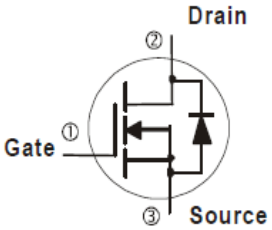
# PJD10N10

## 100V N-Channel MOSFET

| Voltage | 100 V | Current | 10 A |
|---|---|---|---|

TO-252AA




### Features

- $R_{DS(ON)}$, $V_{GS}$@10V,$I_D$@5A<130mΩ
- $R_{DS(ON)}$, $V_{GS}$@6V,$I_D$@2A<135mΩ
- High switching speed
- Improved dv/dt capability
- Low Gate Charge
- 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-252AA 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 | | $V_{DS}$ | 100 | V |
| Gate-Source Voltage | | $V_{GS}$ | ±25 | V |
| Continuous Drain Current | $T_C$=25°C | $I_D$ | 10 | A |
| | $T_C$=100°C | | 6.5 | |
| Pulsed Drain Current (Note 1) | $T_C$=25°C | $I_{DM}$ | 40 | |
| Power Dissipation | $T_C$=25°C | $P_D$ | 34.7 | W |
| | $T_C$=100°C | | 14 | |
| Continuous Drain Current | $T_A$=25°C | $I_D$ | 2.6 | A |
| | $T_A$=70°C | | 2.1 | 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) | | $E_{AS}$ | 6 | mJ |
| Operating Junction and Storage Temperature Range | | $T_J$,$T_{STG}$ | -55~150 | °C |
| Typical Thermal Resistance (Note 4,5) | Junction to Case | $R_{\theta JC}$ | 3.6 | °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 | 100 | - | - | V |
| Gate Threshold Voltage | $V_{GS(th)}$ | $V_{DS}$=$V_{GS}$,$I_D$=250uA | 2.0 | 2.76 | 3.5 | V |
| Drain-Source On-State Resistance | $R_{DS(on)}$ | $V_{GS}$=10V,$I_D$=5A | - | 110 | 130 | mΩ |
| | | $V_{GS}$=6V,$I_D$=2A | - | 120 | 135 | |
| Zero Gate Voltage Drain Current | $I_{DSS}$ | $V_{DS}$=100V,$V_{GS}$=0V | - | 0.01 | 1.0 | uA |
| Gate-Source Leakage Current | $I_{GSS}$ | $V_{GS}$=±20V,$V_{DS}$=0V | - | ±20 | ±100 | nA |
| **Dynamic** (Note 7) | | | | | | |
| Total Gate Charge | $Q_g$ | $V_{DS}$=37.5V, $I_D$=5A, $V_{GS}$=10V (Note 2,3) | - | 12 | - | nC |
| Gate-Source Charge | $Q_{gs}$ | | - | 3.1 | - | |
| Gate-Drain Charge | $Q_{gd}$ | | - | 2.2 | - | |
| Input Capacitance | Ciss | $V_{DS}$=30V, $V_{GS}$=0V, f=1.0MHZ | - | 707 | - | pF |
| Output Capacitance | Coss | | - | 40 | - | |
| Reverse Transfer Capacitance | Crss | | - | 16 | - | |
| Turn-On Delay Time | $td_{(on)}$ | $V_{DS}$=37.5V,RL=7.5Ω, $V_{GS}$=10V, $R_G$=3Ω (Note 2,3) | - | 6 | - | ns |
| Turn-On Rise Time | $t_r$ | | - | 27 | - | |
| Turn-Off Delay Time | $td_{(off)}$ | | - | 15 | - | |
| Turn-Off Fall Time | $t_f$ | | - | 7 | - | |
| **Drain-Source Diode** | | | | | | |
| Maximum Continuous Drain-Source Diode Forward Current | $I_S$ | --- | - | - | 10 | A |
| Diode Forward Voltage | $V_{SD}$ | $I_S$=1A,$V_{GS}$=0V | - | 0.76 | 1.0 | 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=0.1mH, $I_{AS}$=11A, $V_{DD}$=25V, $V_{GS}$=10V
7. Guaranteed by design, not subject to production testing

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## TYPICAL CHARACTERISTIC CURVES

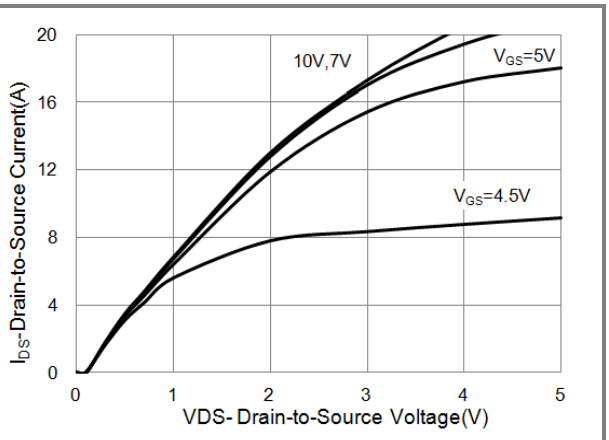



Fig.1 On-Region Characteristics

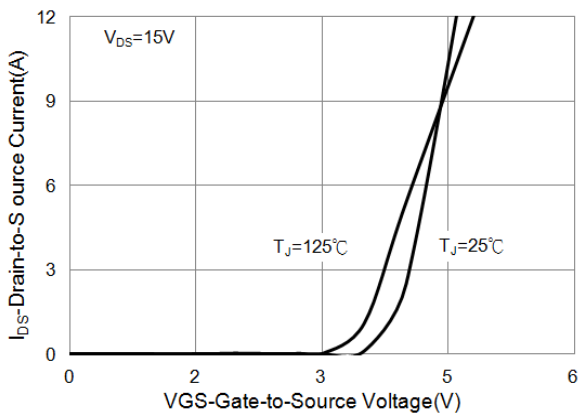



Fig.2 Transfer Characteristics

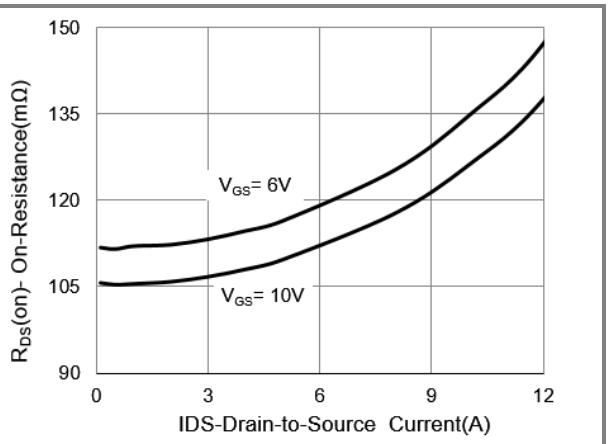



Fig.3 On-Resistance vs. Drain Current

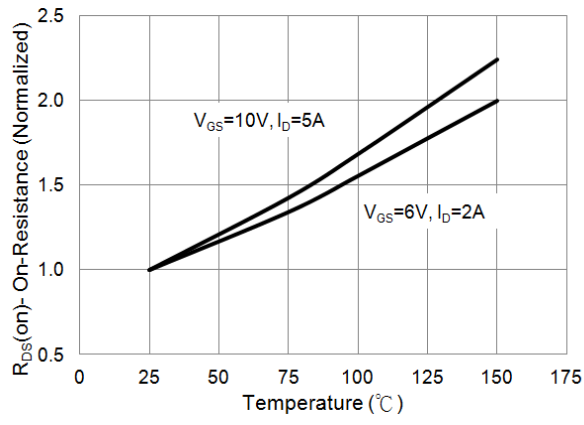



Fig.4 On-Resistance vs. Junction temperature

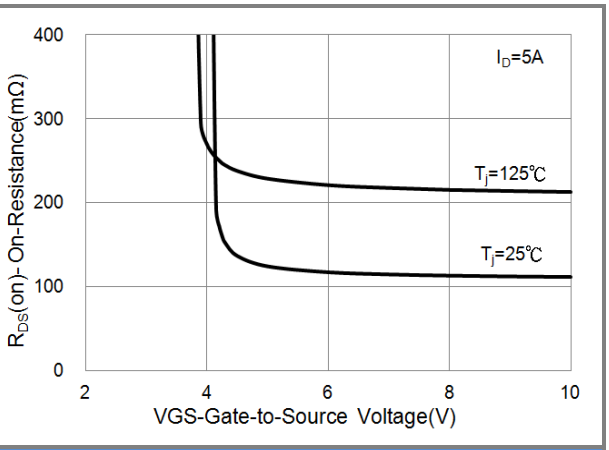



Fig.5 On-Resistance Variation with VGS.

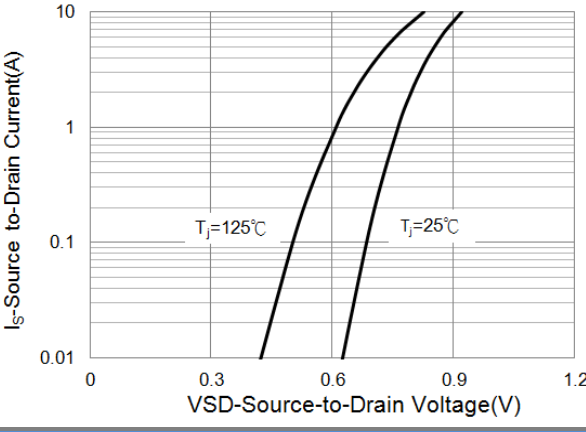



Fig.6 Body Dlode CharacterIsIcs

# PJD10N10

## TYPICAL CHARACTERISTIC CURVES

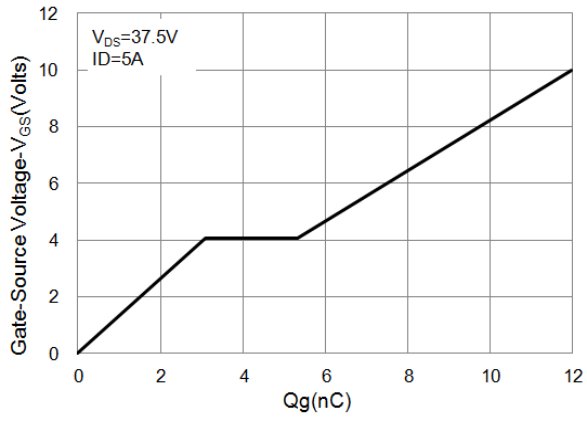



Fig.7 Gate-Charge Characteristics

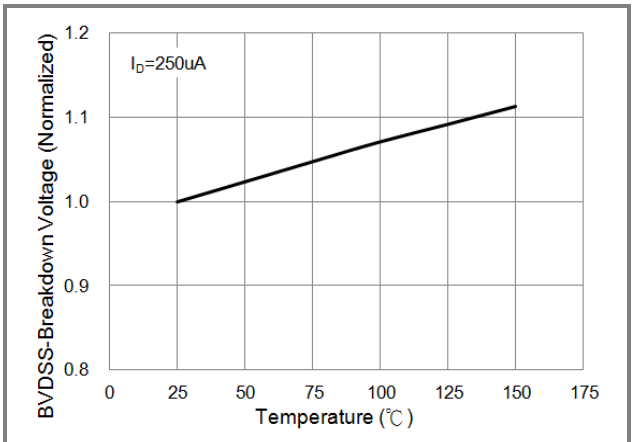



Fig.8 Breakdown Voltage Variation vs. Temperature

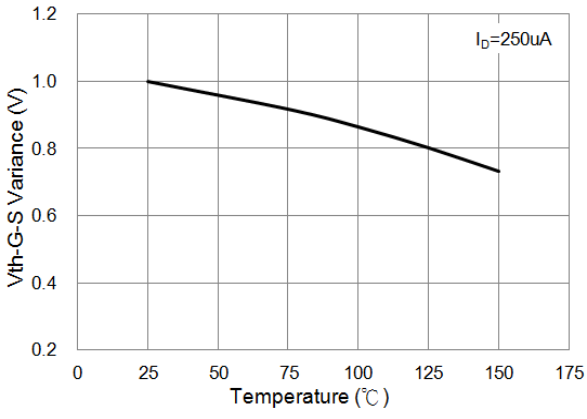



Fig.9 Threshold Voltage Variation with Temperature

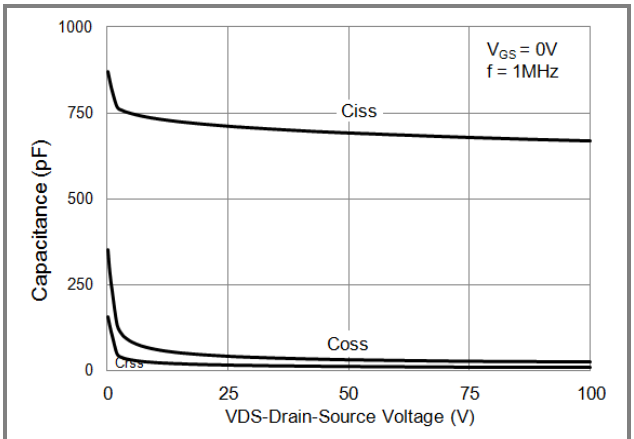



Fig.10 Capacitance vs. Drain-Source Voltage

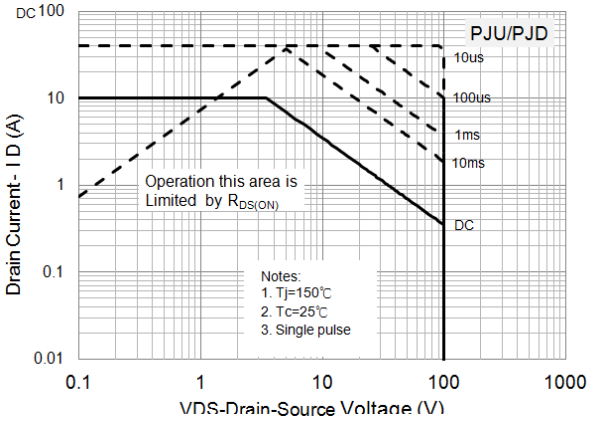



Fig.11 Maximum Safe Operating Area

# PJD10N10

## TYPICAL CHARACTERISTIC CURVES

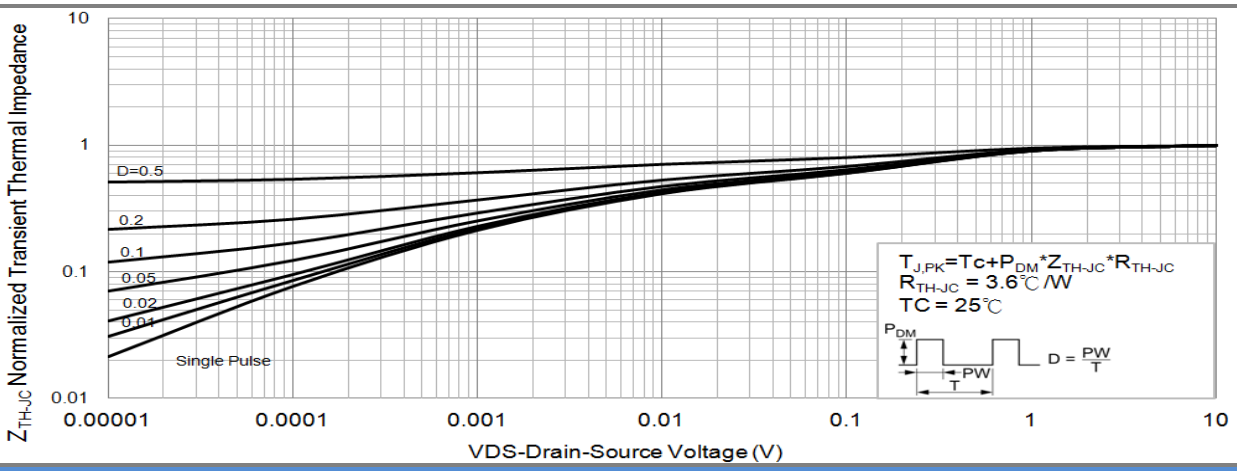
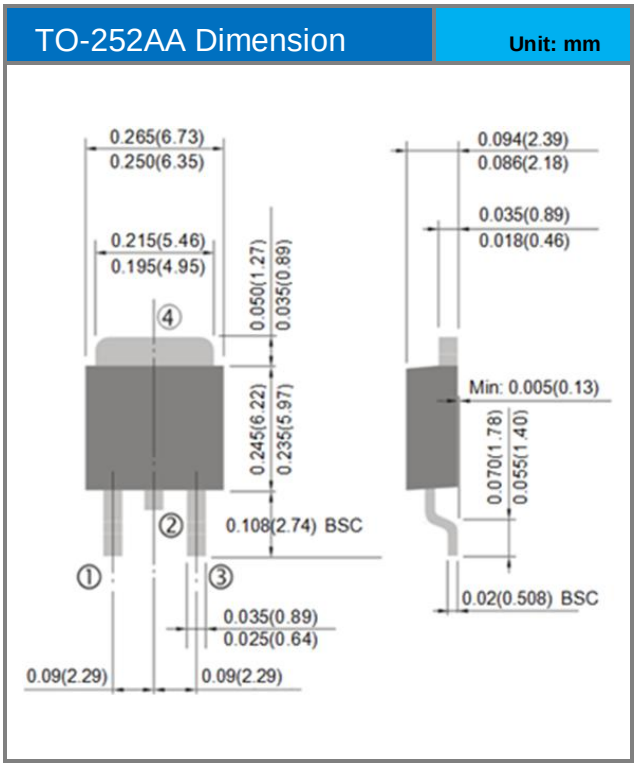



Fig.12 Normalized Thermal Transient Impedance

# PJD10N10

## Packaging Information .

TO-252AA Dimension — Unit: mm

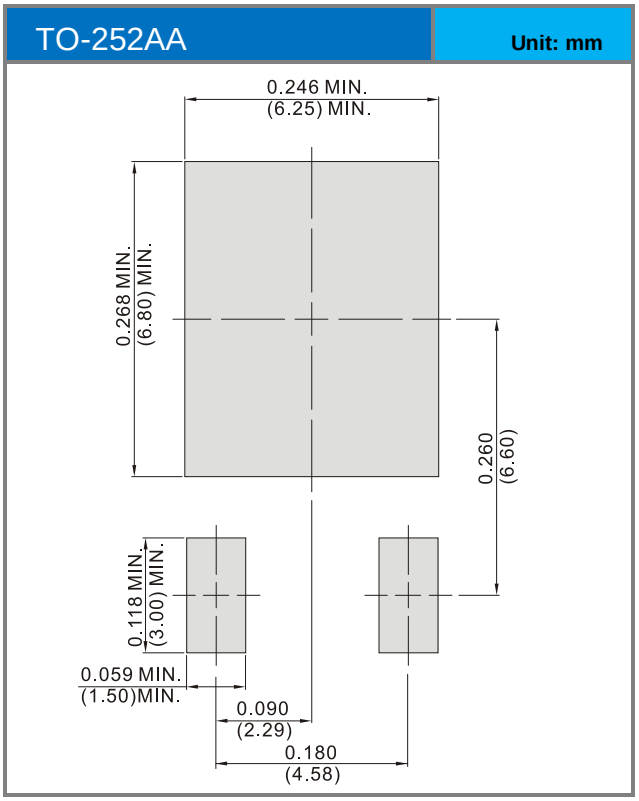


# PJD10N10

## PART NO PACKING CODE VERSION

| Part No Packing Code | Package Type | Packing Type | Marking | Version |
|---|---|---|---|---|
| PJD10N10_L2_00001 | TO-252AA | 3,000pcs / 13” reel | D10N10 | Halogen free |

## MOUNTING PAD LAYOUT



# PJD10N10

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