TECH PUBLIC
台舟电子

# TPMGD780SN

## 60V Dual N-Channel Enhancement Mode MOSFET

WWW.TECHPUBLIC.COM

### Features

- *Fast switching*
- *Green Device Available*
- *Suit for 1.5V Gate Drive Applications*

### Application

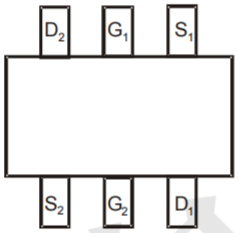
- *Notebook*
- *Load Switch*
- *Networking*
- *Hand-held Instruments*

### Package and Pin Configuration

SOT363

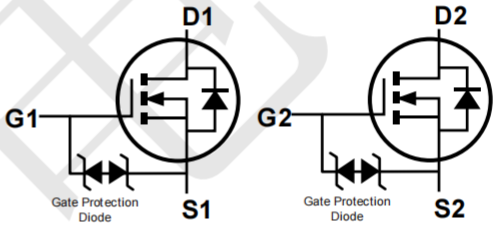


Top View




Top View
Internal Schematic

### Circuit diagram




Equivalent Circuit

### Absolute Maximum Ratings ($T_A$=25℃unless otherwise noted)

| Parameter | | Symbol | Limit | Unit |
|---|---|---|---|---|
| Drain-Source Voltage | | $V_{DS}$ | 60 | V |
| Gate-Source Voltage | | $V_{GS}$ | ±20 | V |
| Continuous Drain Current ($T_J$ =150℃) | $T_A$ =25℃ | $I_D$ | 0.3 | A |
| | $T_A$ =100℃ | | 0.19 | |
| Drain Current-Pulsed (Note 1) | | $I_{DM}$ | 0.8 | A |
| Maximum Power Dissipation | | $P_D$ | 0.35 | W |
| Operating Junction and Storage Temperature Range | | $T_J$,$T_{STG}$ | -55 To 150 | ℃ |

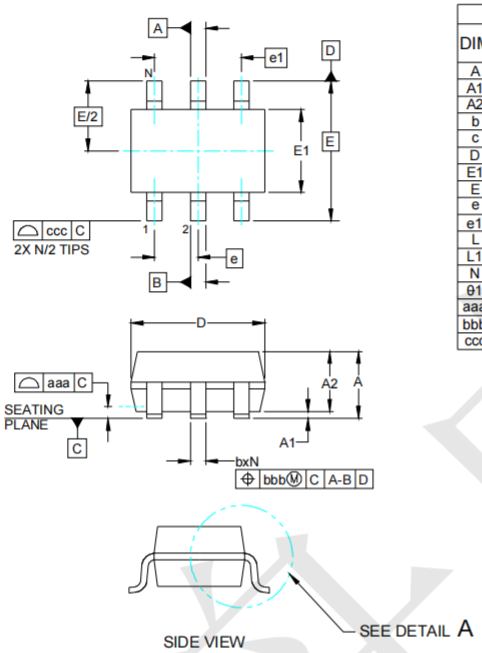
### Thermal Characteristic

| | | | |
|---|---|---|---|
| Thermal Resistance,Junction-to-Ambient (Note 2) | $R_{\theta JA}$ | 350 | ℃/W |

## Electrical Characteristics ( $T_A$ = 25°C unless otherwise noted )

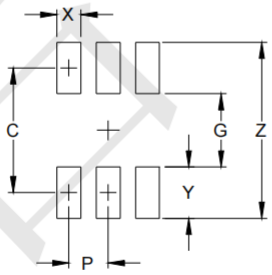
| Parameter | Symbol | Condition | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| **Off Characteristics** | | | | | | |
| Drain-Source Breakdown Voltage | $BV_{DSS}$ | $V_{GS}$=0V $I_D$=250μA | 60 | | - | V |
| Zero Gate Voltage Drain Current | $I_{DSS}$ | $V_{DS}$=60V,$V_{GS}$=0V | - | - | 1 | μA |
| Gate-Body Leakage Current | $I_{GSS}$ | $V_{GS}$=±10V,$V_{DS}$=0V | - | - | ±1 | uA |
| | | $V_{GS}$=±20V,$V_{DS}$=0V | - | | ±10 | uA |
| **On Characteristics** (Note 3) | | | | | | |
| Gate Threshold Voltage | $V_{GS(th)}$ | $V_{DS}$=$V_{GS}$,$I_D$=250μA | 1 | 1.6 | 2.5 | V |
| Drain-Source On-State Resistance | $R_{DS(ON)}$ | $V_{GS}$=4.5V, $I_D$=0.2A | - | 1.9 | 2.5 | Ω |
| | | $V_{GS}$=10V, $I_D$=0.3A | - | 1.8 | 2.2 | Ω |
| Forward Transconductance | $g_{FS}$ | $V_{DS}$=10V,$I_D$=0.2A | 0.1 | - | - | S |
| **Dynamic Characteristics** (Note4) | | | | | | |
| Input Capacitance | $C_{lss}$ | $V_{DS}$=30V,$V_{GS}$=0V, F=1.0MHz | | 27 | | PF |
| Output Capacitance | $C_{oss}$ | | | 18 | | PF |
| Reverse Transfer Capacitance | $C_{rss}$ | | | 2 | | PF |
| **Switching Characteristics** (Note 4) | | | | | | |
| Turn-on Delay Time | $t_{d(on)}$ | $V_{DD}$=30V,$I_D$=0.2A $V_{GS}$=10V,$R_{GEN}$=10Ω | - | 10 | - | nS |
| Turn-on Rise Time | $t_r$ | | - | 50 | - | nS |
| Turn-Off Delay Time | $t_{d(off)}$ | | - | 17 | - | nS |
| Turn-Off Fall Time | $t_f$ | | - | 10 | - | nS |
| Total Gate Charge | $Q_g$ | $V_{DS}$=10V,$I_D$=0.3A, $V_{GS}$=4.5V | - | 1.7 | 3 | nC |
| **Drain-Source Diode Characteristics** | | | | | | |
| Diode Forward Voltage (Note 3) | $V_{SD}$ | $V_{GS}$=0V,$I_S$=0.2A | - | - | 1.2 | V |
| Diode Forward Current (Note 2) | $I_S$ | | - | - | 0.3 | A |

## Outline Drawing - SOT-363(2.0X2.1)




| DIM | INCHES | | | MILLIMETERS | | |
|---|---|---|---|---|---|---|
| | MIN | NOM | MAX | MIN | NOM | MAX |
| A | - | - | .043 | - | - | 1.10 |
| A1 | .000 | - | .004 | 0.00 | - | 0.10 |
| A2 | .028 | .035 | .039 | 0.70 | 0.90 | 1.00 |
| b | .006 | - | .012 | 0.15 | - | 0.30 |
| c | .003 | - | .009 | 0.08 | - | 0.22 |
| D | .071 | .079 | .087 | 1.80 | 2.00 | 2.20 |
| E1 | .045 | .049 | .053 | 1.15 | 1.25 | 1.35 |
| E | .083 BSC | | | 2.10 BSC | | |
| e | .026 BSC | | | 0.65 BSC | | |
| e1 | .051 | | | 1.30 BSC | | |
| L | .010 | .014 | .018 | 0.26 | 0.36 | 0.46 |
| L1 | (.017) | | | (0.42) | | |
| N | 6 | | | 6 | | |
| θ1 | 0° | - | 8° | 0° | - | 8° |
| aaa | .004 | | | 0.10 | | |
| bbb | .004 | | | 0.10 | | |
| ccc | .012 | | | 0.30 | | |

## Land Pattern - SOT-363




| DIM | INCHES | MILLIMETERS |
|---|---|---|
| C | (.073) | (1.85) |
| G | .039 | 1.00 |
| P | .026 | 0.65 |
| X | .016 | 0.40 |
| Y | .033 | 0.85 |
| Z | .106 | 2.70 |