

### Features

- Fast Switching
- Low Gate Charge and  $R_{DS(on)}$
- Low Reverse transfer capacitances
- $V_{DS} = 600V, I_D = 2A$   
 $R_{DS(on)} < 4.3\Omega @ V_{GS} = 10V$

### TO-252

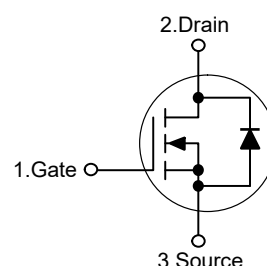


1. Gate 2.Drain 3.Source

### Applications

- Power switch circuit of adaptor and charger

### Schematic Diagram



### Absolute Maximum Ratings

Ratings at 25°C ambient temperature unless otherwise specified.

| Parameter                                      | Symbol    | Value       | Unit |
|------------------------------------------------|-----------|-------------|------|
| Drain-Source Voltage                           | $V_{DS}$  | 600         | V    |
| Gate-Source Voltage                            | $V_{GS}$  | $\pm 30$    | V    |
| Drain Current-Continuous                       | $I_D$     | 2           | A    |
| Drain Current-Pulsed <sup>Note1</sup>          | $I_{DM}$  | 8           | A    |
| Single pulse avalanche energy <sup>Note4</sup> | $E_{AS}$  | 80          | mJ   |
| Avalanche energy, Repetitive <sup>Note1</sup>  | $E_{AR}$  | 6.4         | mJ   |
| Avalanche Current <sup>Note1</sup>             | $I_{AR}$  | 1.1         | A    |
| Maximum Power Dissipation                      | $P_D$     | 35          | W    |
| Junction Temperature                           | $T_J$     | 150         | °C   |
| Storage Temperature Range                      | $T_{STG}$ | -55 to +150 | °C   |

### Thermal Characteristics

|                                                         |                 |      |      |
|---------------------------------------------------------|-----------------|------|------|
| Thermal Resistance,Junction-to-Ambient <sup>Note2</sup> | $R_{\theta JA}$ | 62   | °C/W |
| Maximum Junction-to-Case <sup>Note2</sup>               | $R_{\theta JC}$ | 3.57 | °C/W |

**Electrical Characteristics**

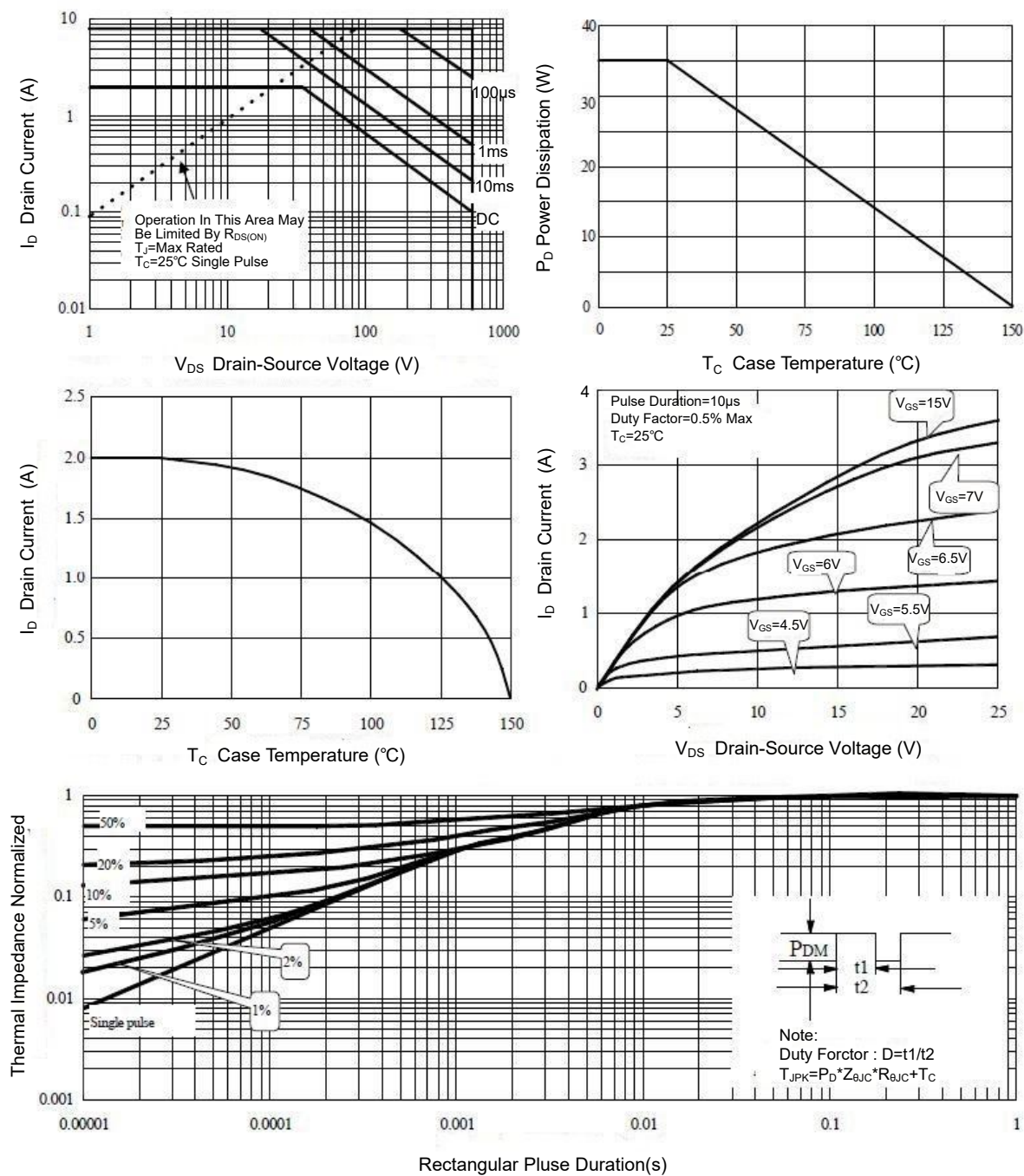
(Ta=25°C unless otherwise specified)

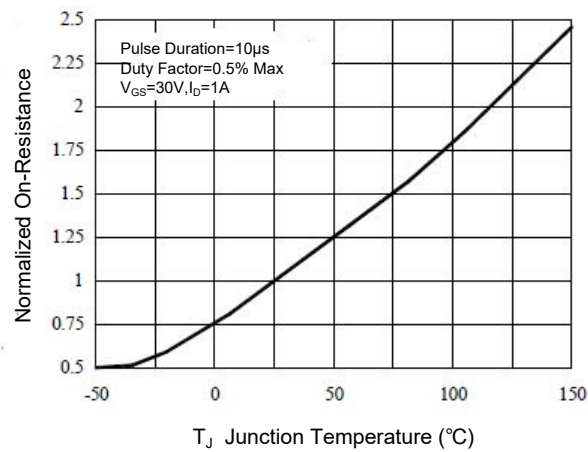
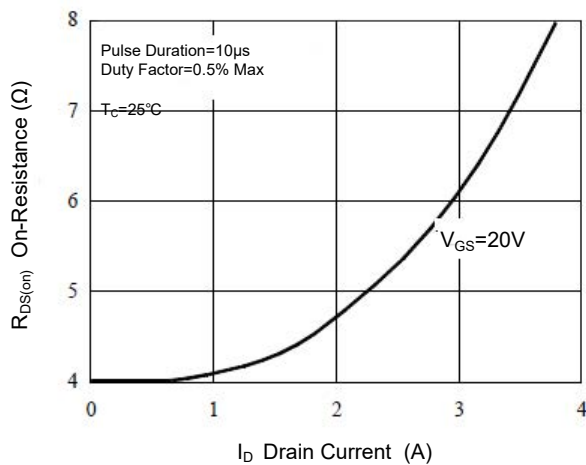
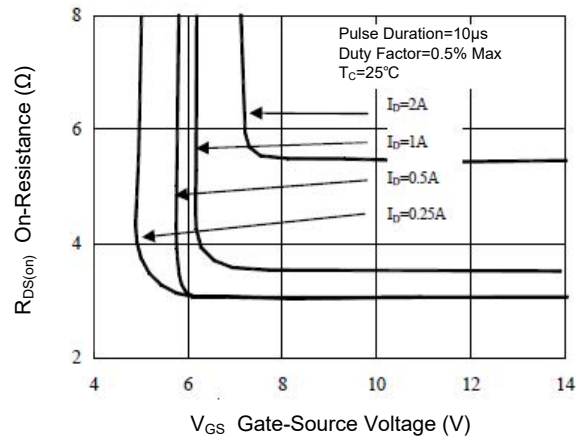
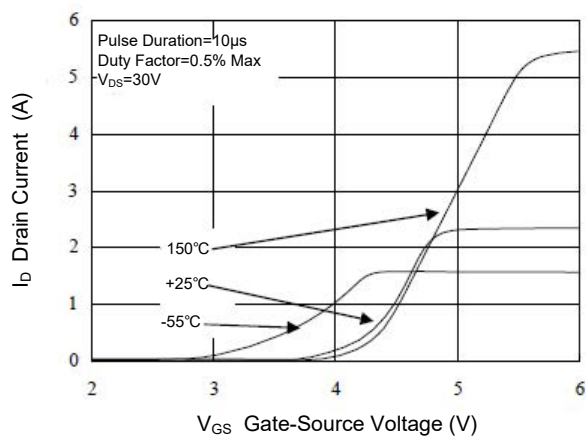
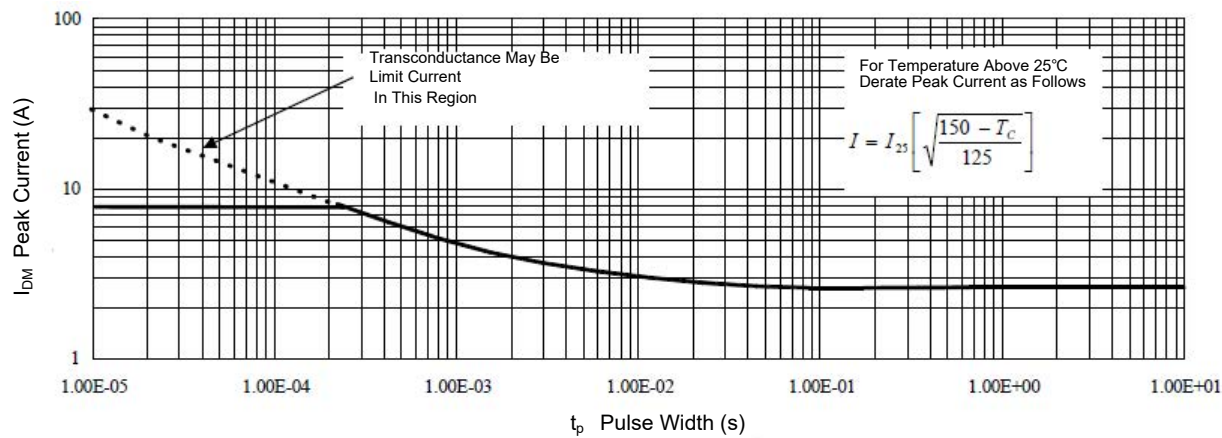
| Parameter                                   | Symbol               | Test Condition                                                                          | Min. | Typ. | Max. | Unit |
|---------------------------------------------|----------------------|-----------------------------------------------------------------------------------------|------|------|------|------|
| Static Characteristics                      |                      |                                                                                         |      |      |      |      |
| Drain-Source Breakdown Voltage              | V <sub>(BR)DSS</sub> | V <sub>GS</sub> =0V, I <sub>D</sub> =250μA                                              | 600  | --   | --   | V    |
| Zero Gate Voltage Drain Current             | I <sub>DSS</sub>     | V <sub>DS</sub> =600V, V <sub>GS</sub> =0V                                              | --   | --   | 1    | μA   |
| Gate-Body Leakage Current                   | I <sub>GSS</sub>     | V <sub>GS</sub> =±30V, V <sub>DS</sub> =0V                                              | --   | --   | ±10  | μA   |
| Gate Threshold Voltage <sup>Note3</sup>     | V <sub>GS(th)</sub>  | V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA                                | 2    | 3    | 4    | V    |
| Drain-Source On-Resistance <sup>Note3</sup> | R <sub>DS(on)</sub>  | V <sub>GS</sub> =10V, I <sub>D</sub> =1A                                                | --   | 3.6  | 4.3  | Ω    |
| Forward Transconductance <sup>Note3</sup>   | g <sub>FS</sub>      | V <sub>DS</sub> =15V, I <sub>D</sub> =1A                                                | --   | 1.8  | --   | S    |
| Dynamic Characteristics                     |                      |                                                                                         |      |      |      |      |
| Input Capacitance                           | C <sub>iss</sub>     | V <sub>DS</sub> =25V, V <sub>GS</sub> =0V, f=1MHz                                       | --   | 280  | --   | pF   |
| Output Capacitance                          | C <sub>oss</sub>     |                                                                                         | --   | 31   | --   | pF   |
| Reverse Transfer Capacitance                | C <sub>rss</sub>     |                                                                                         | --   | 5.4  | --   | pF   |
| Switching Characteristics                   |                      |                                                                                         |      |      |      |      |
| Turn-on Delay Time                          | t <sub>d(on)</sub>   | V <sub>DD</sub> =300V, I <sub>D</sub> =2A<br>V <sub>GS</sub> =10V, R <sub>G</sub> =9.1Ω | --   | 7    | --   | nS   |
| Turn-on Rise Time                           | t <sub>r</sub>       |                                                                                         | --   | 5    | --   | nS   |
| Turn-off Delay Time                         | t <sub>d(off)</sub>  |                                                                                         | --   | 26   | --   | nS   |
| Turn-off Fall Time                          | t <sub>f</sub>       |                                                                                         | --   | 10.5 | --   | nS   |
| Total Gate Charge                           | Q <sub>g</sub>       | V <sub>DD</sub> =300V, I <sub>D</sub> =2A, V <sub>GS</sub> =10V                         | --   | 8.5  | --   | nC   |
| Gate-Source Charge                          | Q <sub>gs</sub>      |                                                                                         | --   | 1.5  | --   | nC   |
| Gate-Drain Charge                           | Q <sub>gd</sub>      |                                                                                         | --   | 4.0  | --   | nC   |
| Source-Drain Diode Characteristics          |                      |                                                                                         |      |      |      |      |
| Diode Forward Voltage <sup>Note3</sup>      | V <sub>SD</sub>      | V <sub>GS</sub> =0V, I <sub>S</sub> =2A                                                 | --   | --   | 1.5  | V    |
| Diode Forward Current <sup>Note2</sup>      | I <sub>S</sub>       |                                                                                         | --   | --   | 2    | A    |

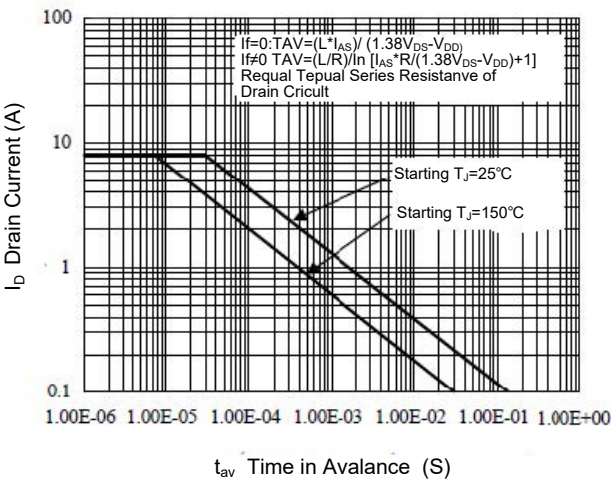
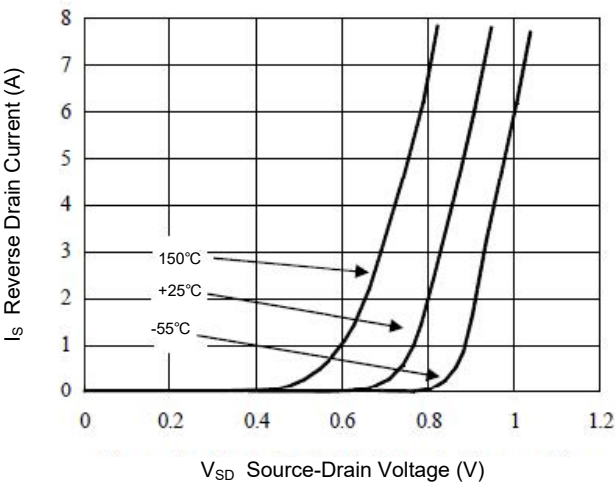
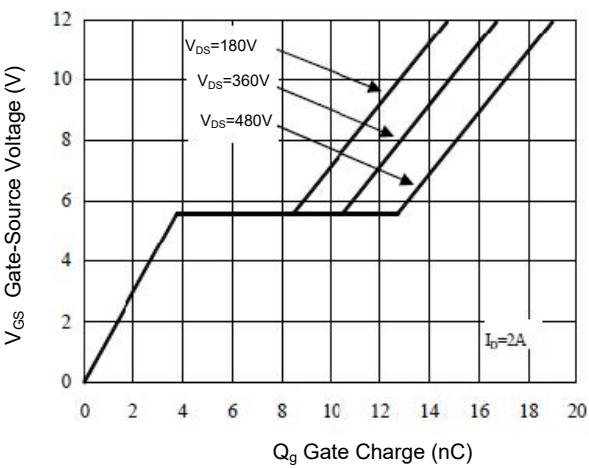
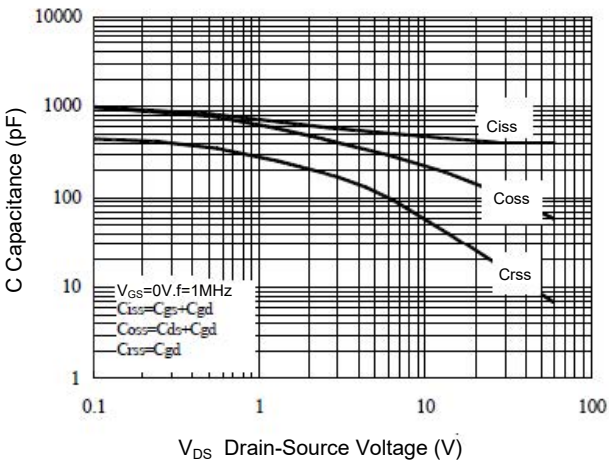
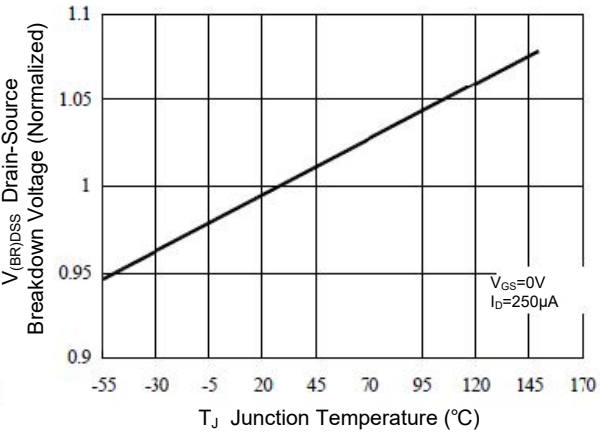
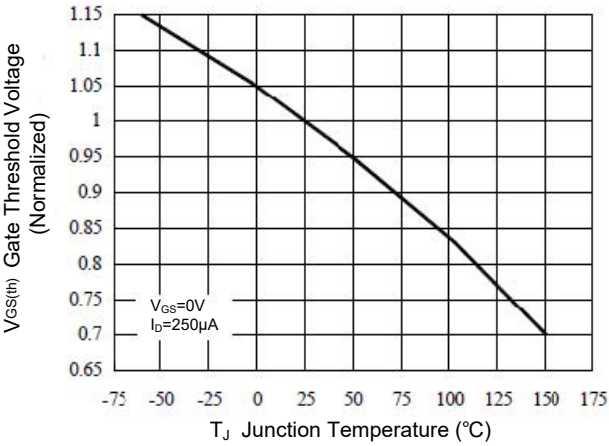
Note: 1. Repetitive Rating: Pulse width limited by maximum junction temperature.

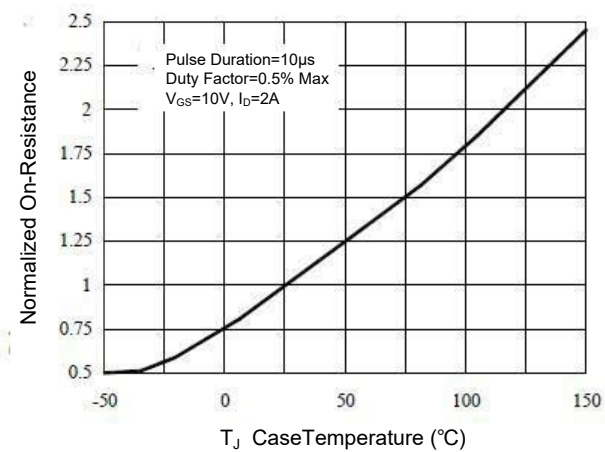
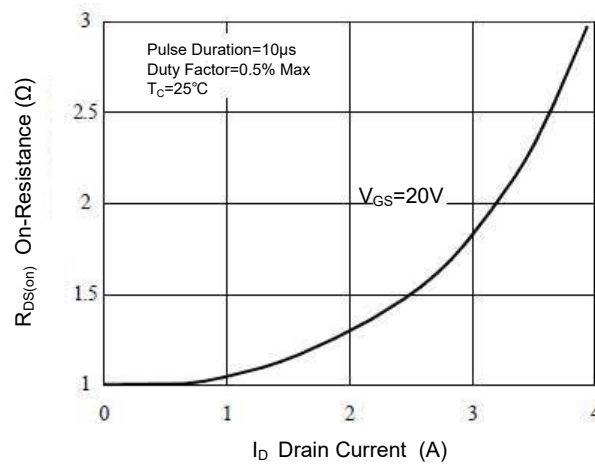
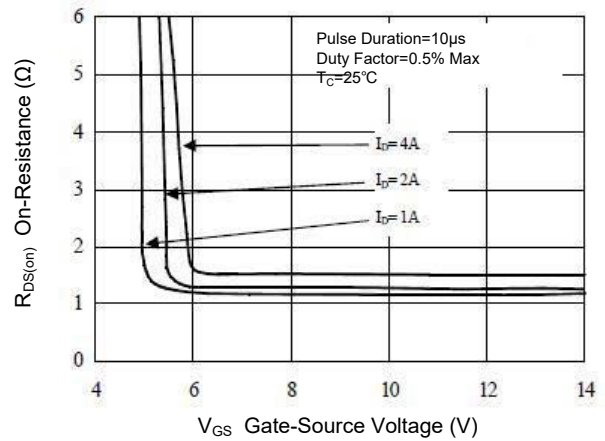
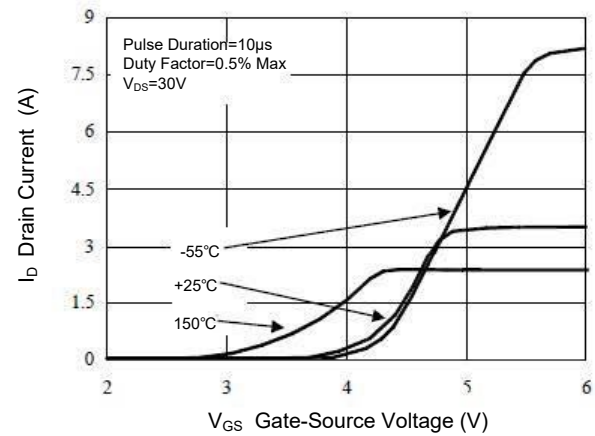
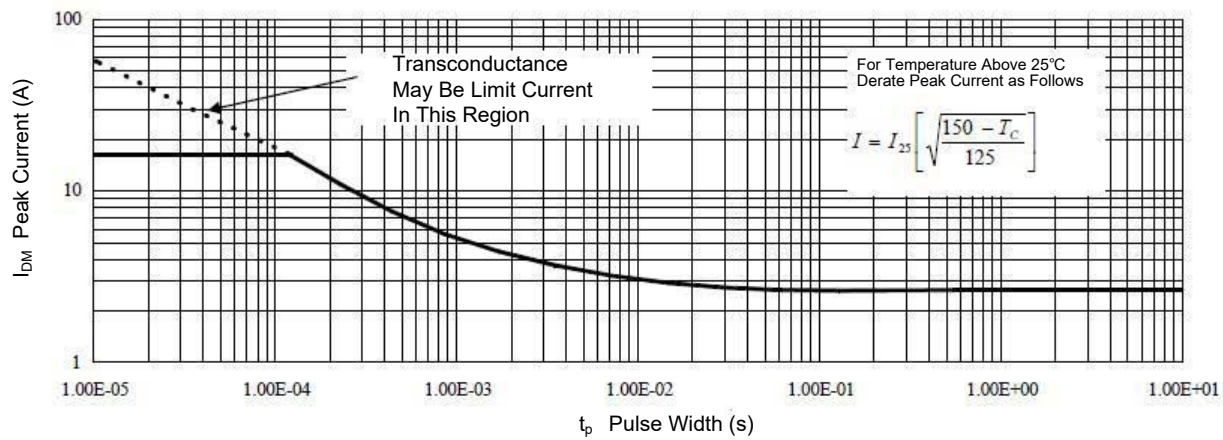
2. Surface Mounted on FR4 Board,  $t \leq 10$  sec.3. Pulse Test: Pulse width  $\leq 380\mu s$ , duty cycles  $\leq 2\%$ .4.  $E_{AS}$  condition :  $L=10mH, I_D=3.7A$ , start  $T_J=25^\circ C$ .

Typical Characteristic Curves





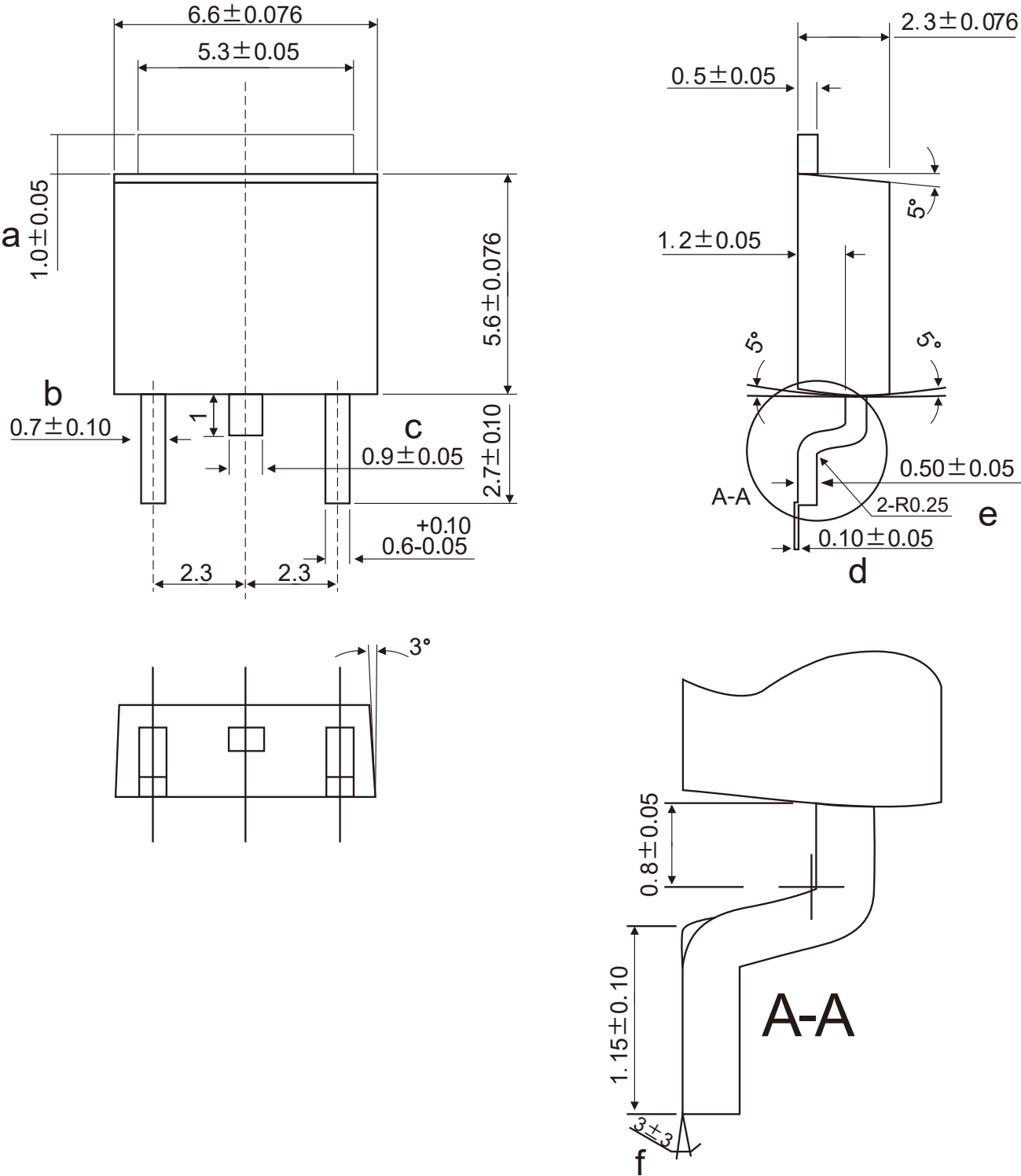




Package Outline

TO-252

Dimensions in mm



## Contact Information

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For additional information, please contact your local Sales Representative.



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