# SLS80N03 N-Channel 30V / 80A Enhancement Mode Power MOSFET

## SLS80N03 Description

This Power SLS80N03 is produced using advanced TRENCH technology.

This advanced technology has been especially tailored to minimize conduction loss , provide superior switching performance , and withstand high energy pulse i n the avalanche and commutation mode.

## SLS80N03 General Features

- $V_{DS}$ = 30V, $I_D$ = 80A

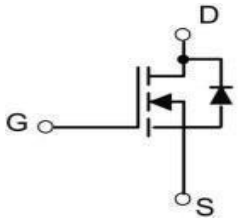
  $R_{DS(ON)}$ (TYP) =4 m Ω @$V_{GS}$=10V

  $R_{DS(ON)}$ (TYP)=7 m Ω @$V_{GS}$=4.5V

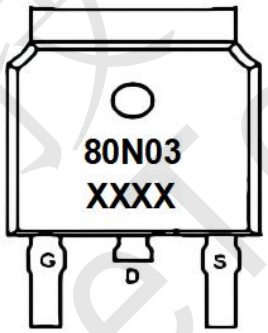
- Very Low On- resistance RDS( ON)
- Low Crss
- Fast switching
- 100% avalanche tested

## SLS80N03 Application

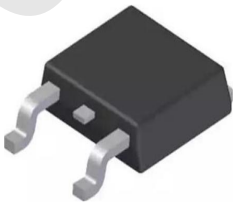
- PWM applications
- Load switch
- Power management




**Schematic diagram**




**Marking and pin assignment**



**TO-252-2L**

## SLS80N03 Absolute Maximum Ratings (TA=25℃ unless otherwise noted)

| Symbol | Parameter | Rating | Units |
|---|---|---|---|
| $V_{DSS}$ | Drain-Source Voltage | 30 | V |
| $I_D$ | Drain Current - Continuous ($T_C$ = 25℃) | 80 | A |
| | - Continuous ($T_C$ = 100℃) | 45 | A |
| $I_{DM}$ | Drain Current - Pulsed (Note 1) | 320 | A |
| $V_{GSS}$ | Gate-Source Voltage | ±20 | V |
| $E_{AS}$ | Single Pulsed Avalanche Energy (Note 2) | 306 | Jm |
| $P_D$ | Power Dissipation ($T_C$ = 25℃) | 83 | W |
| $R_{\theta JC}$ | Thermal Resistance, Junction to Case | 1.5 | ℃/W |
| $T_J$ , $T_{STG}$ | Operating and Storage Temperature Range | -55 to +150 | ℃ |
| $T_L$ | Maximum lead temperature for soldering purposes, 1/8" from case for 5 seconds | 300 | ℃ |

* Drain current limited by maximum junction temperature.



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## SLS80N03 Electrical Characteristics (TA=25℃ unless otherwise noted)

| Symbol | Parameter | Test Conditions | Min | Typ | Max | Units |
|---|---|---|---|---|---|---|
| **Off Characteristics** | | | | | | |
| BVDSS | Drain-Source Breakdown Voltage | VGS = 0 V, ID = 250 uA | 30 | -- | -- | V |
| IDSS | Zero Gate Voltage Drain Current | VDS =30 V, VGS = 0 V | -- | -- | 1 | uA |
| IGSSF | Gate-Body Leakage Current, Forward | VGS = 20V, VDS = 0 V | -- | -- | 100 | nA |
| IGSSR | Gate-Body Leakage Current, Reverse | VGS = -20 V, VDS = 0 V | -- | -- | -100 | nA |
| **On Characteristics** | | | | | | |
| VGS(th) | Gate Threshold Voltage | VDS = VGS , ID = 250 uA | 1 | 1.6 | 2.2 | V |
| RDS(on) | Static Drain-Source | VGS = 10 V, ID = 30A | -- | 4 | 5 | mΩ |
| | On-Resistance | VGS = 4.5 V, ID = 20A | - | 7 | 9 | |
| **Dynamic Characteristics** | | | | | | |
| Ciss | Input Capacitance | VDS = 15 V, VGS = 0 V, | -- | 1970 | - | pF |
| Coss | Output Capacitance | | -- | 215 | - | pF |
| Crss | Reverse Transfer Capacitance | | -- | 178 | - | pF |
| **Switching Characteristics** | | | | | | |
| td(on) | Turn-On Delay Time | VGS= 10 V, VDS=15 V, RG = 2.7Ω ,ID=30A(Note 3) | -- | 20 | -- | ns |
| tr | Turn-On Rise Time | | -- | 15 | -- | ns |
| td(off) | Turn-Off Delay Time | | -- | 60 | -- | ns |
| tf | Turn-Off Fall Time | | -- | 10 | -- | ns |
| Qg | Total Gate Charge | VDS = 15 V, ID =30A, VGS = 10V (Note 3) | -- | 37.3 | -- | nC |
| Qgs | Gate-Source Charge | | -- | 5.8 | -- | nC |
| Qgd | Gate-Drain Charge | | -- | 7.7 | -- | nC |
| **Drain-Source Diode Characteristics and Maximum Ratings** | | | | | | |
| IS | Maximum Continuous Drain-Source Diode Forward Current | | -- | -- | 80 | A |
| ISM | Maximum Pulsed Drain-Source Diode Forward Current | | -- | -- | 320 | A |
| VSD | Drain to Source Diode Forward Voltage,V GS = 0V, I SD =30A,T J = 25℃ | | -- | -- | 1.2 | V |
| trr | Reverse Recovery Time &TJ = 25°C, IF = 80A di/dt = 100A/μs | | -- | 32 | -- | nS |
| Qrr | Reverse Recovery Charge & TJ = 25°C, IF = 80A di/dt = 100A/μs | | -- | 12 | -- | nC |

**Notes**

1 . Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature
2 . EAS condition: $T_J$ =25℃ , $V_{DD}$ =15V, $V_G$ =10V, $R_G$ =25Ω , L=0 .5mH,
3. Pulse Test: Pulse Width≤300μs, Duty Cycle≤0.5%



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## SLS80N03 Typical Electrical and Thermal Characteristics

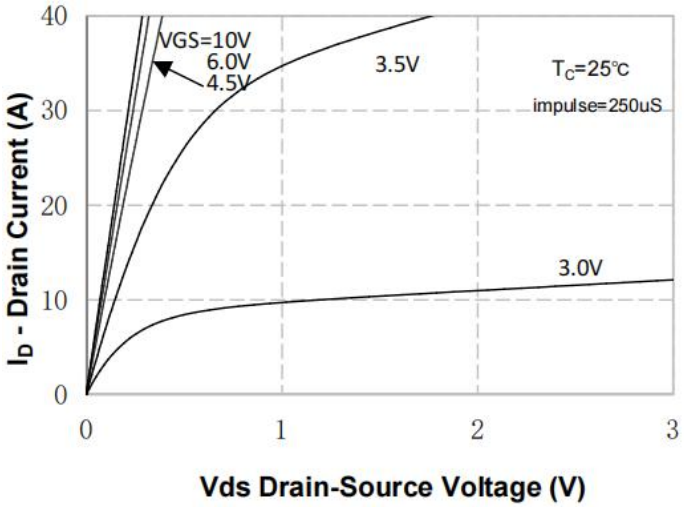


Figure 1. On-Region Characteristics

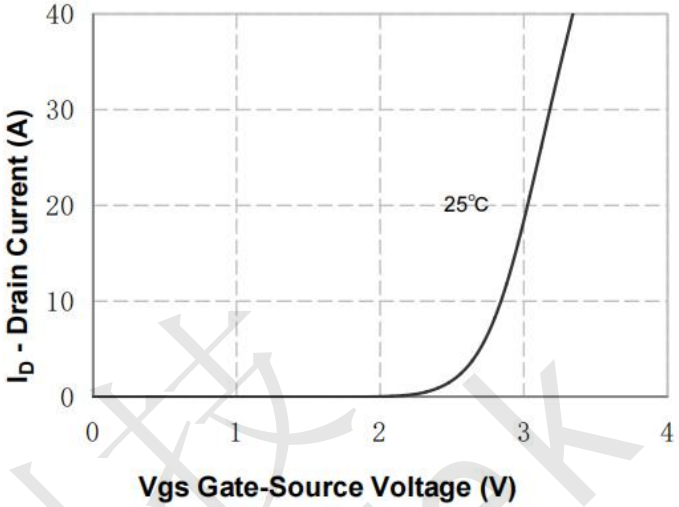


Figure 2. Transfer Characteristics

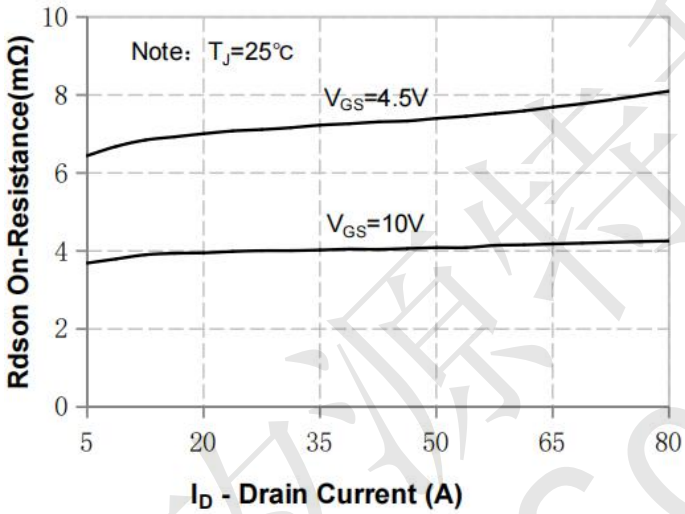


Figure 3. On-Resistance Variation vs Drain Current and Gate Voltage

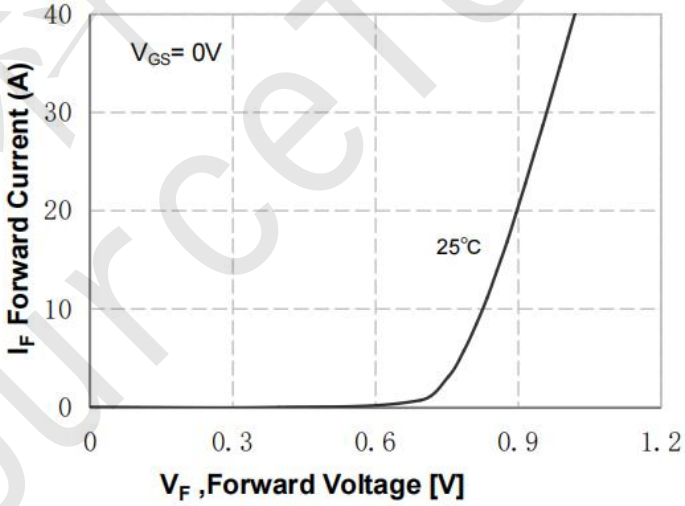


Figure 4. Body Diode Forward Voltage Variation vs Source Current

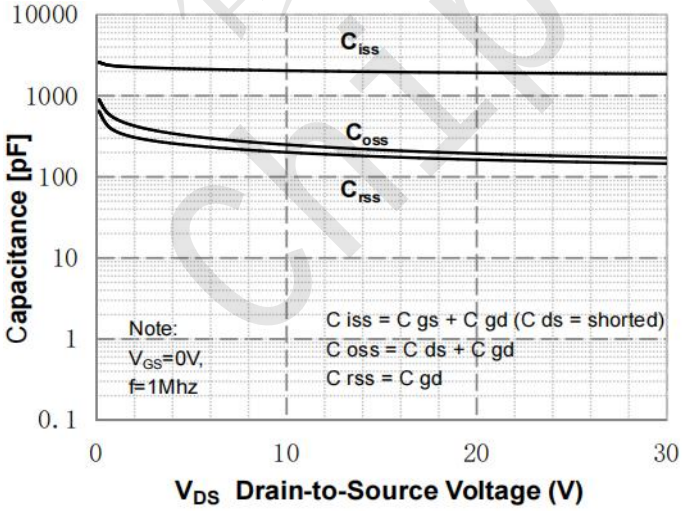


Figure 5. Capacitance Characteristics

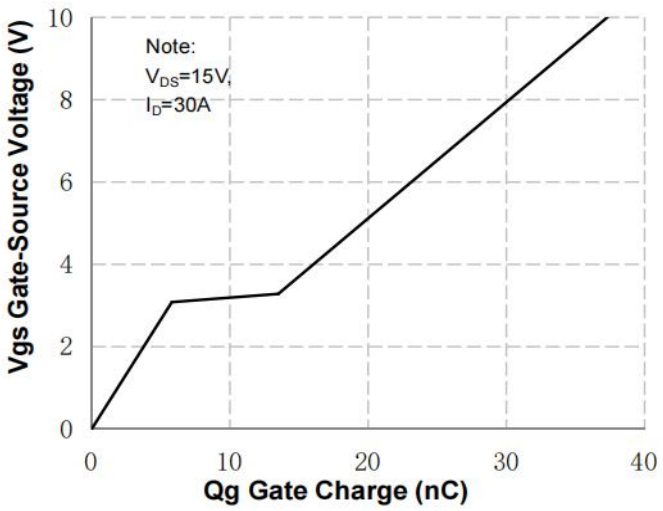


Figure 6. Gate Charge Characteristics



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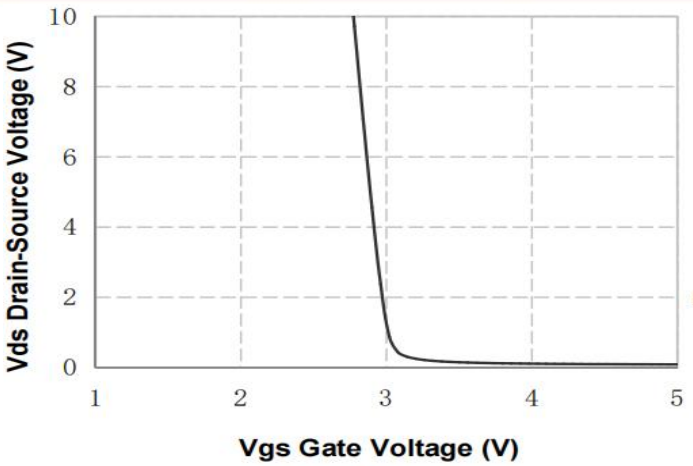


Figure 7. Vds Drain-Source Voltage vs Gate Voltage

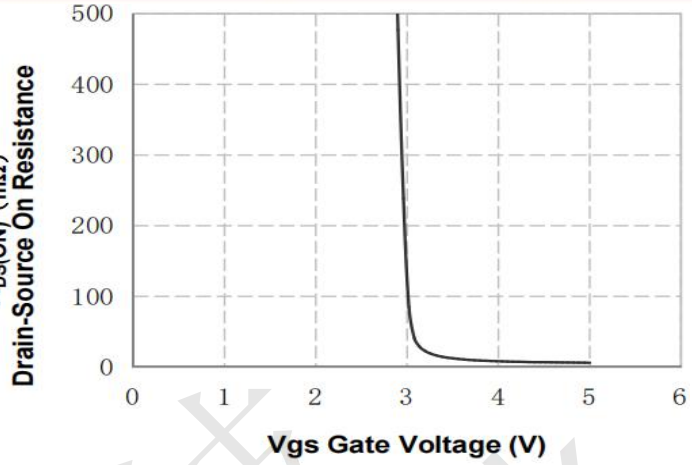


Figure 8. On-Resistance vs Gate Voltage

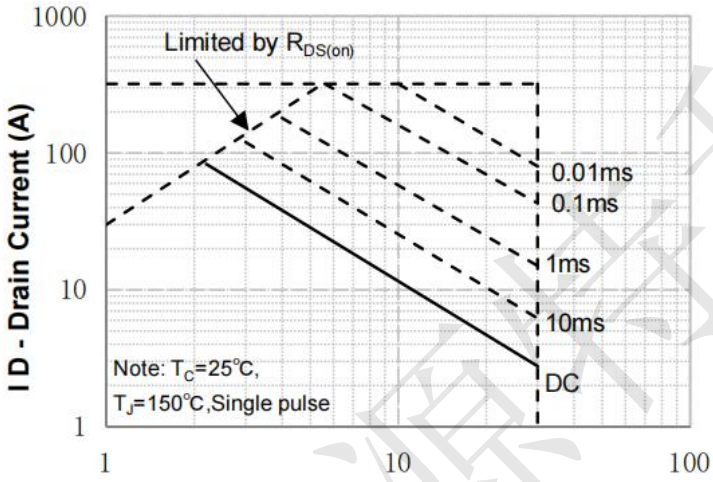


Figure 9. Maximum Safe Operating Area

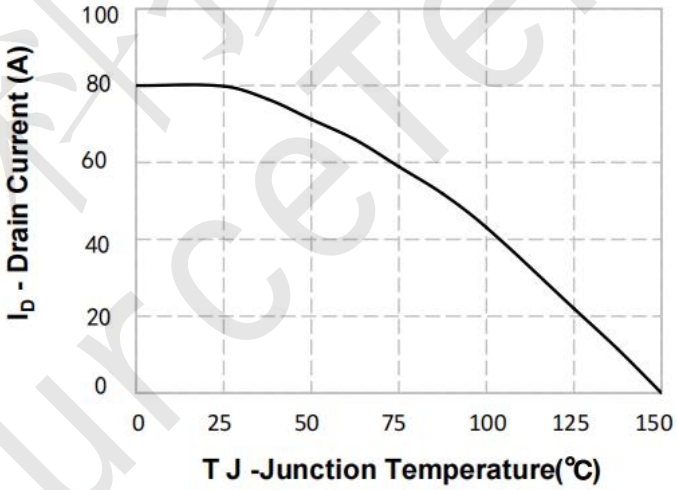


Figure 10. Maximum Continuous Drain Current vs Temperature

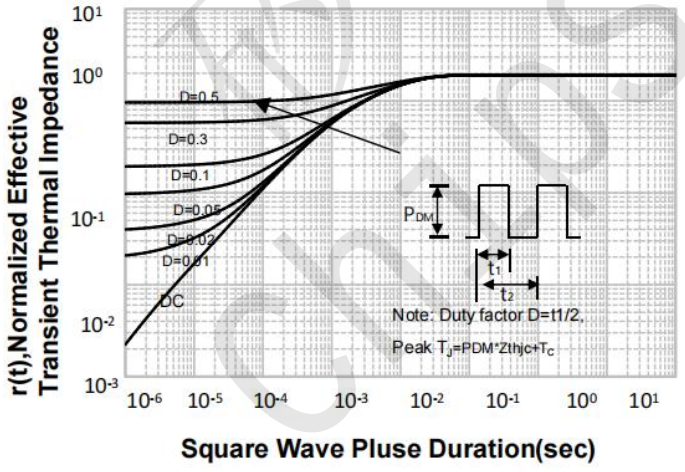


Figure 11. Transient Thermal Response Curve



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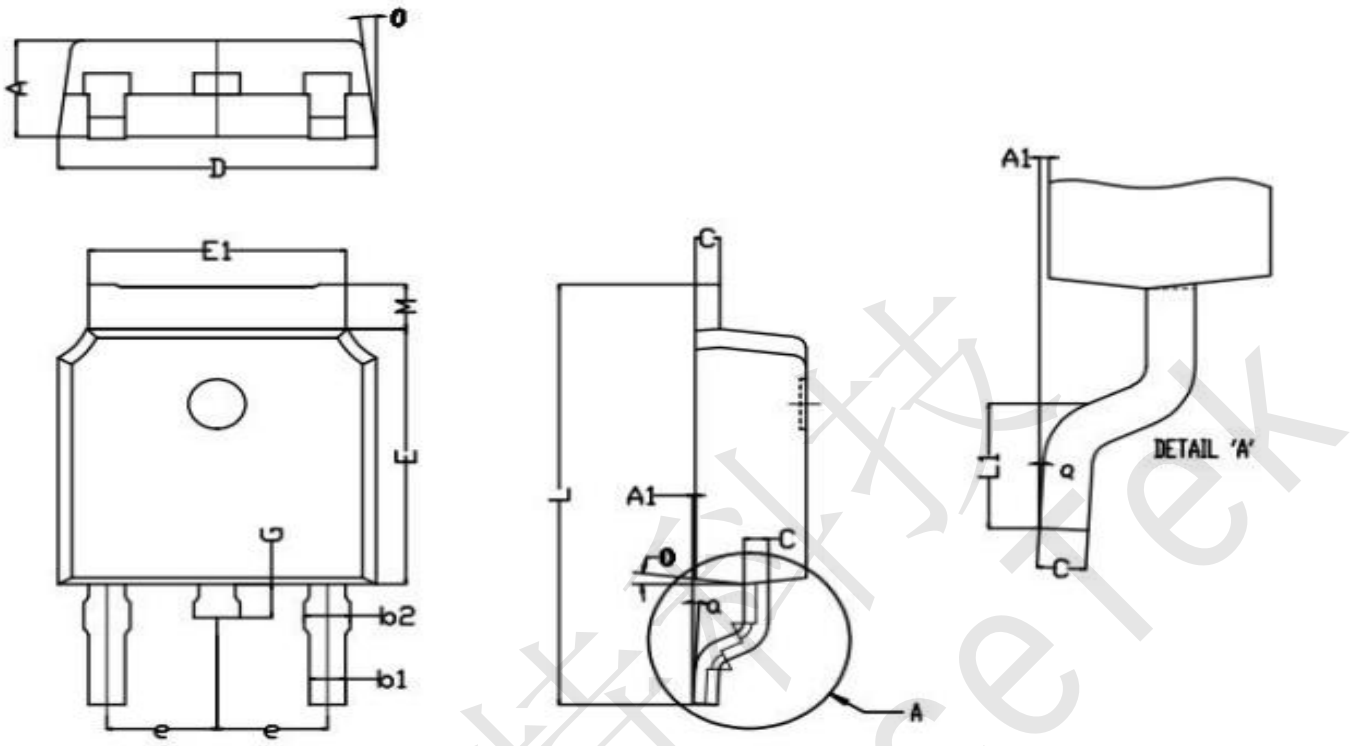
## SLS80N03 TO-252-2L Package Information




| Symbol | Dim in mm | | |
|---|---|---|---|
| | Min | Nor | Max |
| A | 2 25 | 2 30 | 2 35 |
| L1 | 2.90 | 3.00 | 3.10 |
| b1 | 0 71 | 0 76 | 0 81 |
| b2 | 0.91 | 0.96 | 1.01 |
| C | 0.46 | 0.51 | 0.56 |
| D | 6 55 | 6 60 | 6 65 |
| e | 2.29(BSC) | | |
| E | 6 05 | 6 10 | 6 15 |
| E1 | 5.23 | 5.33 | 5.43 |
| L | 9.84 | 10.04 | 10.24 |
| A1 | 0.00 | 0.05 | 0.10 |
| M | 1 01 | 1 06 | 1 11 |
| G | 0.70 | 0.80 | 0.90 |
| θ | 0° | 5° | 10° |
| Q | 0° | 3° | 6° |



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