

## PJU14P06A / PJD14P06A

### 60V P-Channel Enhancement Mode MOSFET

**Voltage**

**-60 V**

**Current**

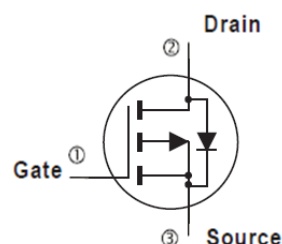
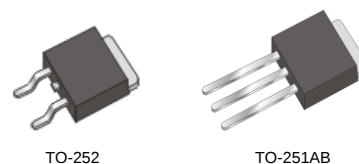
**-14 A**

#### Features

- $R_{DS(ON)}$ ,  $V_{GS}@-10V, I_D@-6A < 110m\Omega$
- $R_{DS(ON)}$ ,  $V_{GS}@-4.5V, I_D@-3A < 130m\Omega$
- 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 : TO-251AB, TO-252 Package
- Terminals : Solderable per MIL-STD-750, Method 2026
- TO-251AB Approx. Weight : 0.0104 ounces, 0.297grams
- TO-252 Approx. Weight : 0.0104 ounces, 0.297grams



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

| PARAMETER                                        |                     | SYMBOL          | LIMIT    | UNITS         |
|--------------------------------------------------|---------------------|-----------------|----------|---------------|
| Drain-Source Voltage                             |                     | $V_{DS}$        | -60      | V             |
| Gate-Source Voltage                              |                     | $V_{GS}$        | $\pm 20$ | V             |
| Continuous Drain Current                         | $T_C=25^{\circ}C$   | $I_D$           | -14      | A             |
|                                                  | $T_C=100^{\circ}C$  |                 | -9       |               |
| Pulsed Drain Current (Note 1)                    | $T_C=25^{\circ}C$   | $I_{DM}$        | -42      |               |
| Power Dissipation                                | $T_C=25^{\circ}C$   | $P_D$           | 40       | W             |
|                                                  | $T_C=100^{\circ}C$  |                 | 16       |               |
| Continuous Drain Current                         | $T_A=25^{\circ}C$   | $I_D$           | -3.2     | A             |
|                                                  | $T_A=70^{\circ}C$   |                 | -2.5     | A             |
| Power Dissipation                                | $T_A=25^{\circ}C$   | $P_D$           | 2.0      | W             |
| Power Dissipation                                | $T_A=70^{\circ}C$   |                 | 1.3      |               |
| Single Pulse Avalanche Energy (Note 6)           |                     | $E_{AS}$        | 20       | mJ            |
| Operating Junction and Storage Temperature Range |                     | $T_J, T_{STG}$  | -55~150  | $^{\circ}C$   |
| Typical Thermal resistance (Note 4,5)            | Junction to Case    | $R_{\theta JC}$ | 3.1      | $^{\circ}C/W$ |
|                                                  | Junction to Ambient | $R_{\theta JA}$ | 62.5     |               |

- Limited only By Maximum Junction Temperature



## PJU14P06A / PJD14P06A

### 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                                                 | -60  | -     | -    | V     |
| Gate Threshold Voltage                                | V <sub>GS(th)</sub> | V <sub>DS</sub> =V <sub>GS</sub> ,I <sub>D</sub> =-250uA                                   | -1.0 | -1.7  | -2.5 | V     |
| Drain-Source On-State Resistance                      | R <sub>DS(on)</sub> | V <sub>GS</sub> =-10V,I <sub>D</sub> =-6A                                                  | -    | 87    | 110  | mΩ    |
|                                                       |                     | V <sub>GS</sub> =-4.5V,I <sub>D</sub> =-3A                                                 | -    | 110   | 130  |       |
| Zero Gate Voltage Drain Current                       | I <sub>DSS</sub>    | V <sub>DS</sub> =-60V,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> =-30V, I <sub>D</sub> =-4A,<br>V <sub>GS</sub> =-10V (Note 2,3)            | -    | 10    | -    | nC    |
| Gate-Source Charge                                    | Q <sub>gs</sub>     |                                                                                            | -    | 1.6   | -    |       |
| Gate-Drain Charge                                     | Q <sub>gd</sub>     |                                                                                            | -    | 3     | -    |       |
| Input Capacitance                                     | C <sub>iss</sub>    | V <sub>DS</sub> =-30V, V <sub>GS</sub> =0V,<br>f=1.0MHZ                                    | -    | 785   | -    | pF    |
| Output Capacitance                                    | C <sub>oss</sub>    |                                                                                            | -    | 175   | -    |       |
| Reverse Transfer Capacitance                          | C <sub>rss</sub>    |                                                                                            | -    | 112   | -    |       |
| Turn-On Delay Time                                    | td <sub>(on)</sub>  | V <sub>DS</sub> =-30V,RL=30Ω,<br>V <sub>GS</sub> =-10V, R <sub>G</sub> =6.2Ω<br>(Note 2,3) | -    | 8     | -    | ns    |
| Turn-On Rise Time                                     | t <sub>r</sub>      |                                                                                            | -    | 15    | -    |       |
| Turn-Off Delay Time                                   | td <sub>(off)</sub> |                                                                                            | -    | 43    | -    |       |
| Turn-Off Fall Time                                    | t <sub>f</sub>      |                                                                                            | -    | 8.4   | -    |       |
| Drain-Source Diode                                    |                     |                                                                                            |      |       |      |       |
| Maximum Continuous Drain-Source Diode Forward Current | I <sub>S</sub>      | ---                                                                                        | -    | -     | -14  | A     |
| Reverse Recovery Time                                 | V <sub>SD</sub>     | I <sub>S</sub> =-1A,V <sub>GS</sub> =0V                                                    | -    | -0.76 | -1.0 | V     |

#### NOTES :

1. Pulse width  $\leq 300\mu s$ , Duty cycle  $\leq 2\%$
2. Essentially independent of operating temperature typical characteristics
3. 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  $T_J=25^{\circ}\text{C}$ .
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<sup>2</sup> with 2oz.square pad of copper
6.  $L=0.1\text{mH}$ ,  $I_{AS}=-20A$ ,  $V_{GS}=-10V$ ,  $V_{DS}=-25V$ ,  $R_G=25\text{ ohm}$
7. Guaranteed by design, not subject to production testing.

# PJU14P06A / PJD14P06A

## TYPICAL CHARACTERISTIC CURVES

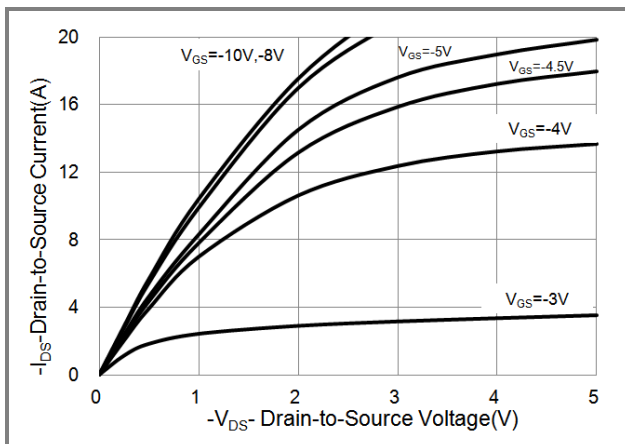


Fig.1 On-Region Characteristics

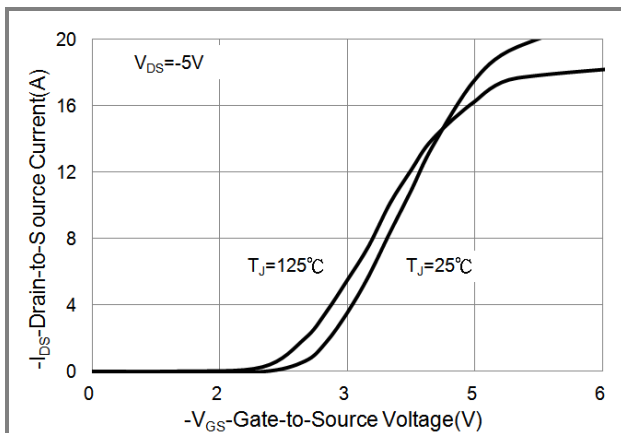


Fig.2 Transfer Characteristics

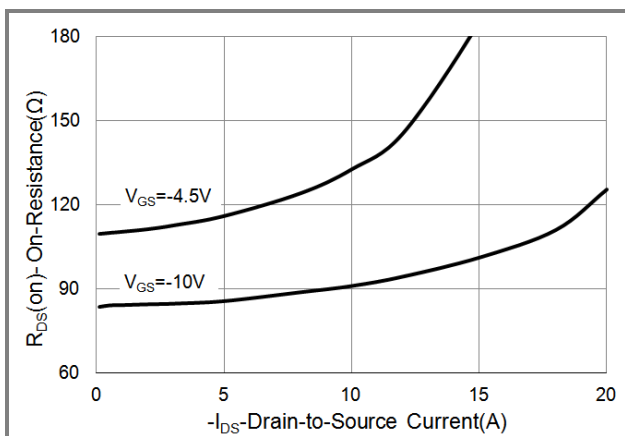


Fig.3 On-Resistance vs. Drain Current

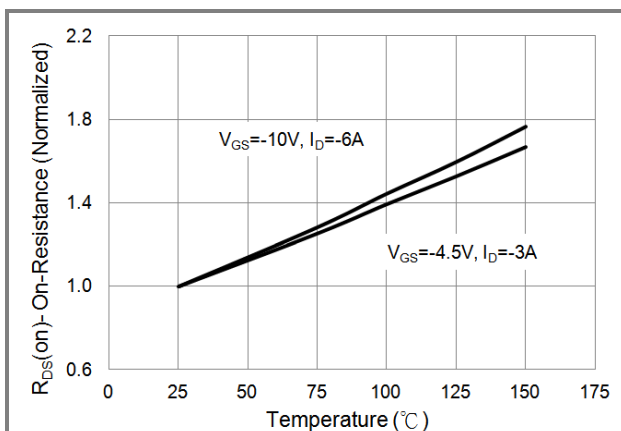


Fig.4 On-Resistance vs. Junction temperature

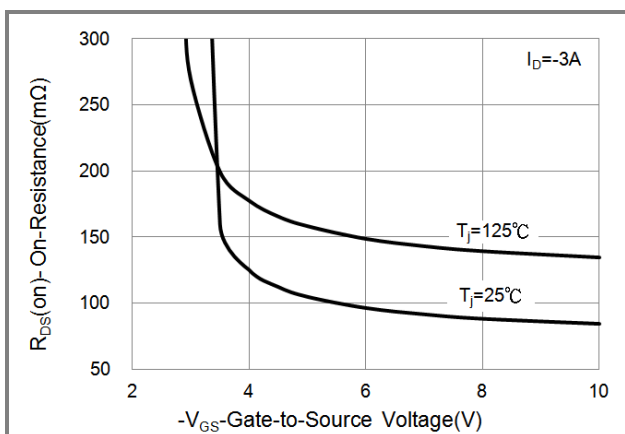


Fig.5 On-Resistance Variation with  $V_{GS}$ .

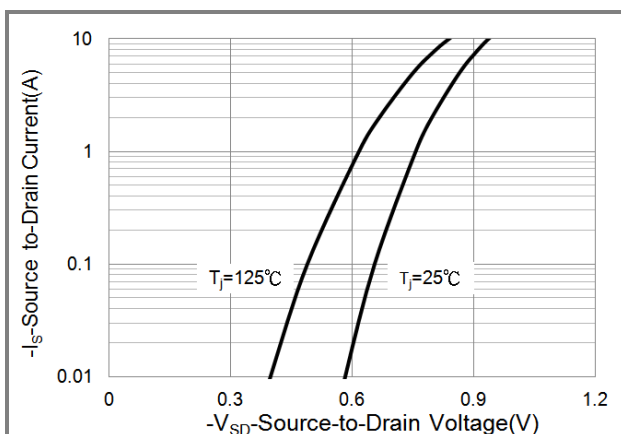


Fig.6 Body Diode Characteristics

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## TYPICAL CHARACTERISTIC CURVES

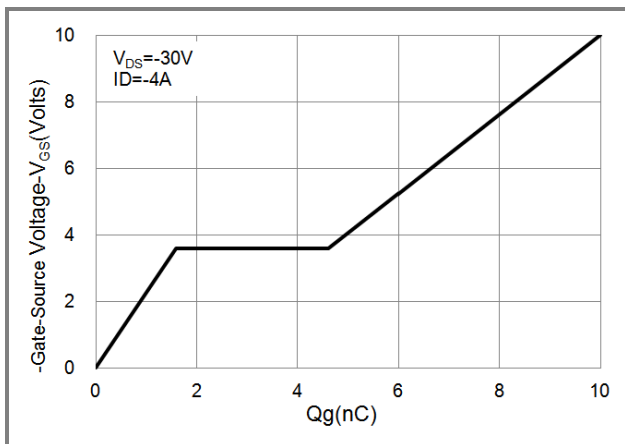


Fig.7 Gate-Charge Characteristics

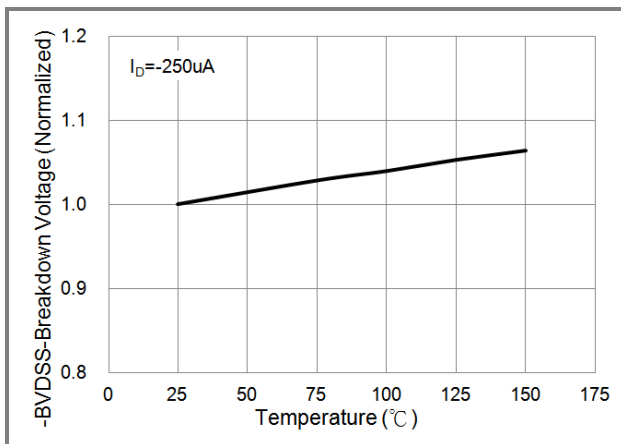


Fig.8 Breakdown Voltage Variation vs. Temperature

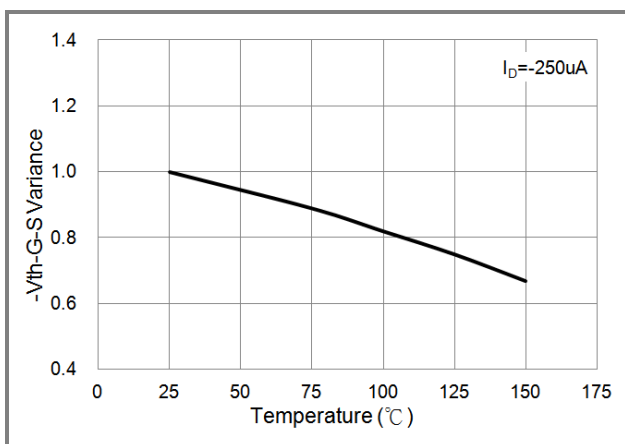


Fig.9 Threshold Voltage Variation with Temperature.

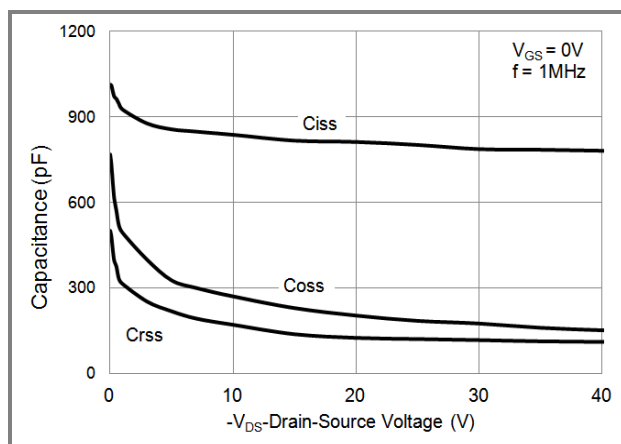


Fig.10 Capacitance vs. Drain-Source Voltage.

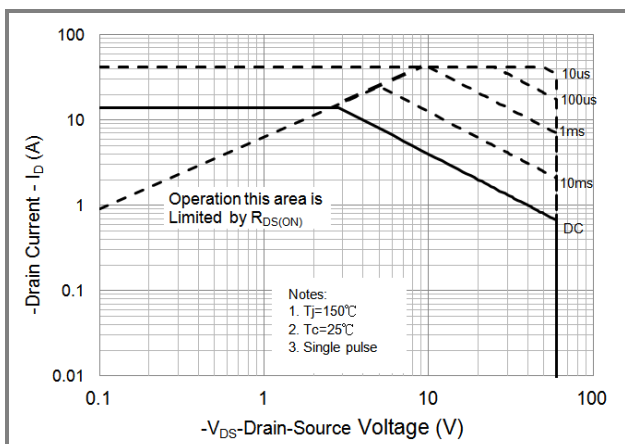
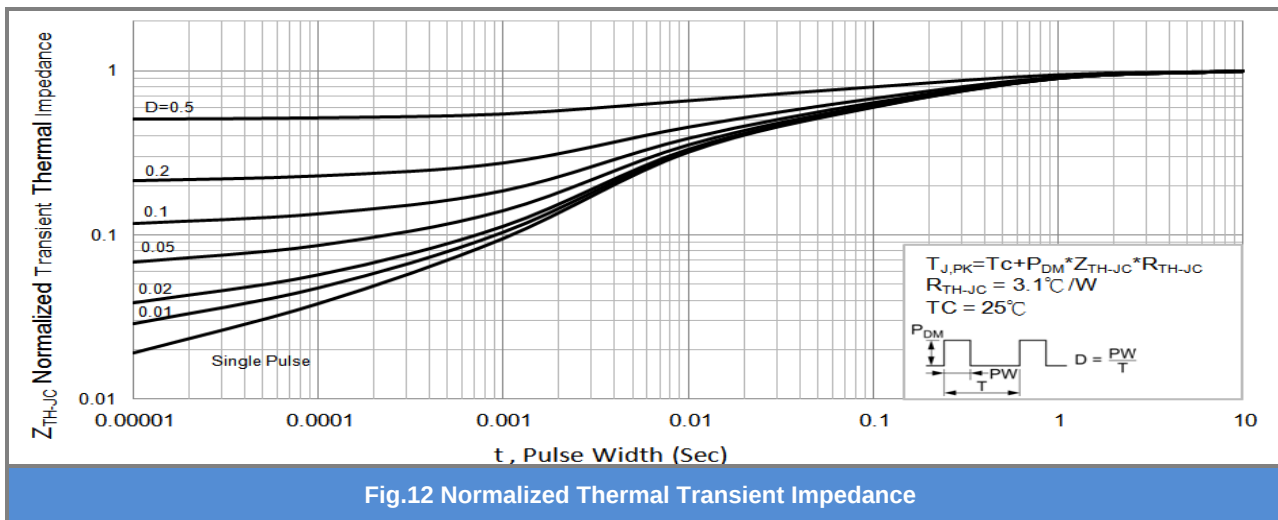


Fig.11 Maximum Safe Operating Area



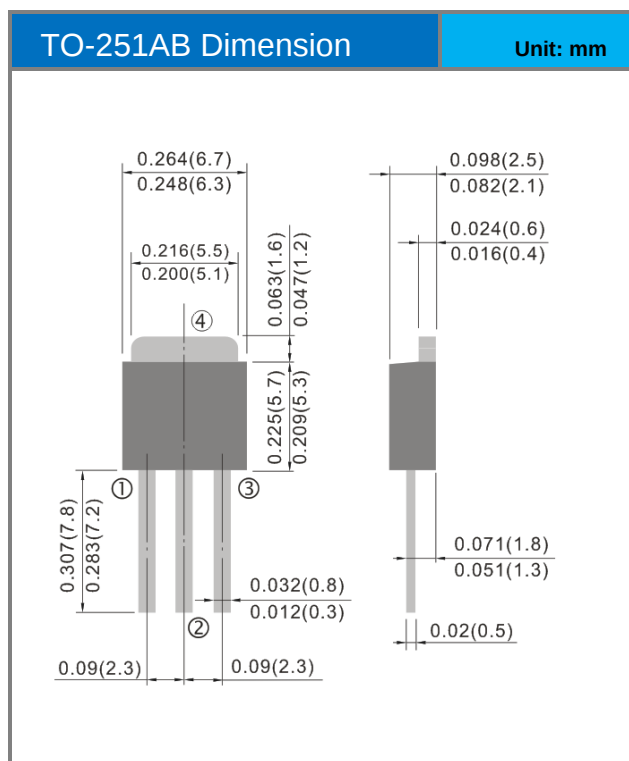
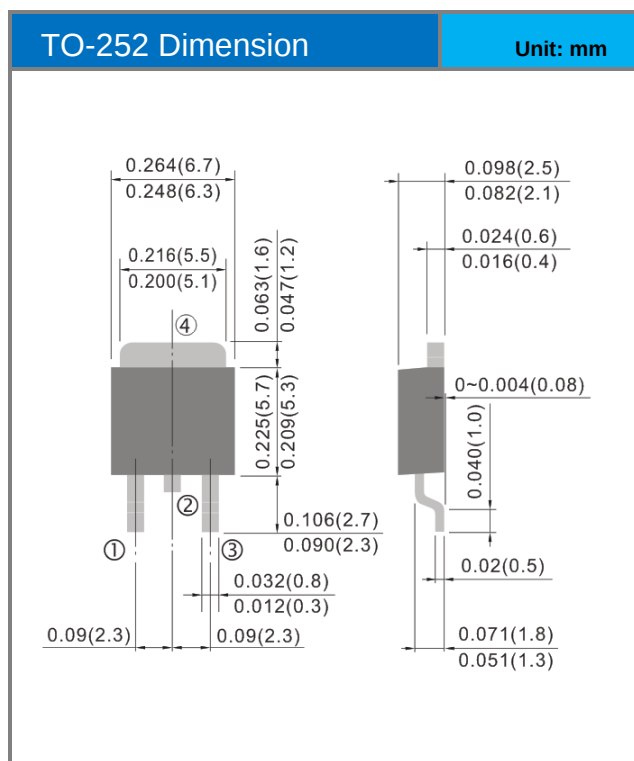
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### TYPICAL CHARACTERISTIC CURVES



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## Packaging Information

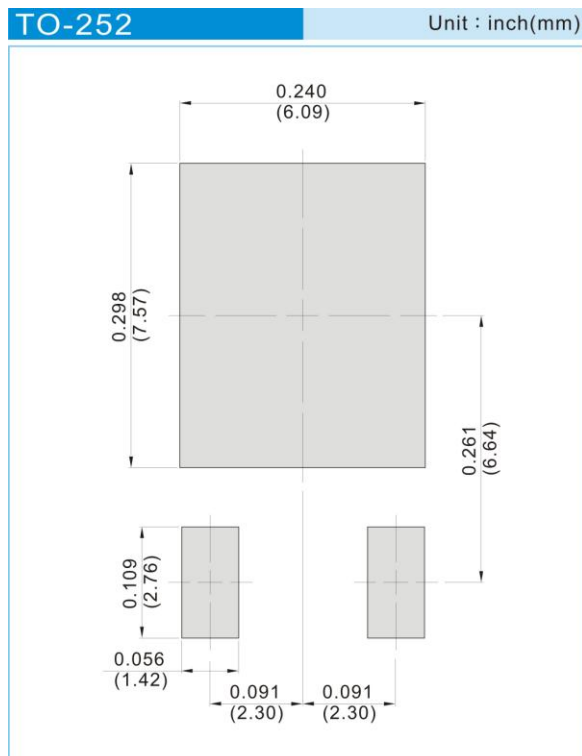


## PJU14P06A / PJD14P06A

### PART NO PACKING CODE VERSION

| Part No Packing Code | Package Type | Packing type        | Marking | Version      |
|----------------------|--------------|---------------------|---------|--------------|
| PJU14P06A_T0_00001   | TO-251AB     | 80pcs / Tube        | U14P06A | Halogen free |
| PJD14P06A_L2_00001   | TO-252       | 3,000pcs / 13" reel | D14P06A | Halogen free |

### MOUNTING PAD LAYOUT





## **PJU14P06A / PJD14P06A**

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