# 18V N-Channel Trench Power MOSFET

## General Description

The SJM18N035 uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 2.5V. This device is suitable for use as a wide variety of applications.

## Features

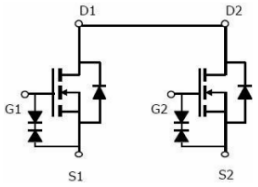
- Low Gate Charge
- High Power and current handing capability
- Lead free product is acquired
- ESD Rating: HBM 2KV

## Application

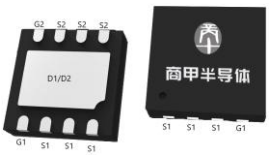
- Load Switch

## Key Performance Parametes

| Parameter | Value | Unit |
|---|---|---|
| $V_{DS}$ | 18 | V |
| $R_{DS(ON)\_TYP}$ | 3 | mΩ |
| $I_D$ | 58 | A |
| $Q_G$ | 36 | nC |




Schematic Diagram




DFN3X3-8L top&bottom view

RoHS

## Package Marking and Ordering Information

| Device/Ordering Code | Marking | Package | Reel Size | Tape width | Quantity |
|---|---|---|---|---|---|
| SJM18N035 | SJM18N035 | DFN3X3-8L | \ | \ | \ |

## Table 1. Absolute Maximum Ratings ($T_C$=25℃ unless otherwise noted)

| Symbol | Parameter | Limit | Unit |
|---|---|---|---|
| $V_{DS}$ | Drain-Source Voltage ($V_{GS}$=0V) | 18 | V |
| $V_{GS}$ | Gate-Source Voltage ($V_{DS}$=0V) | ±10 | V |
| $I_D$ | Drain Current-Continuous($T_C$=25℃) | 58 | A |
| | Drain Current-Continuous($T_C$=100℃) | 36 | A |
| $I_{DM\ (pluse)}$ | Drain Current-Continuous@ Current-Pulsed (Note 1) | 232 | A |
| $P_D$ | Maximum Power Dissipation($T_C$=25℃) | 22 | W |
| | Maximum Power Dissipation($T_C$=100℃) | 8.7 | W |
| $E_{AS}$ | Avalanche energy (Note 2) | 110 | mJ |
| $T_J$, $T_{STG}$ | Operating Junction and Storage Temperature Range | -55 To 150 | ℃ |

## Table 2. Thermal Characteristic

| Symbol | Parameter | Typ | Max | Unit |
|---|---|---|---|---|
| $R_{\theta JC}$ | Thermal Resistance, Junction-to-Case | | 5.7 | ℃/W |

## Table 3. Electrical Characteristics ($T_J$=25℃ unless otherwise noted)

| Symbol | Parameter | Conditions | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| **On/Off States** | | | | | | |
| $BV_{DSS}$ | Drain-Source Breakdown Voltage | $V_{GS}$=0V $I_D$=250μA | 18 | | | V |
| $I_{DSS}$ | Zero Gate Voltage Drain Current | $V_{DS}$=18V, $V_{GS}$=0V $T_J$=25℃ | | | 1 | μA |
| | | $V_{DS}$=18V, $V_{GS}$=0V $T_J$=125℃ | | | 100 | μA |
| $I_{GSS}$ | Gate-Body Leakage Current | $V_{GS}$=±10V, $V_{DS}$=0V | | | ±10 | uA |
| $V_{GS(th)}$ | Gate Threshold Voltage | $V_{DS}$=$V_{GS}$, $I_D$=250μA | 0.5 | | 1 | V |
| $g_{FS}$ | Forward Transconductance | $V_{DS}$=5V, $I_D$=5A | | 13.6 | | S |
| $R_{DS(ON)}$ | Drain-Source On-State Resistance | $V_{GS}$=4.5V, $I_D$=5A $T_J$=25℃ | | 3 | 3.9 | mΩ |
| $R_{DS(ON)}$ | Drain-Source On-State Resistance | $V_{GS}$=2.5V, $I_D$=4A $T_J$=25℃ | | 3.7 | 4.9 | mΩ |
| **Dynamic Characteristics** | | | | | | |
| $C_{iss}$ | Input Capacitance | $V_{DS}$=9V,$V_{GS}$=0V, f=1.0KHz | | 2727 | | pF |
| $C_{oss}$ | Output Capacitance | | | 332 | | pF |
| $C_{rss}$ | Reverse Transfer Capacitance | | | 306 | | pF |
| **Switching Parameters** | | | | | | |
| $t_{d(on)}$ | Turn-on Delay Time | $V_{GS}$=4.5V, $V_{DS}$=9V, $R_L$=1.8Ω, $R_{GEN}$=3Ω | | 11 | | nS |
| $t_r$ | Turn-on Rise Time | | | 34 | | nS |
| $t_{d(off)}$ | Turn-Off Delay Time | | | 72 | | nS |
| $t_f$ | Turn-Off Fall Time | | | 92 | | nS |
| $Q_g$ | Total Gate Charge | $V_{GS}$=4.5V, $V_{DS}$=9V, $I_D$=5A | | 36 | | nC |
| $Q_{gs}$ | Gate-Source Charge | | | 6 | | nC |
| $Q_{gd}$ | Gate-Drain Charge | | | 10 | | nC |
| **Source-Drain Diode Characteristics** | | | | | | |
| $I_{SD}$ | Source-Drain Current (Body Diode) | | | | 58 | A |
| $V_{SD}$ | Forward on Voltage (Note 3) | $V_{GS}$=0V, $I_S$=5A | | | 1.2 | V |

Notes 1.Repetitive Rating: Pulse width limited by maximum junction temperature.
Notes 2.$E_{AS}$ condition: $T_J$=25℃,$V_{DD}$=10V,$V_G$=10V, Rg=25Ω, L=0.5mH.
Notes 3.Repetitive Rating: Pulse width limited by maximum junction temperature.

## Typical Electrical And Thermal Characteristics (Curves)

**Figure 1. Output Characteristics**

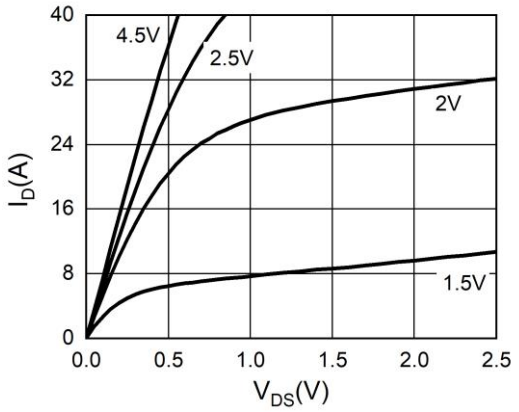



**Figure 2. Transfer Characteristics**

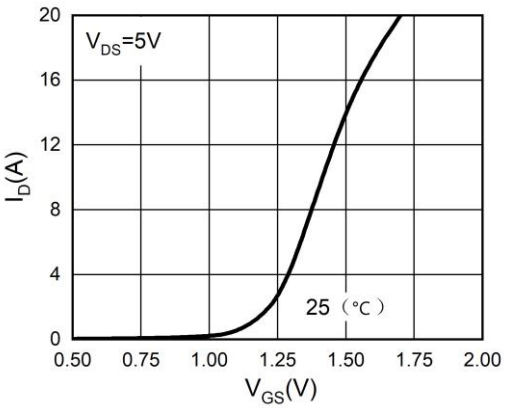



**Figure 3. Power Dissipation**

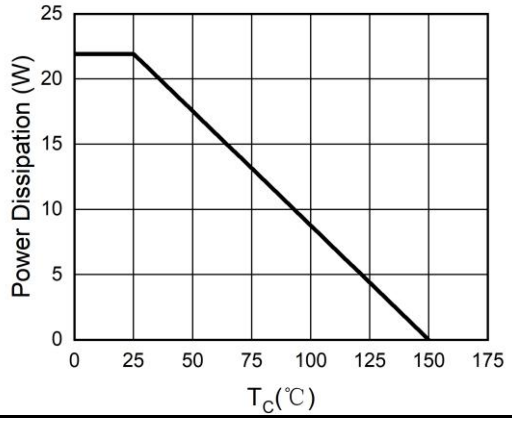



**Figure 4. Drain Current**

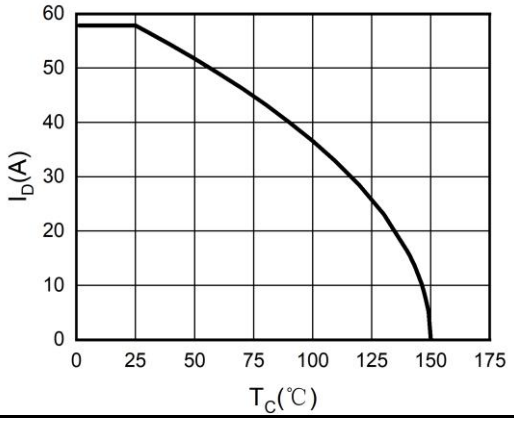



**Figure 5. $BV_{DSS}$ vs Junction Temperature**

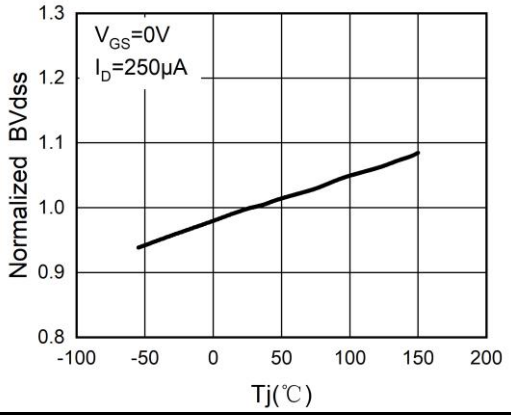
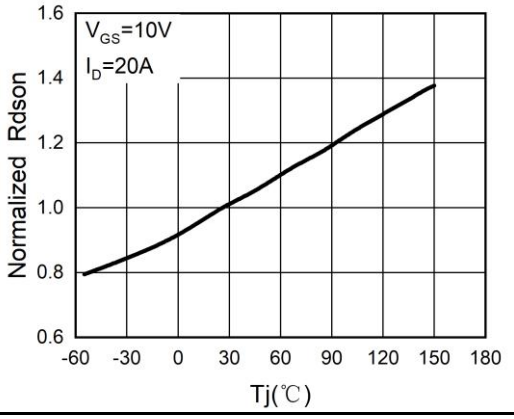



**Figure 6. $R_{DS(ON)}$ vs Junction Temperature**



## Typical Electrical And Thermal Characteristics (Curves)

**Figure 7. Gate Charge Waveforms**

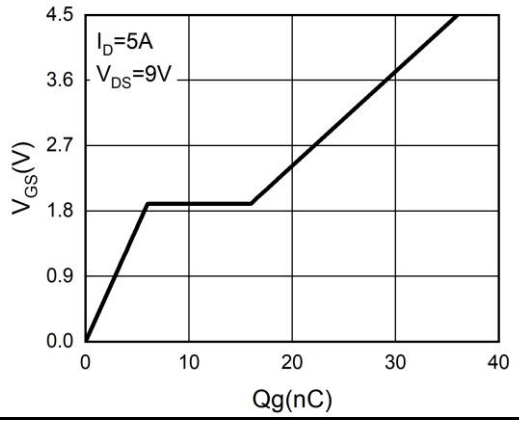



**Figure 8. Capacitance**

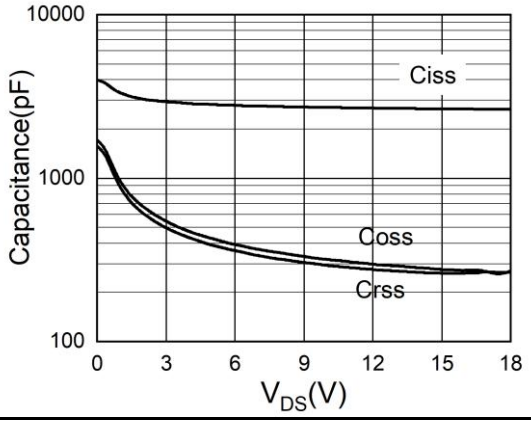



**Figure 9. Body-Diode Characteristics**

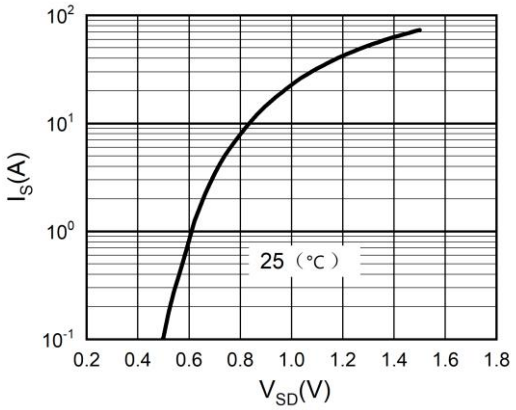
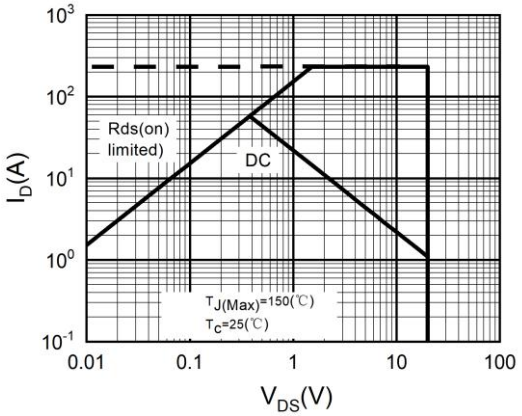
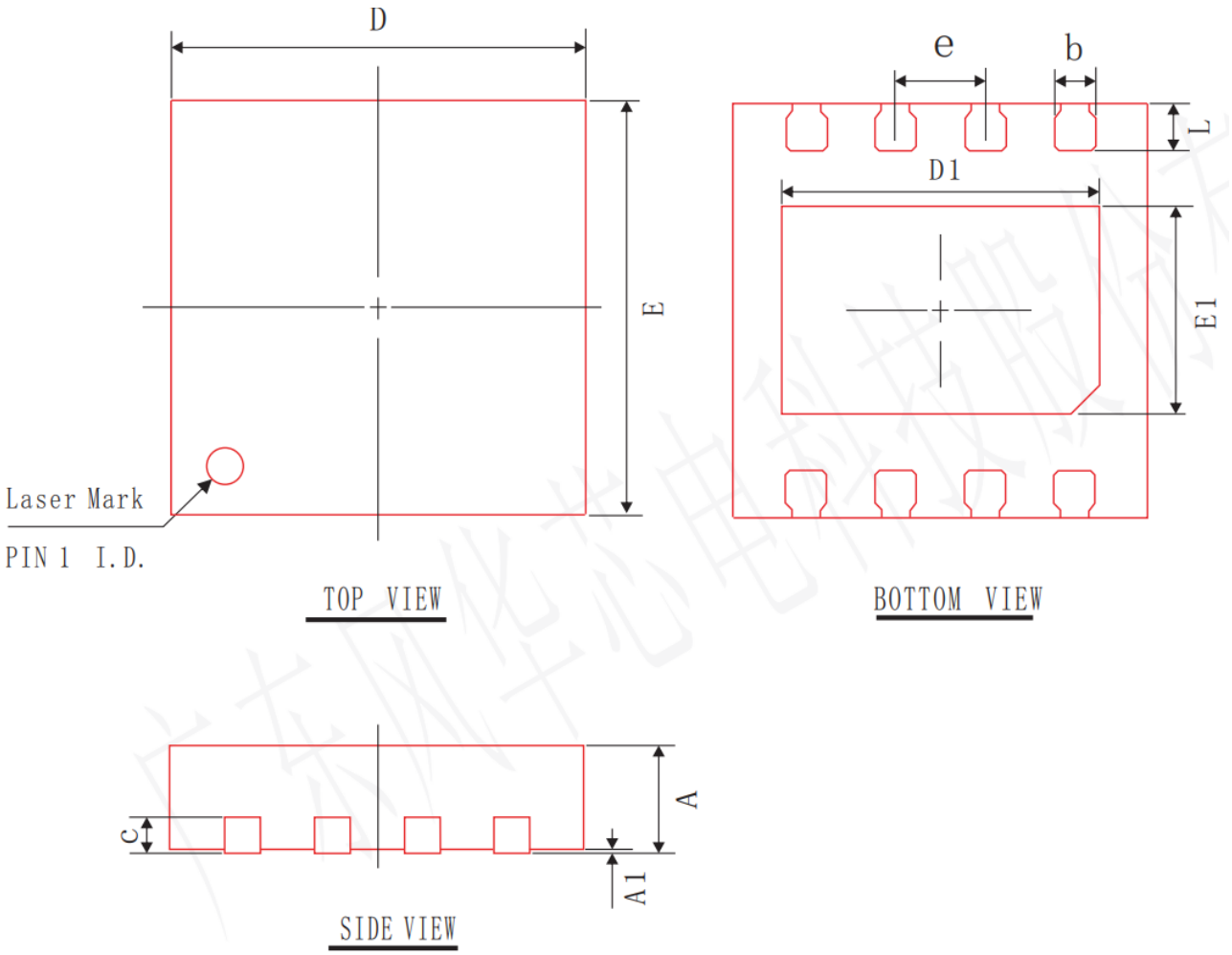



**Figure 10. Maximum Safe Operating Area**



## DFN3X3-8L Package Information




COMMON DIMENSIONS
(UNITS OF MEASURE=mm)

| SYMBOL | MIN | NOM | MAX |
|---|---|---|---|
| A | 0.70 | 0.75 | 0.80 |
| A1 | 0.00 | 0.02 | 0.05 |
| b | 0.25 | 0.30 | 0.35 |
| D | 2.95 | 3.00 | 3.07 |
| E | 2.95 | 3.00 | 3.07 |
| D1 | 2.25 | 2.30 | 2.35 |
| E1 | 1.40 | 1.50 | 1.60 |
| L | 0.25 | 0.35 | 0.45 |
| c | 0.203 REF | | |
| e | 0.65 BSC | | |

其它厚度尺寸如下

| | | | |
|---|---|---|---|
| A | 0.55 | 0.60 | 0.65 |
| A | 0.50 | 0.55 | 0.60 |

## Attention

This product described in this document can not be used in life support devices or systems, aircraft's control systems, and other applications whose failure can be reasonably expected to result in serious physical and/or material damage，apart from that when an application agreement is signed between customer and Wuxi Shangjia Semiconductor.

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