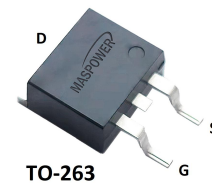


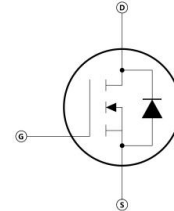
### Features

- 100% avalanche tested
- Fast Intrinsic Diode
- Gate charge minimized
- Very low intrinsic capacitances
- High speed switching



### Applications

- High Voltage Power Supplies
- PV Inverter
- Switching applications



### Electrical ratings

| Absolute maximum ratings                                                                                                  |           |           |                    |
|---------------------------------------------------------------------------------------------------------------------------|-----------|-----------|--------------------|
| Parameter                                                                                                                 | Symbol    | Value     | Unit               |
| Drain-source voltage ( $V_{GS} = 0$ )                                                                                     | $V_{DS}$  | 2500      | V                  |
| Transient Gate- source voltage                                                                                            | $V_{GS}$  | $\pm 30$  |                    |
| Continuous Gate- source voltage(DC)                                                                                       | $V_{GS}$  | $\pm 20$  |                    |
| Drain current (continuous) at $T_C = 25\text{ }^{\circ}\text{C}$                                                          | $I_D$     | 0.5       | A                  |
| Drain current (continuous) at $T_C = 100\text{ }^{\circ}\text{C}$                                                         |           | 0.3       |                    |
| Drain current (pulsed)                                                                                                    | $I_{DM}$  | 3         |                    |
| Total dissipation at $T_C = 25\text{ }^{\circ}\text{C}$                                                                   | $P_D$     | 198       | W                  |
| Continuous Pulse Avalanche Current                                                                                        | $I_{AR}$  | 0.26      | A                  |
| Single pulse avalanche energy<br>(starting $T_J = 25\text{ }^{\circ}\text{C}$ , $I_D = I_{AR}$ , $V_{DD} = 50\text{ V}$ ) | $E_{AS}$  | 675       | $\mu\text{J}$      |
| Operating junction temperature                                                                                            | $T_J$     | -55 ~ 150 | $^{\circ}\text{C}$ |
| Storage temperature                                                                                                       | $T_{stg}$ |           |                    |
| Maximum lead temperature for soldering<br>purpose                                                                         | $T_L$     | 300       | $^{\circ}\text{C}$ |

### Electrical Characteristics ( $T_{vj} = 25^{\circ}\text{C}$ unless otherwise specified)

| On /off states                                   |               |                                                                                                    |      |     |             |               |
|--------------------------------------------------|---------------|----------------------------------------------------------------------------------------------------|------|-----|-------------|---------------|
| Parameter                                        | Symbol        | Test conditions                                                                                    | Min  | Typ | Max         | Unit          |
| Drain-source breakdown voltage                   | $V_{(BR)DSS}$ | $I_D = 250\text{ }\mu\text{A}$ , $V_{GS} = 0$                                                      | 2500 |     |             | V             |
| Zero gate voltage drain current ( $V_{GS} = 0$ ) | $I_{DSS}$     | $V_{DS} = \text{Max rating}$<br>$V_{DS} = \text{Max rating}$ , $T_C = 125\text{ }^{\circ}\text{C}$ |      |     | 100<br>1000 | $\mu\text{A}$ |
| Gate-body leakage current ( $V_{DS} = 0$ )       | $I_{GSS}$     | $V_{GS} = \pm 20\text{ V}$                                                                         |      |     | $\pm 200$   | nA            |

|                                   |                     |                                                                                                                                |     |      |     |      |
|-----------------------------------|---------------------|--------------------------------------------------------------------------------------------------------------------------------|-----|------|-----|------|
| Gate threshold voltage            | V <sub>GS(th)</sub> | V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 250 μA                                                                    | 4.5 |      | 6.5 | V    |
| Static drain-source on resistance | R <sub>DS(on)</sub> | V <sub>GS</sub> = 10V, I <sub>D</sub> = 0.5A                                                                                   | -   | 39   | 45  | Ω    |
| Dynamic                           |                     |                                                                                                                                |     |      |     |      |
| Parameter                         | Symbol              | Test conditions                                                                                                                | Min | Typ  | Max | Unit |
| Forward trans-conductance         | g <sub>fs</sub>     | V <sub>DS</sub> = 15 V, I <sub>D</sub> = 0.25A                                                                                 |     | 200  |     | mS   |
| Input capacitance                 | C <sub>iss</sub>    | V <sub>DS</sub> =25V,f=1MHz,V <sub>GS</sub> =0                                                                                 |     | 232  |     | pF   |
| Output capacitance                | C <sub>oss</sub>    |                                                                                                                                |     | 16   |     |      |
| Reverse transfer capacitance      | C <sub>rss</sub>    |                                                                                                                                |     | 6    |     |      |
| Total gate charge                 | Q <sub>g</sub>      | V <sub>DD</sub> =1250V,I <sub>D</sub> =1mA<br>V <sub>GS</sub> =10V                                                             |     | 7.4  |     | nC   |
| Gate-source charge                | Q <sub>gs</sub>     |                                                                                                                                |     | 0.7  |     |      |
| Gate-drain charge                 | Q <sub>gd</sub>     |                                                                                                                                |     | 5.3  |     |      |
| Switching times                   |                     |                                                                                                                                |     |      |     |      |
| Parameter                         | Symbol              | Test conditions                                                                                                                | Min | Typ  | Max | Unit |
| Turn-on delay time                | t <sub>d(on)</sub>  | <b>Resistive load</b><br>V <sub>DD</sub> = 1250 V, I <sub>D</sub><br>=0.25A,<br>R <sub>G</sub> = 4.7 Ω, V <sub>GS</sub> = 10 V |     | 16   |     | ns   |
| Rise time                         | t <sub>r</sub>      |                                                                                                                                |     | 14   |     |      |
| Turn-off-delay time               | t <sub>d(off)</sub> |                                                                                                                                |     | 35   |     |      |
| Fall time                         | t <sub>f</sub>      |                                                                                                                                |     | 37   |     |      |
| Source drain diode                |                     |                                                                                                                                |     |      |     |      |
| Parameter                         | Symbol              | Test conditions                                                                                                                | Min | Typ  | Max | Unit |
| Source-drain current              | I <sub>SD</sub>     |                                                                                                                                |     |      | 0.5 | A    |
| Source-drain current (pulsed)     | I <sub>SDM</sub>    |                                                                                                                                |     |      | 2   |      |
| Forward on voltage                | V <sub>SD</sub>     | I <sub>SD</sub> = 0.5A, V <sub>GS</sub> = 0                                                                                    |     |      | 1.3 | V    |
| Reverse recovery time             | t <sub>rr</sub>     | I <sub>SD</sub> =0.5A, di/dt=50A/μs<br>V <sub>DD</sub> = 100 V                                                                 |     | 1300 |     | ns   |
| Reverse recovery charge           | Q <sub>rr</sub>     |                                                                                                                                |     | 9    |     | μC   |
| Reverse recovery current          | I <sub>RRM</sub>    |                                                                                                                                |     | 0.3  |     | A    |
| Reverse recovery time             | t <sub>rr</sub>     | I <sub>SD</sub> =0.5A, di/dt=100A/μs<br>V <sub>DD</sub> = 60V T <sub>J</sub> =150°C                                            |     | 1200 |     | ns   |
| Reverse recovery charge           | Q <sub>rr</sub>     |                                                                                                                                |     | 8.5  |     | μC   |
| Reverse recovery current          | I <sub>RRM</sub>    |                                                                                                                                |     | 0.25 |     | A    |

### Thermal characteristics

| Parameter                               | Symbol         | Value | Unit          |
|-----------------------------------------|----------------|-------|---------------|
| Thermal resistance junction-case,max    | $R_{thj-case}$ | 0.63  | $^{\circ}C/W$ |
| Thermal resistance junction-ambient,max | $R_{thj-amb}$  | 50    |               |

### Electrical characteristics

Fig. 1. Output Characteristics @  $T_J = 25^{\circ}C$

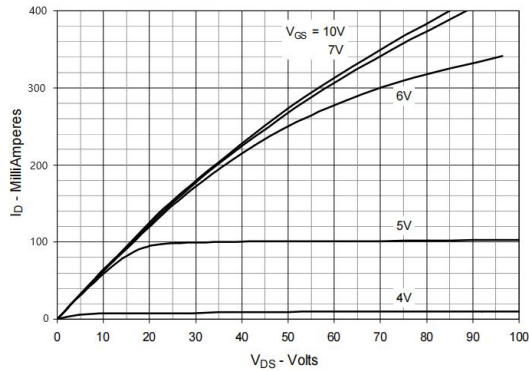


Fig. 2. Extended Output Characteristics @  $T_J = 25^{\circ}C$

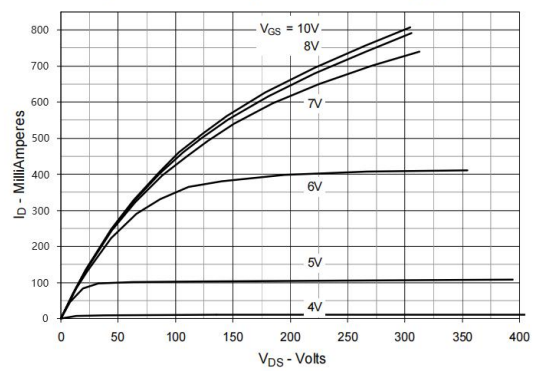


Fig. 3. Output Characteristics @  $T_J = 125^{\circ}C$

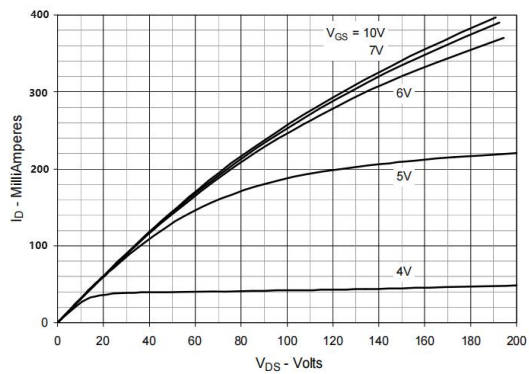


Fig. 4.  $R_{DS(on)}$  Normalized to  $I_D = 100mA$  Value vs. Junction Temperature

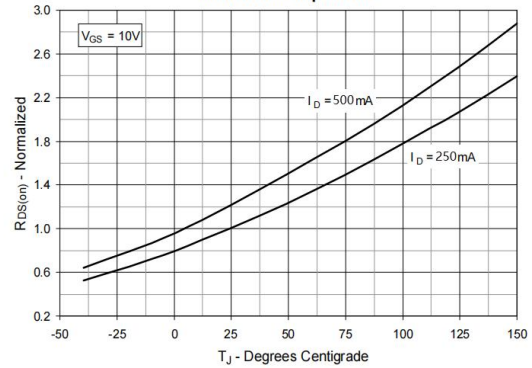


Fig. 5.  $R_{DS(on)}$  Normalized to  $I_D = 100mA$  Value vs. Drain Current

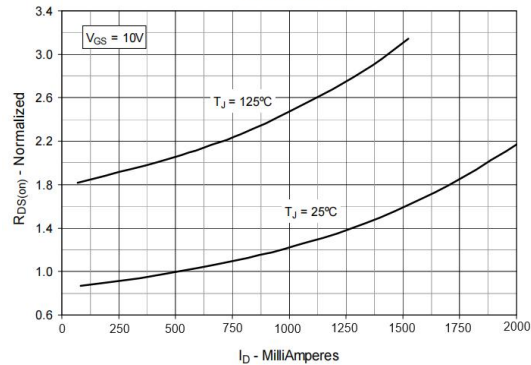


Fig. 6. Maximum Drain Current vs. Case Temperature

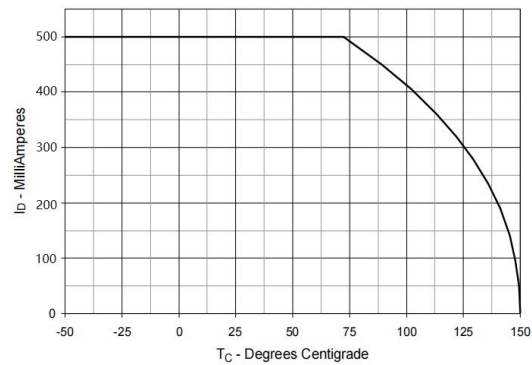


Fig. 7. Input Admittance

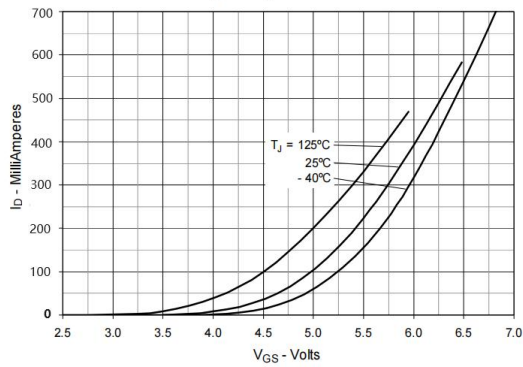


Fig. 8. Transconductance

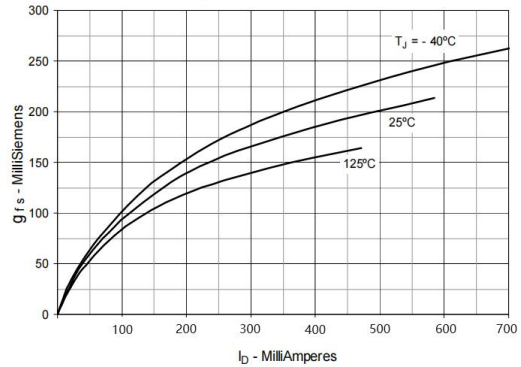


Fig. 9. Forward Voltage Drop of Intrinsic Diode

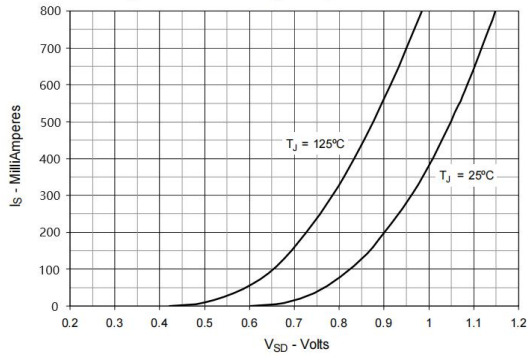


Fig. 10. Gate Charge

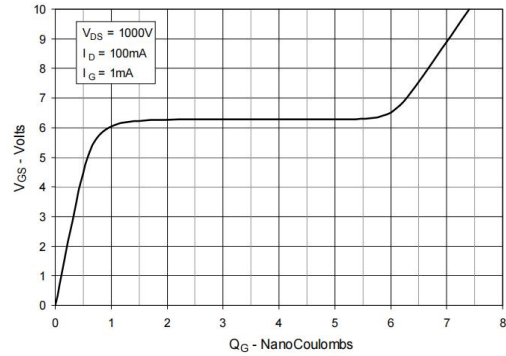


Fig. 11. Capacitance

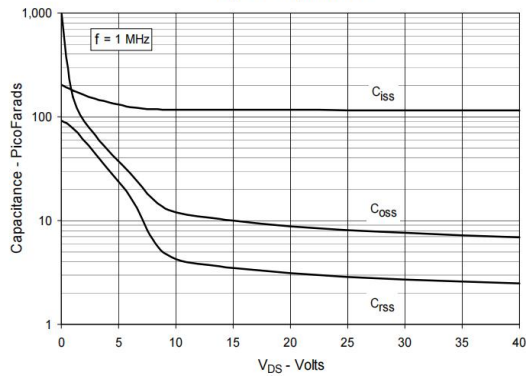


Fig.12 Transient Thermal Response Curve

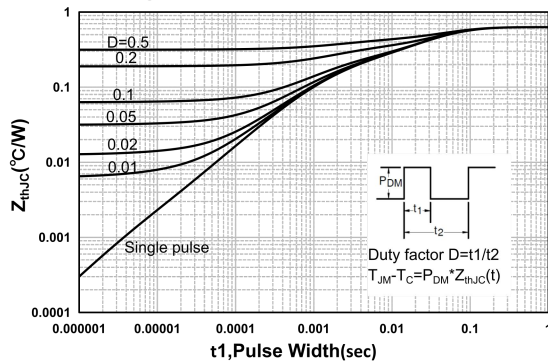
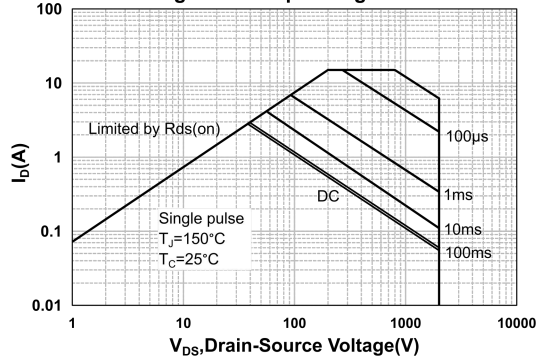
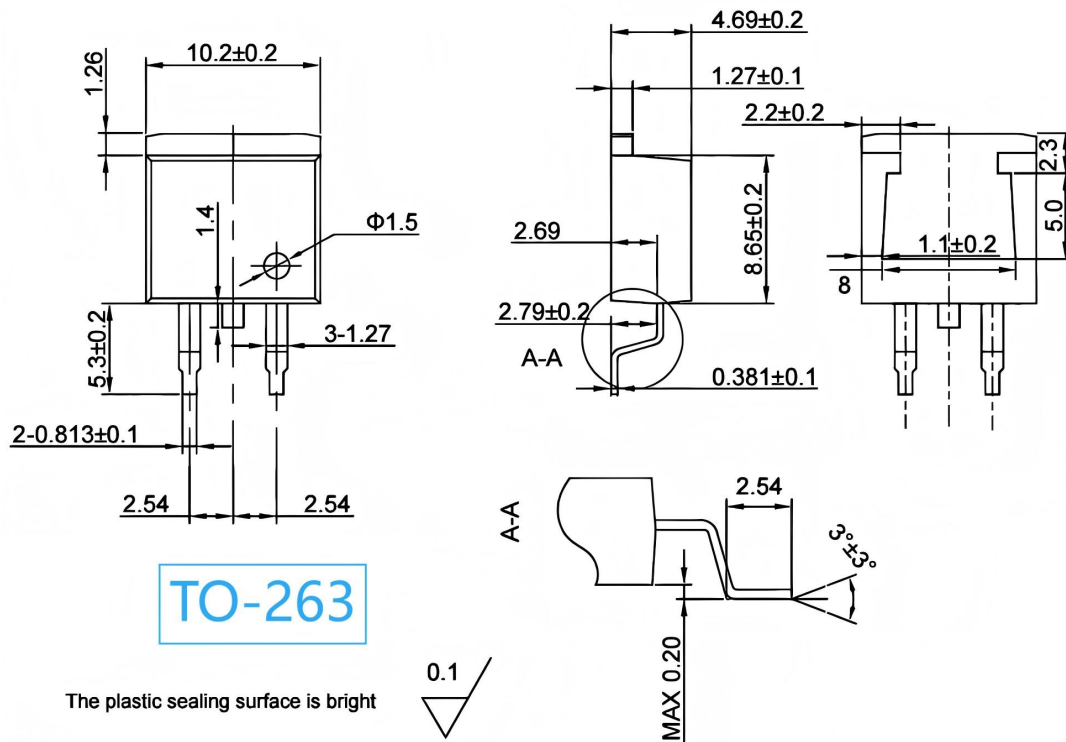


Fig.13 Safe Operating Area



### Package outline dimension



**Notes:**

1. Unmarked tolerance  $\pm 0.15\text{mm}$ ; unmarked R  $< 0.15\text{mm}$
2. The resin body is not allowed to have defects, shrinkage holes, cracks, bubbles and other harmful defects
3. The drawing indicates that the leg has reinforcement
4. Unit : mm