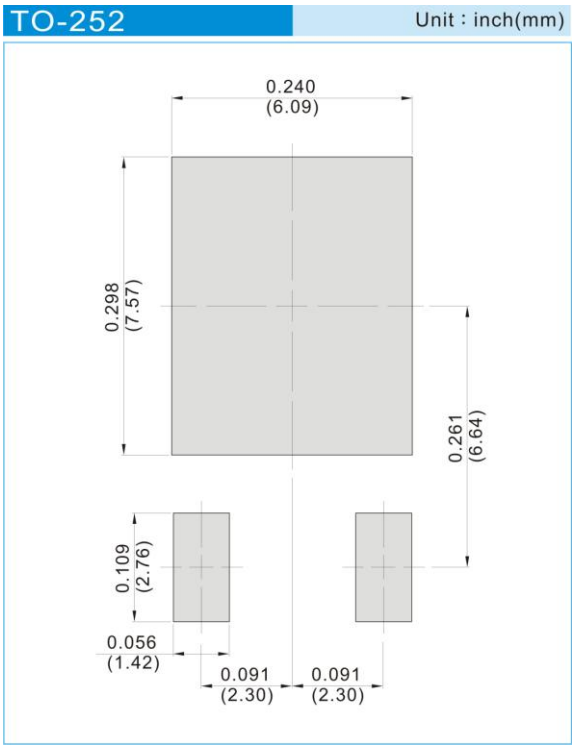


# PJD80N06

## PART NO PACKING CODE VERSION

| Part No Packing Code | Package Type | Packing type | Marking | Version |
|---|---|---|---|---|
| PJD80N06_L2_00001 | TO-252 | 3,000pcs / 13” reel | D80N06 | Halogen free |

## MOUNTING PAD LAYOUT



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