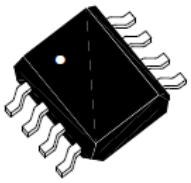
# Dual N-Channel Enhancement-Mode MOSFET(20V, 6A)

| PRODUCT SUMMARY | | |
|---|---|---|
| $V_{DSS}$ | $I_D$ | $R_{DS(on)}$ (m-ohm) Max |
| 20V | 6A | 28 @ VGS = 4.5V, ID=6A |
| | | 40 @ VGS =2.5V,ID=5.2A |

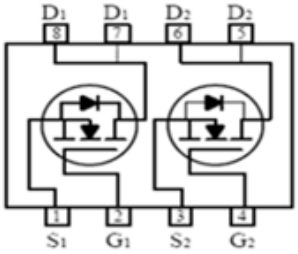
## ◆ Features

1. Advanced Trench Process Technology.
2. High Density Cell Design for Ultra Low On-Resistance.
3. Lead free product is acquired.
4. Surface mount Package.
5. RoHS Compliant.



SOP-8

**Pin 1: Source1**
**Pin 2: Gate1**
**Pin 3: Source2**
**Pin 4: Gate2**
**Pin 5 / 6 : Drain2**
**Pin 7 / 8 : Drain1**




## ◆ Ordering Information

| Ordering Number | | Package | Pin Assignment | | | Packing |
|---|---|---|---|---|---|---|
| Lead Free | Halogen Free | | 2/4 | 1/3 | 5/6/7/8 | |
| SM9926PRL | SM9926PRG | SOP-8 | G | S | D | Tape Reel |

SM9926X X X

(1)Package Type
(2)Packing Type
(3)Lead Free

(1) P：SOP-8

(2) R：Tape Reel

(3) G：Halogen Free；L：Lead Free

## ◆ Absolute Maximum Ratings ($T_A$=25°C, unless otherwise noted)

| Symbol | Parameter | Ratings | Units |
|---|---|---|---|
| $V_{DS}$ | Drain-Source Voltage | 20 | V |
| $V_{GS}$ | Gate-Source Voltage | ±12 | V |
| $I_D$ | Drain Current (Continuous) [a] | 6 | A |
| $I_{DM}$ | Drain Current (Pulsed) [b] | 20 | A |
| $P_D$ | Total Power Dissipation @TA=25°C | 2.0 | W |
| $T_j$, $T_{stg}$ | Operating Junction and Storage Temperature Range | -55 to +150 | °C |
| $R_{\theta JA}$ | Thermal Resistance Junction to Ambient (PCB mounted) [c] | 62.5 | °C/W |

a:Fused current that based on wire numbers and diameter

b:Repetitive Rating: Pulse width limited by the maximum junction temperature

c:1-in$^2$ 2oz Cu PCB board

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

| Symbol | Parameter | Conditions | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| **• Off Characteristics** | | | | | | |
| $BV_{DSS}$ | Drain-Source Breakdown Voltage | $V_{GS}$=0V, $I_D$=250uA | 20 | - | - | V |
| $I_{DSS}$ | Zero Gate Voltage Drain Current | $V_{DS}$=20V, $V_{GS}$=0V | - | - | 1 | uA |
| $I_{GSS}$ | Gate-Body Leakage Current | $V_{GS}$=±12V, $V_{DS}$=0V | - | - | ±100 | nA |
| **• On Characteristics** | | | | | | |
| $V_{GS(th)}$ | Gate Threshold Voltage | $V_{DS}$=$V_{GS}$, $I_D$=250uA | 0.6 | 0.65 | 1.2 | V |
| $R_{DS(on)}$ | Drain-Source On-State Resistance | $V_{GS}$=4.5V, $I_D$=6.0A | - | 20 | 28 | mΩ |
| | | $V_{GS}$=2.5V, $I_D$=5.2A | - | 26 | 40 | |
| **• Dynamic Characteristics[d]** | | | | | | |
| $C_{iss}$ | Input Capacitance | $V_{DS}$=8V, $V_{GS}$=0V, f=1MHz | - | 522.3 | - | pF |
| $C_{oss}$ | Output Capacitance | | - | 98.48 | - | |
| $C_{rss}$ | Reverse Transfer Capacitance | | - | 74.69 | - | |
| **• Switching Characteristics[d]** | | | | | | |
| $Q_g$ | Total Gate Charge | $V_{DS}$=10V, $I_D$=6A, $V_{GS}$=4.5V | - | 6.24 | - | nC |
| $Q_{gs}$ | Gate-Source Charge | | - | 1.64 | - | |
| $Q_{gd}$ | Gate-Drain Charge | | - | 1.34 | - | |
| $t_{d(on)}$ | Turn-on Delay Time | $V_{DD}$=10V, $I_D$=1A, $V_{GEN}$=4.5V, $R_G$=6Ω | - | 10.4 | - | nS |
| $t_r$ | Turn-on Rise Time | | - | 4.4 | - | |
| $t_{d(off)}$ | Turn-off Delay Time | | - | 27.36 | - | |
| $t_f$ | Turn-off Fall Time | | - | 4.16 | - | |
| **• Drain-Source Diode Characteristics** | | | | | | |
| $I_S$ | Maximum Diode Forward Current | | - | - | 1.7 | A |
| $V_{SD}$ | Drain-Source Diode Forward Voltage | $V_{GS}$=0V, $I_S$=1.7A | - | - | 1.2 | V |

Note: Pulse Test: Pulse Width ≤300us, Duty Cycle≤2%

d: Guaranteed by design: not subject to production testing

## ◆ Characteristics Curve

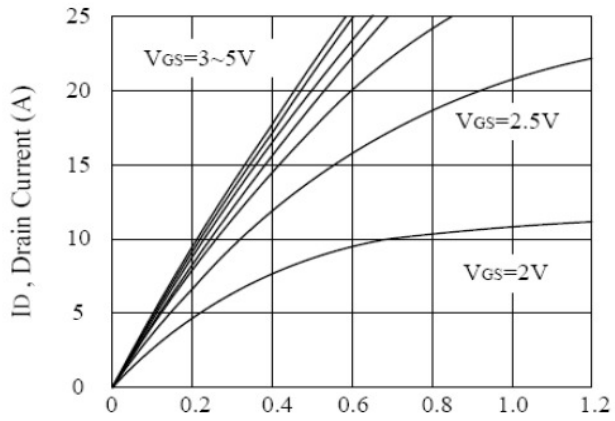



Figure 1. Output Characteristics

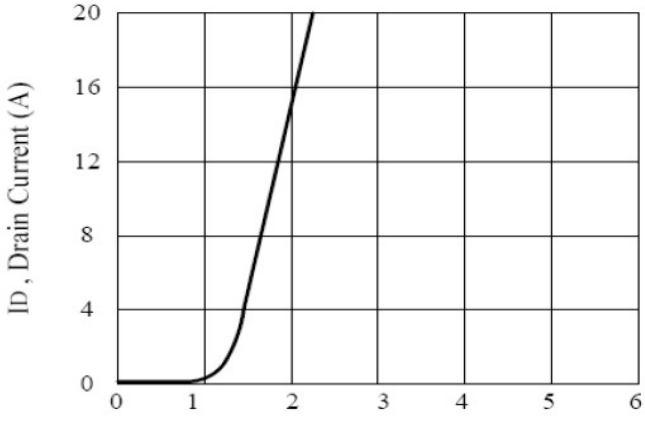



Figure 2. Transfer Characteristics

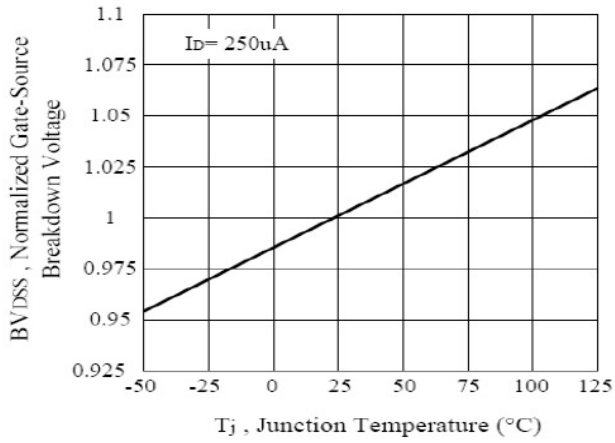



Figure 3. Breakdown Voltage Variation with Temperature

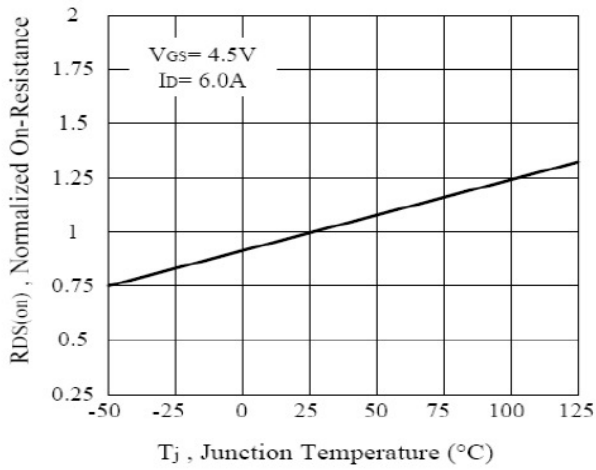



Figure 4. On-Resistance Variation with Temperature

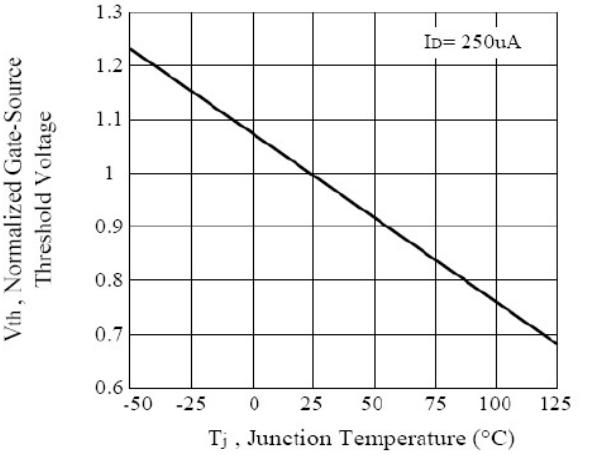



Figure 5. Gate Threshold Variation with Temperature

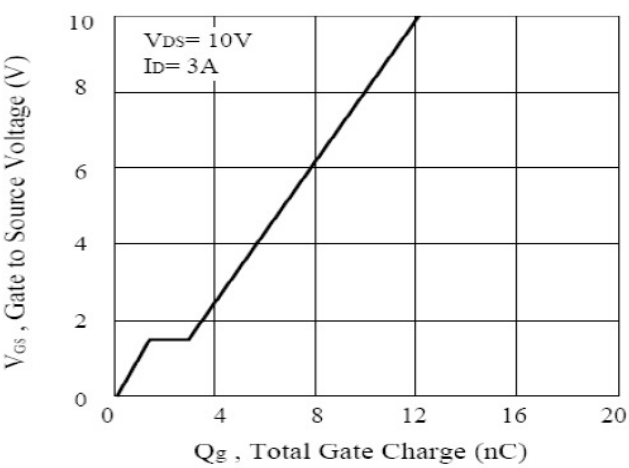



Figure 6. Gate Charge

## ◆ Characteristics Curve

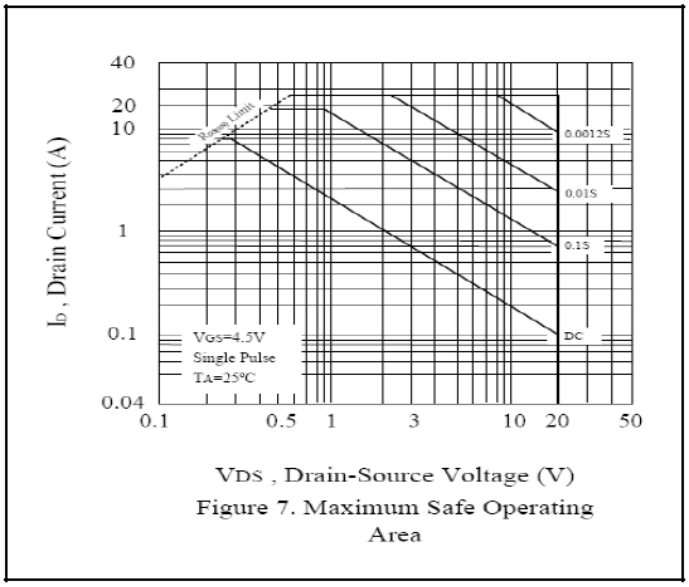



Figure 7. Maximum Safe Operating Area

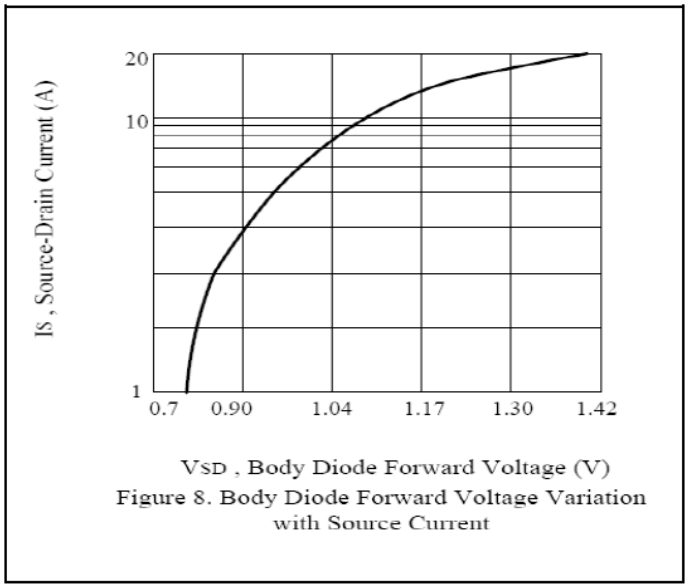



Figure 8. Body Diode Forward Voltage Variation with Source Current