

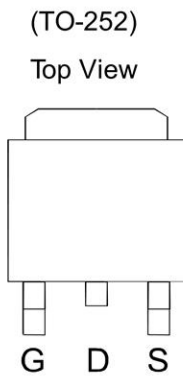
**Features**

- $V_{DS} -100V$   
 $I_D -13A$   
 $R_{DS(ON)}$  (at  $V_{GS}=-10V$ )  $< 210m\Omega$

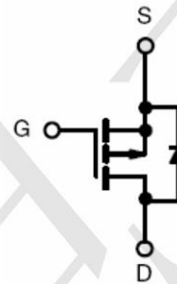
**Application**

- Load/Power Switching
- Interfacing Switching
- Battery Management for Ultra Small Portable Electronics
- Logic Level Shift

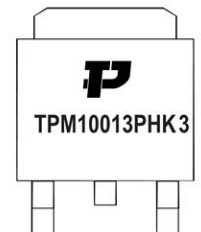
**Package and Pin Configuration**



1. GATE
2. DRAIN
3. SOURCE



**Marking:**



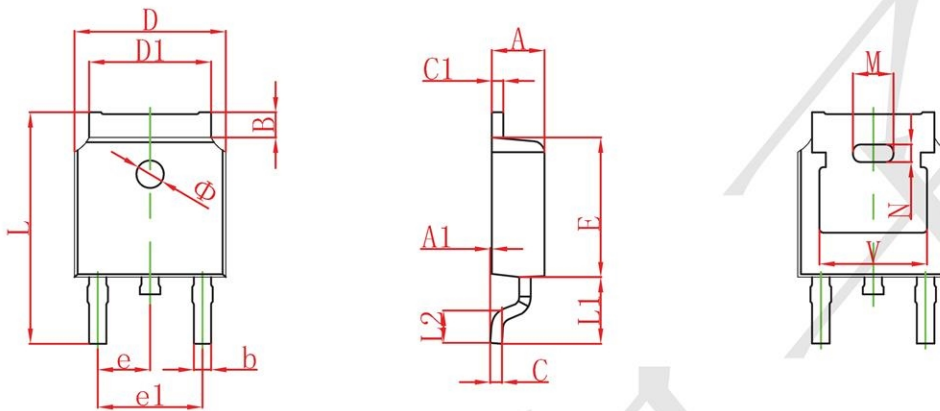
**Absolute Maximum Ratings ( $T_A=25^\circ C$  unless otherwise noted)**

| Parameter   | Symbol          | Value    | Unit         |
|---|-----------------|----------|--------------|
| Drain-Source Voltage  | $V_{DS}$        | -100     | V            |
| Gate-Source Voltage   | $V_{GS}$        | $\pm 20$ |              |
| Continuous Drain Current                                    | $I_D$           | -13      | A            |
| Pulsed Drain Current ①                                      | $I_{DM}$        | -30      |              |
| Continuous Source-Drain Current(Diode Conduction)           | $I_S$           | 13       |              |
| Power Dissipation ②   | $P_D$           | 66       | W            |
| Thermal Resistance from Junction to Ambient ( $t \leq 5s$ ) | $R_{\theta JA}$ | 110      | $^\circ C/W$ |
| Operating Junction  | $T_J$           | 175      | $^\circ C$   |
| Storage Temperature   | $T_{STG}$       | -55~+175 | $^\circ C$   |

**Electrical Characteristics (T<sub>A</sub>=25°C unless otherwise noted)**

| Parameter                         | Symbol              | Test Condition  | Min  | Typ  | Max  | Unit |
|-----------------------------------|---------------------|---|------|------|------|------|
| <b>Static Parameters</b>          |                     |   |      |      |      |      |
| Drain-Source Breakdown Voltage    | BV <sub>DSS</sub>   | V <sub>GS</sub> = 0V, I <sub>D</sub> = -250μA   | -100 |      |      | V    |
| Gate Threshold Voltage            | V <sub>GS(th)</sub> | V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = -250μA   | -2   |      | -4   | V    |
| Gate-Body leakage Current         | I <sub>GSS</sub>    | V <sub>DS</sub> = 0V, V <sub>GS</sub> = ±20V  |      |      | ±100 | nA   |
| Zero Gate Voltage Drain Current   | I <sub>DSS</sub>    | V <sub>DS</sub> = -100V, V <sub>GS</sub> = 0V   |      |      | -1   | μA   |
| Static Drain-Source On-Resistance | R <sub>DS(on)</sub> | V <sub>GS</sub> = -10V, I <sub>D</sub> = -6A  |      | 180  | 210  | mΩ   |
| Forward Transconductance          | g <sub>fs</sub>     | V <sub>DS</sub> = -50V, I <sub>D</sub> = -12A   |      | 3.2  |      | S    |
| Diode Forward Voltage             | V <sub>SD</sub>     | I <sub>S</sub> = -1A, V <sub>GS</sub> = 0V  |      | -0.8 | -1.2 | V    |
| <b>Dynamic Parameters</b>         |                     |   |      |      |      |      |
| Input Capacitance                 | C <sub>iss</sub>    | V <sub>DS</sub> = -30V, V <sub>GS</sub> = 0V,<br>f = 1MHz   |      | 760  |      | pF   |
| Output Capacitance                | C <sub>oss</sub>    |   |      | 260  |      | pF   |
| Reverse Transfer Capacitance      | C <sub>rss</sub>    |   |      | 170  |      | pF   |
| Total Gate Charge                 | Q <sub>g</sub>      | V <sub>DS</sub> = -80V, V <sub>GS</sub> = -<br>10V,<br>I <sub>D</sub> = -12A  |      | 58   |      | nC   |
| Gate Source Charge                | Q <sub>gs</sub>     |   |      | 8.3  |      | nC   |
| Gate Drain Charge                 | Q <sub>gd</sub>     |   |      | 32   |      | nC   |
| <b>Switching Parameters</b>       |                     |   |      |      |      |      |
| Turn-On DelayTime                 | t <sub>d(on)</sub>  | V <sub>DD</sub> = -50V<br>R <sub>L</sub> = 10Ω, I <sub>D</sub> = -8.4A,<br>V <sub>GEN</sub> = -10V, R <sub>g</sub> = 9Ω |      | 130  |      | ns   |
| Turn-On Rise Time                 | t <sub>r</sub>      |   |      | 130  |      | ns   |
| Turn-Off DelayTime                | t <sub>d(off)</sub> |   |      | 135  |      | ns   |
| Turn-Off Fall Time                | t <sub>f</sub>      |   |      | 140  |      | ns   |

**TO252 Package Information**



| Symbol | Dimensions In Millimeters |        | Dimensions In Inches |       |
|--------|---------------------------|--------|----------------------|-------|
|        | Min.                      | Max.   | Min.                 | Max.  |
| A      | 2.200                     | 2.380  | 0.087                | 0.094 |
| A1     | 0.000                     | 0.100  | 0.000                | 0.004 |
| B      | 0.800                     | 1.400  | 0.031                | 0.055 |
| b      | 0.710                     | 0.810  | 0.028                | 0.032 |
| c      | 0.460                     | 0.560  | 0.018                | 0.022 |
| c1     | 0.460                     | 0.560  | 0.018                | 0.022 |
| D      | 6.500                     | 6.700  | 0.256                | 0.264 |
| D1     | 5.130                     | 5.460  | 0.202                | 0.215 |
| E      | 6.000                     | 6.200  | 0.236                | 0.244 |
| e      | 2.286 TYP.                |        | 0.090 TYP.           |       |
| e1     | 4.327                     | 4.727  | 0.170                | 0.186 |
| M      | 1.778REF.                 |        | 0.070REF.            |       |
| N      | 0.762REF.                 |        | 0.018REF.            |       |
| L      | 9.800                     | 10.400 | 0.386                | 0.409 |
| L1     | 2.9REF.                   |        | 0.114REF.            |       |
| L2     | 1.400                     | 1.700  | 0.055                | 0.067 |
| V      | 4.830 REF.                |        | 0.190 REF.           |       |
| Φ      | 1.100                     | 1.300  | 0.043                | 0.051 |