

# PJW2P10A

## 100V P-Channel Enhancement Mode MOSFET

Voltage

-100 V

Current

-1.5 A

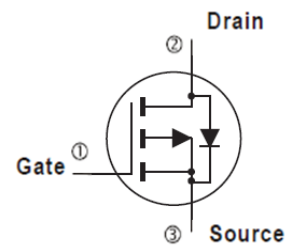
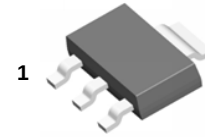
### Features

- $R_{DS(ON)}$ ,  $V_{GS}@-10V, I_D@-1.5A < 650m\Omega$
- $R_{DS(ON)}$ ,  $V_{GS}@-4.5V, I_D@-1.0 A < 700m\Omega$
- 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 : SOT-223 Package
- Terminals : Solderable per MIL-STD-750, Method 2026
- Approx. Weight : 0.043 ounces, 0.123 grams
- Marking: W2P10A

SOT-223



### Maximum Ratings and Thermal Characteristics ( $T_A=25^\circ\text{C}$ unless otherwise noted)

| PARAMETER                                         |                      | SYMBOL                           | LIMIT   | UNITS |
|---------------------------------------------------|----------------------|----------------------------------|---------|-------|
| Drain-Source Voltage                              |                      | V <sub>DS</sub>                  | -100    | V     |
| Gate-Source Voltage                               |                      | V <sub>GS</sub>                  | ±20     | V     |
| Continuous Drain Current                          | T <sub>A</sub> =25°C | I <sub>D</sub>                   | -1.5    | A     |
|                                                   | T <sub>A</sub> =70°C |                                  | -1.2    |       |
| Pulsed Drain Current <sup>(Note 1)</sup>          |                      | I <sub>DM</sub>                  | -6      | A     |
| Power Dissipation                                 | T <sub>A</sub> =25°C | P <sub>D</sub>                   | 3.1     | W     |
|                                                   | T <sub>A</sub> =70°C |                                  | 2       |       |
| Single Pulse Avalanche Energy <sup>(Note 5)</sup> |                      | E <sub>AS</sub>                  | 0.2     | mJ    |
| Operating Junction and Storage Temperature Range  |                      | T <sub>J</sub> ,T <sub>STG</sub> | -55~150 | °C    |
| Typical Thermal resistance                        |                      | R <sub>θJA</sub>                 | 40.3    | °C/W  |
| - Junction to Ambient <sup>(Note 6)</sup>         |                      |                                  |         |       |

- Limited only By Maximum Junction Temperature



# PJW2P10A

## Electrical Characteristics ( $T_A=25^{\circ}\text{C}$ unless otherwise noted)

| PARAMETER                                             | SYMBOL              | TEST CONDITION                                                                                | MIN. | TYP.  | MAX. | UNITS |
|-------------------------------------------------------|---------------------|-----------------------------------------------------------------------------------------------|------|-------|------|-------|
| Static                                                |                     |                                                                                               |      |       |      |       |
| Drain-Source Breakdown Voltage                        | BV <sub>DSS</sub>   | V <sub>GS</sub> =0V, I <sub>D</sub> = -250uA                                                  | -100 | -     | -    | V     |
| Gate Threshold Voltage                                | V <sub>GS(th)</sub> | V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> = -250uA                                    | -1.0 | -2.0  | -2.5 | V     |
| Drain-Source On-State Resistance                      | R <sub>DS(on)</sub> | V <sub>GS</sub> = -10V, I <sub>D</sub> = -1.5A                                                | -    | 500   | 650  | mΩ    |
|                                                       |                     | V <sub>GS</sub> = -4.5V, I <sub>D</sub> = -1.0A                                               | -    | 560   | 700  |       |
| Zero Gate Voltage Drain Current                       | I <sub>DSS</sub>    | V <sub>DS</sub> = -80V, V <sub>GS</sub> =0V                                                   | -    | -     | -1.0 | uA    |
| Gate-Source Leakage Current                           | I <sub>GSS</sub>    | V <sub>GS</sub> = ±20V, V <sub>DS</sub> =0V                                                   | -    | -     | ±100 | nA    |
| Dynamic (Note 7)                                      |                     |                                                                                               |      |       |      |       |
| Total Gate Charge                                     | Q <sub>g</sub>      | V <sub>DS</sub> = -50V, I <sub>D</sub> = -1.5A,<br>V <sub>GS</sub> = -10V (Note 1,2)          | -    | 8     | -    | nC    |
| Gate-Source Charge                                    | Q <sub>gs</sub>     |                                                                                               | -    | 1.8   | -    |       |
| Gate-Drain Charge                                     | Q <sub>gd</sub>     |                                                                                               | -    | 1.4   | -    |       |
| Input Capacitance                                     | C <sub>iss</sub>    | V <sub>DS</sub> = -15V, V <sub>GS</sub> =0V,<br>f=1.0MHZ                                      | -    | 448   | -    | pF    |
| Output Capacitance                                    | C <sub>oss</sub>    |                                                                                               | -    | 28    | -    |       |
| Reverse Transfer Capacitance                          | C <sub>rss</sub>    |                                                                                               | -    | 21    | -    |       |
| Turn-On Delay Time                                    | td(on)              | V <sub>DS</sub> = -50V, RL=33Ω,<br>V <sub>GS</sub> = -10V, R <sub>G</sub> =6.2Ω<br>(Note 1,2) | -    | 3.7   | -    | ns    |
| Turn-On Rise Time                                     | t <sub>r</sub>      |                                                                                               | -    | 25    | -    |       |
| Turn-Off Delay Time                                   | td(off)             |                                                                                               | -    | 21    | -    |       |
| Turn-Off Fall Time                                    | t <sub>f</sub>      |                                                                                               | -    | 22    | -    |       |
| Drain-Source Diode                                    |                     |                                                                                               |      |       |      |       |
| Maximum Continuous Drain-Source Diode Forward Current | I <sub>S</sub>      | ---                                                                                           | -    | -     | -1.5 | A     |
| Diode Forward Voltage                                 | V <sub>SD</sub>     | I <sub>S</sub> = -1A, V <sub>GS</sub> =0V                                                     | -    | -0.82 | -1.2 | V     |

### NOTES :

- Pulse width  $\leq 300\mu s$ , Duty cycle  $\leq 2\%$
- Essentially independent of operating temperature typical characteristics.
- The maximum current rating is package limited.
- Repetitive rating, pulse width limited by junction temperature  $T_J(\text{MAX})=150^{\circ}\text{C}$ . Ratings are based on low frequency and duty cycles to keep initial  $T_J=25^{\circ}\text{C}$ .
- The test condition is  $L=0.1\text{mH}$ ,  $I_{AS}=-2A$ ,  $V_{DD}=-25V$ ,  $V_{GS}=-10V$
- $R_{\theta JA}$  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<sup>2</sup> with 2oz.square pad of copper.
- Guaranteed by design, not subject to production testing.

# PJW2P10A

## TYPICAL CHARACTERISTIC CURVES

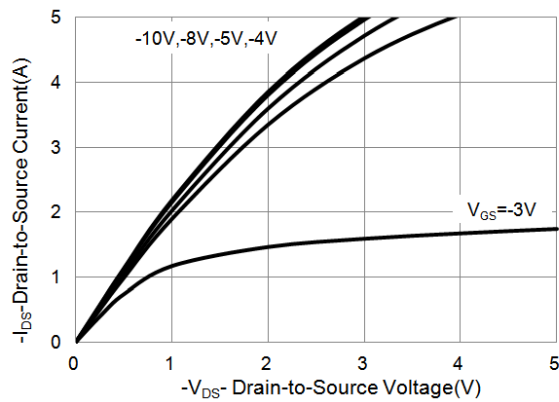


Fig.1 Output Characteristics

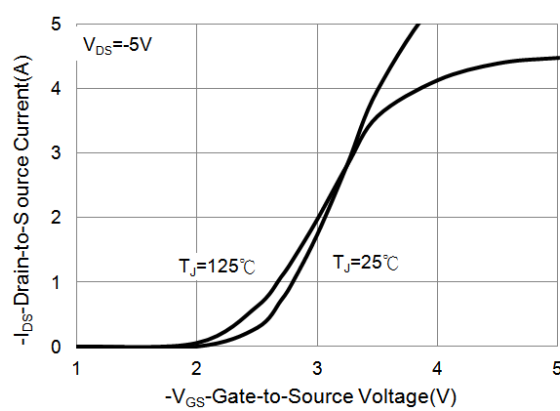


Fig.2 Transfer Characteristics

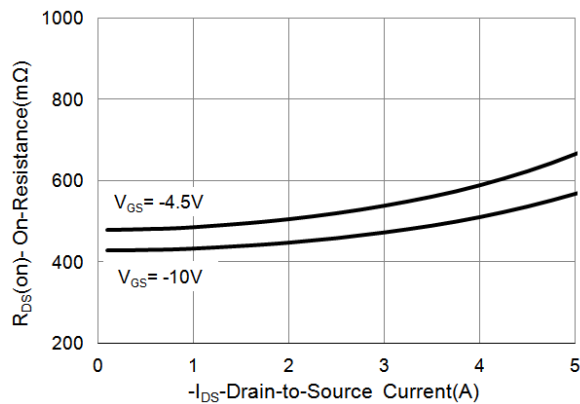


Fig.3 On-Resistance vs. Drain Current

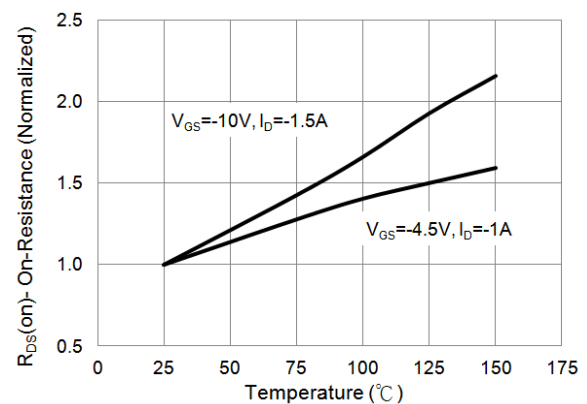


Fig.4 On-Resistance vs. Junction temperature

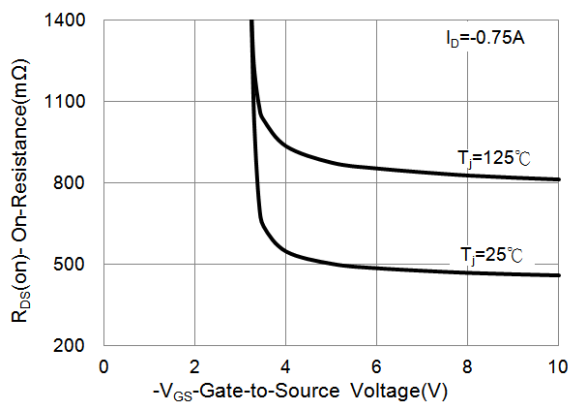


Fig.5 On-Resistance Variation with V\_GS.

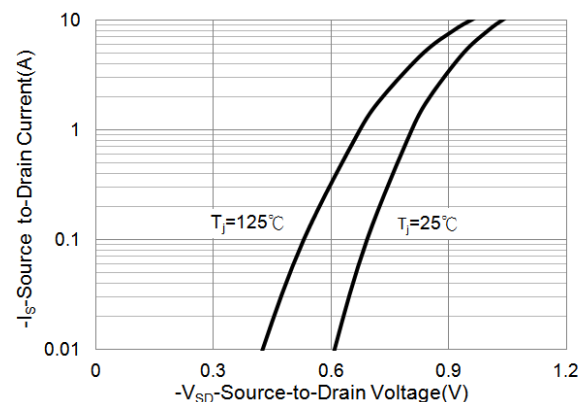


Fig.6 Source-Drain Diode Forward Voltage

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## TYPICAL CHARACTERISTIC CURVES

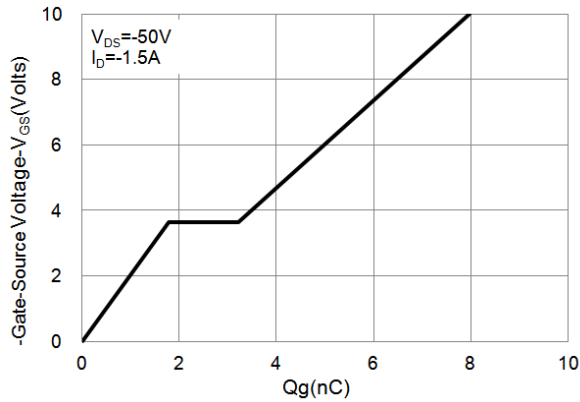


Fig.7 Gate-Charge Characteristics

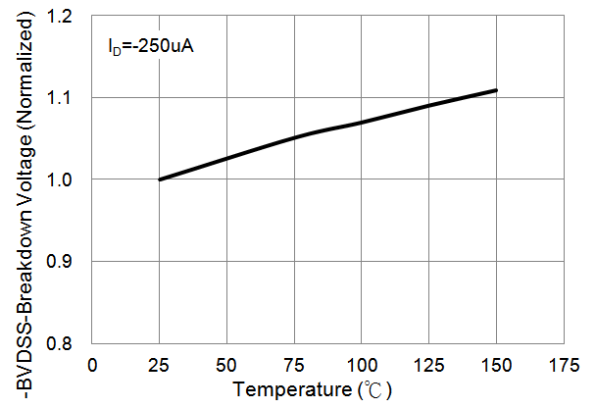


Fig.8 Breakdown Voltage Variation vs. Temperature

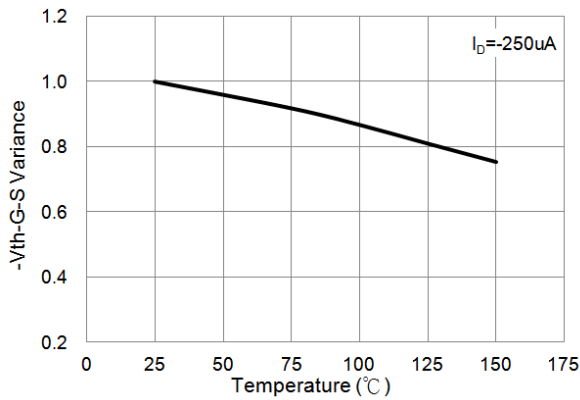


Fig.9 Threshold Voltage Variation with Temperature

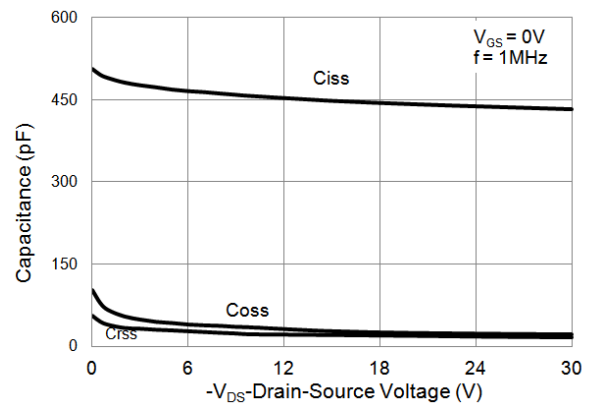


Fig.10 Capacitance vs. Drain-Source Voltage

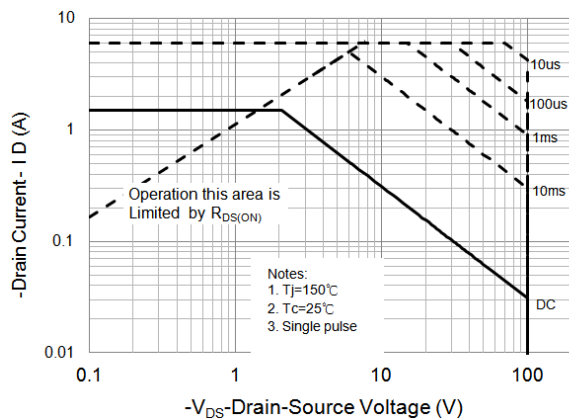
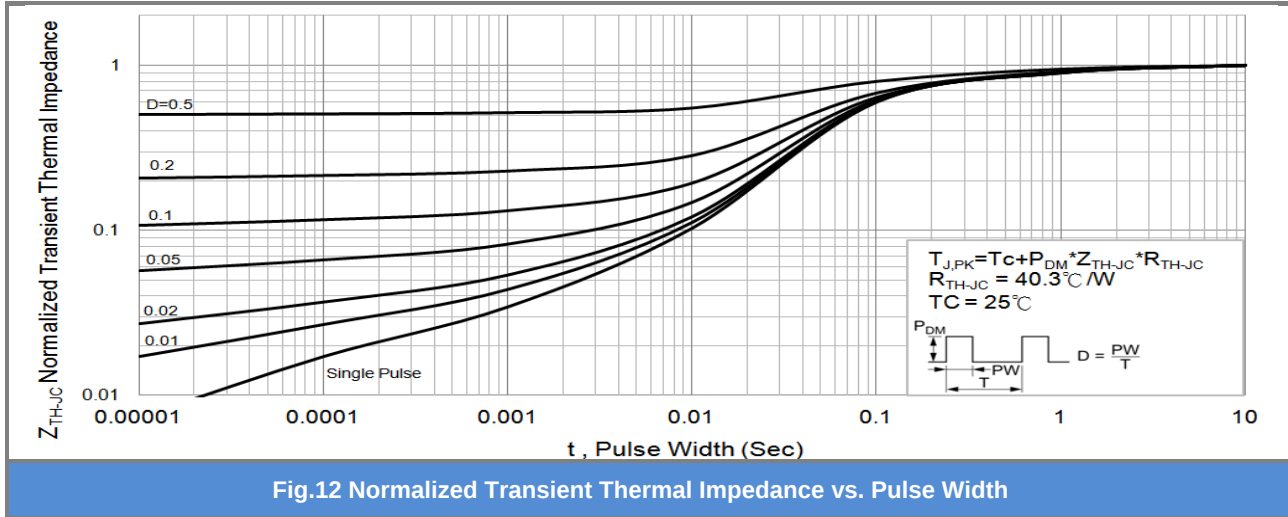


Fig.11 Maximum Safe Operating Area



# PJW2P10A

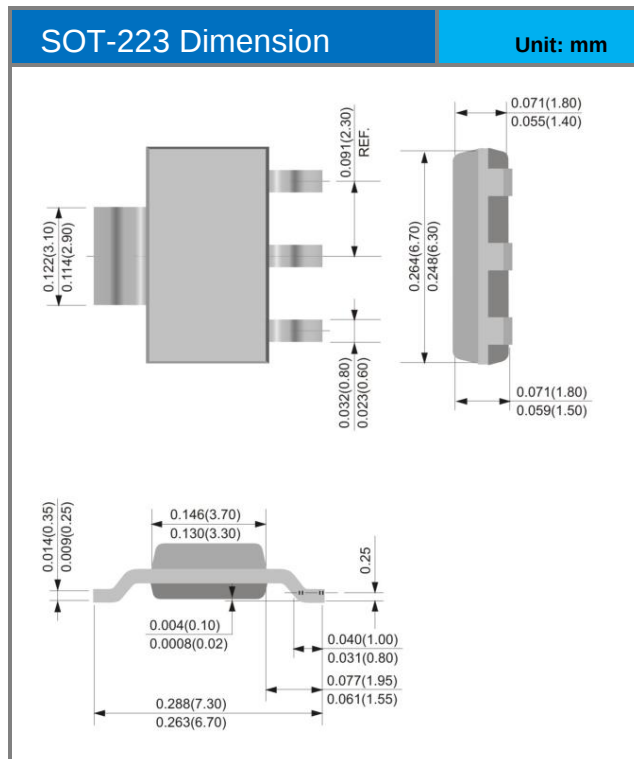
## TYPICAL CHARACTERISTIC CURVES





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## Packaging Information

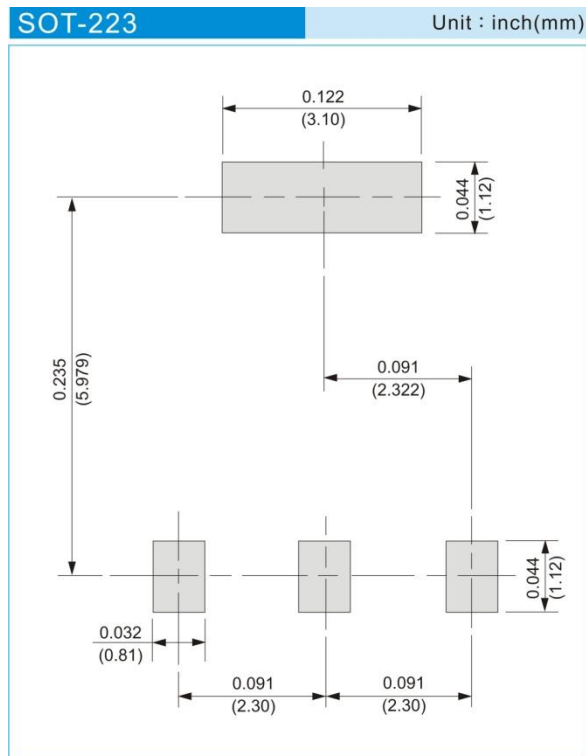


# PJW2P10A

## PART NO PACKING CODE VERSION

| Part No Packing Code | Package Type | Packing type        | Marking | Version      |
|----------------------|--------------|---------------------|---------|--------------|
| PJW2P10A_R2_00001    | SOT-223      | 2,500pcs / 13" reel | W2P10A  | Halogen free |

## MOUNTING PAD LAYOUT





## PJW2P10A

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