



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

SLS80N03 Description

This Power SLS80N03 is produced using advanced TRENCH technology.

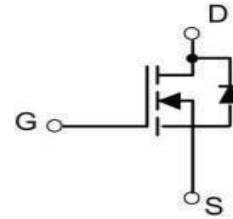
This advanced technology has been especially tailored to minimize conduction loss, provide superior switching performance, and withstand high energy pulse in the avalanche and commutation mode.

SLS80N03 General Features

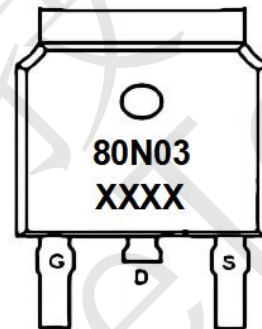
- $V_{DS} = 30V$, $I_D = 80A$
- $R_{DS(ON)} (TYP) = 4 m\Omega @ V_{GS} = 10V$
- $R_{DS(ON)} (TYP) = 7 m\Omega @ V_{GS} = 4.5V$
- Very Low On-resistance $R_{DS(ON)}$
- Low C_{rss}
- Fast switching
- 100% avalanche tested

SLS80N03 Application

- PWM applications
- Load switch
- Power management



Schematic diagram



Marking and pin assignment



TO-252-2L

SLS80N03 Absolute Maximum Ratings (TA=25°C unless otherwise noted)

Symbol	Parameter	Rating	Units
V_{DSS}	Drain-Source Voltage	30	V
I_D	Drain Current	- Continuous ($T_C = 25^\circ C$)	80
		- Continuous ($T_C = 100^\circ C$)	45
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 ($T_C = 25^\circ C$)	83	W
$R_{\theta JC}$	Thermal Resistance, Junction to Case	1.5	$^\circ C/W$
T_J, T_{STG}	Operating and Storage Temperature Range	-55 to +150	$^\circ C$
T_L	Maximum lead temperature for soldering purposes, 1/8" from case for 5 seconds	300	$^\circ C$

* Drain current limited by maximum junction temperature.



SLS80N03 Electrical Characteristics (TA=25°C 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, VGS = 0V, ISD =30A, TJ = 25°C		--	--	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: TJ =25°C , VDD =15V, VG =10V, RG =25Ω , L=0.5mH,
3. Pulse Test: Pulse Width≤300μs, Duty Cycle≤0.5%



SLS80N03 Typical Electrical and Thermal Characteristics

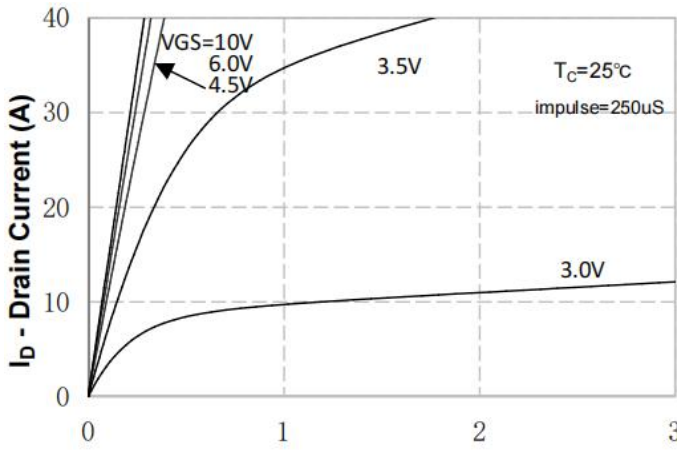


Figure 1. On-Region Characteristics

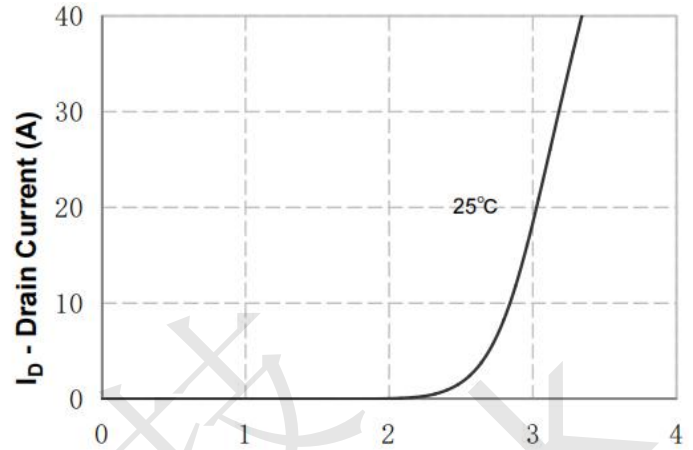


Figure 2. Transfer Characteristics

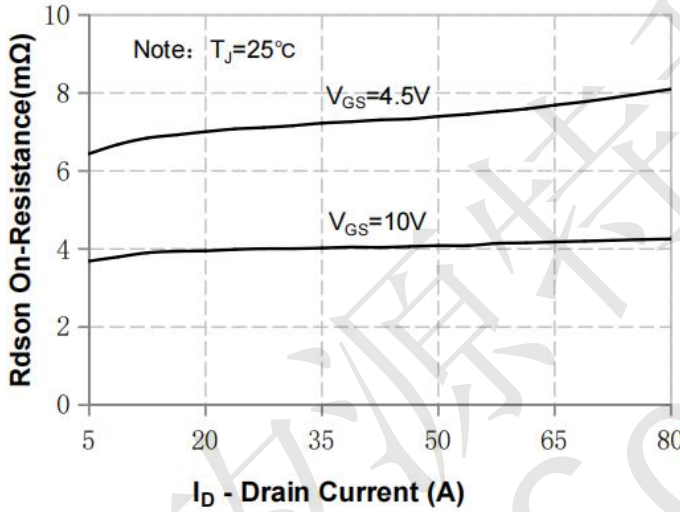


Figure 3. On-Resistance Variation vs Drain Current and Gate Voltage

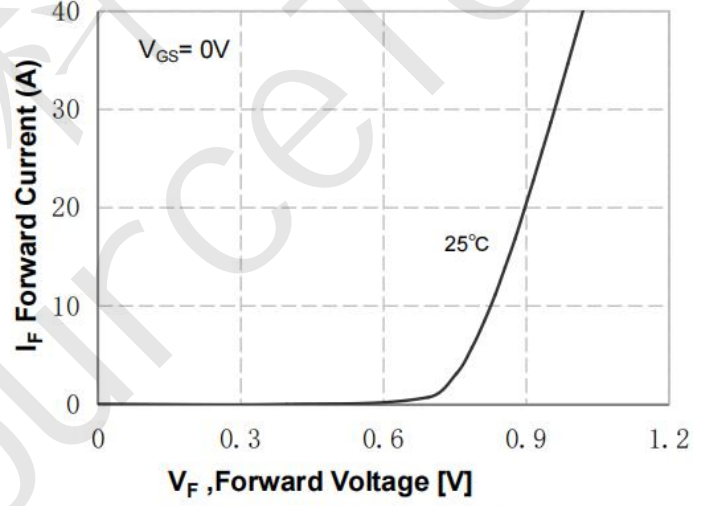


Figure 4. Body Diode Forward Voltage Variation vs Source Current

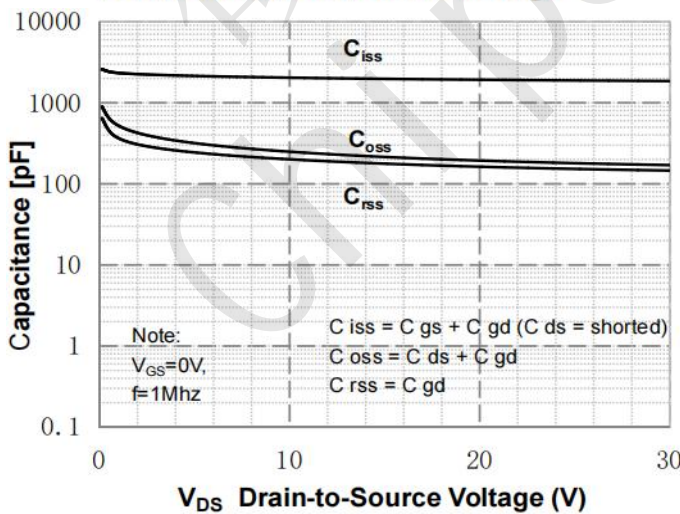


Figure 5. Capacitance Characteristics

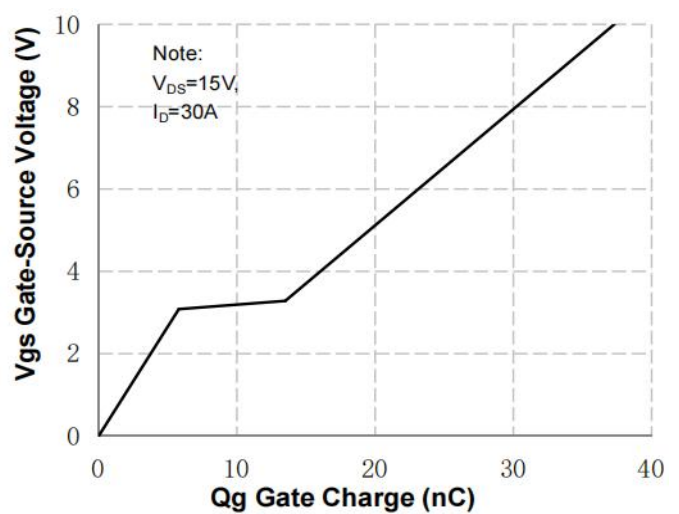


Figure 6. Gate Charge Characteristics

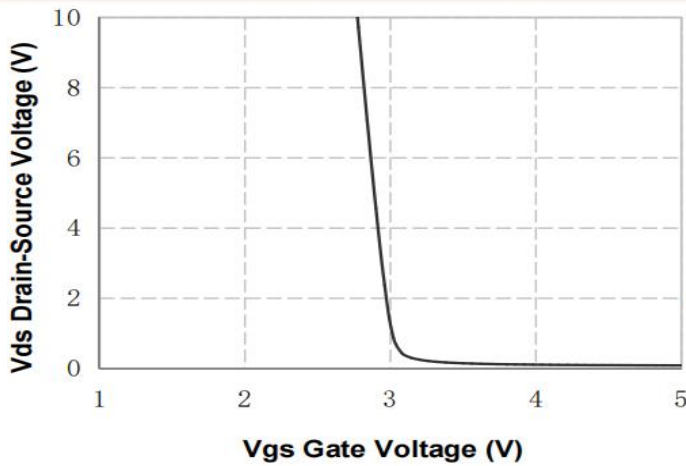


Figure 7. Vds Drain-Source Voltage vs Gate Voltage

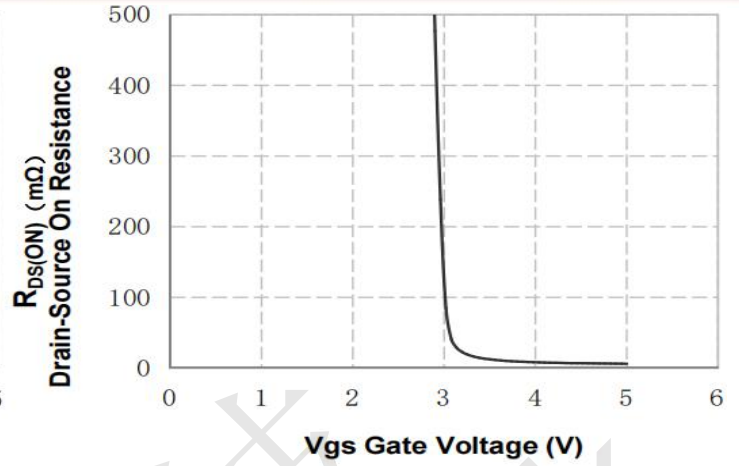


Figure 8. On-Resistance vs Gate Voltage

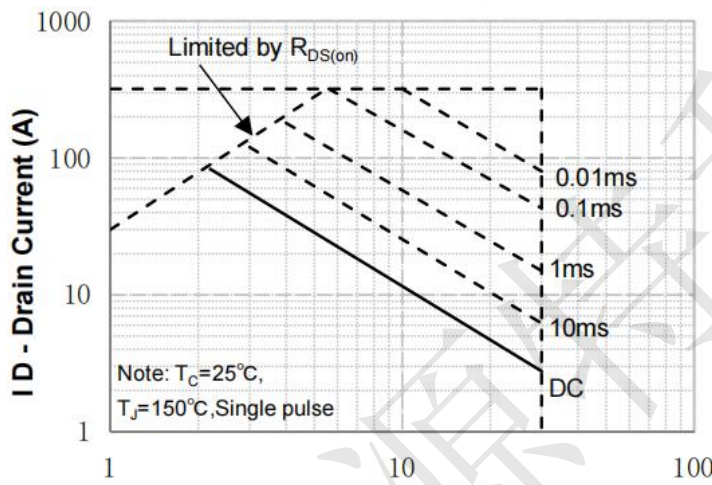


Figure 9. Maximum Safe Operating Area

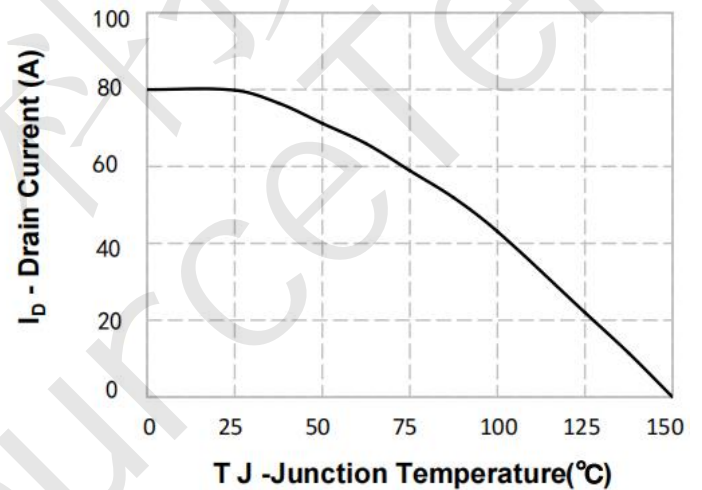


Figure 10. Maximum Continuous Drain Current vs Temperature

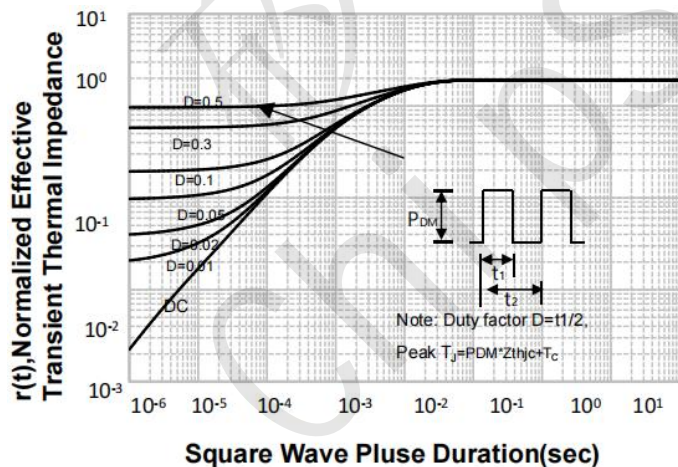
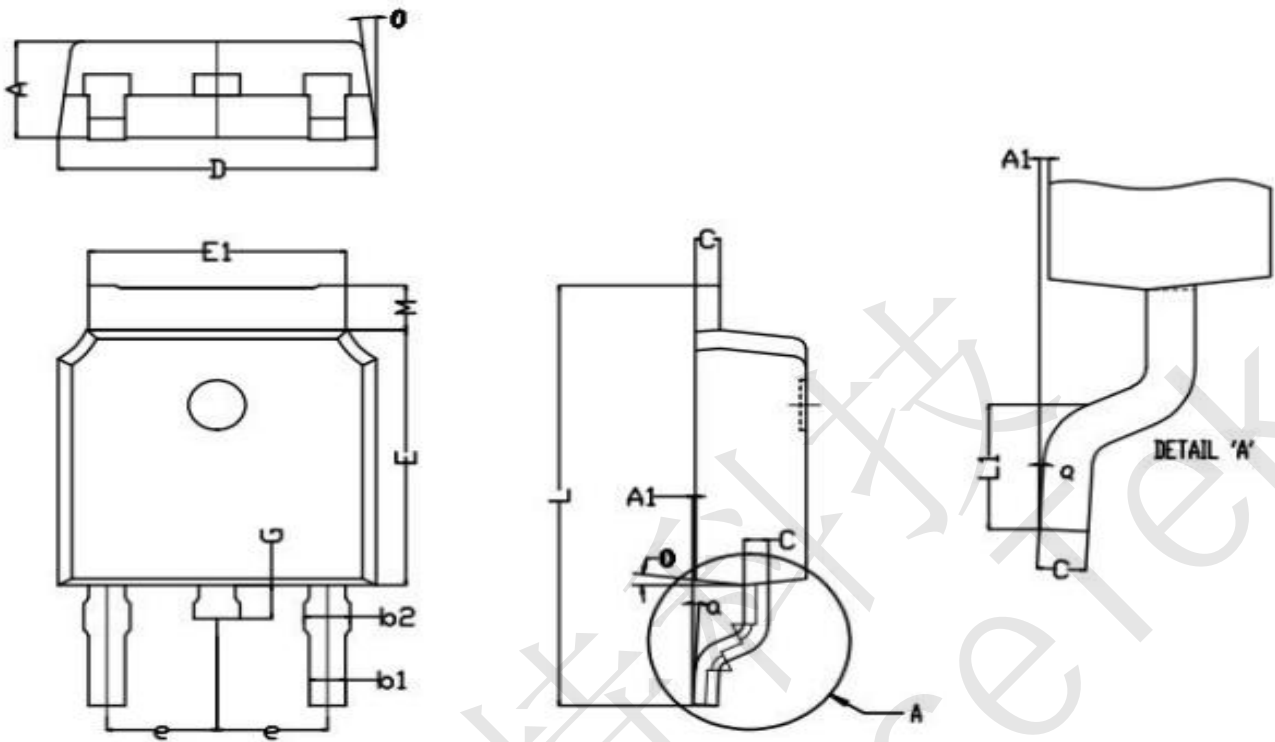


Figure 11. Transient Thermal Response Curve



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
0	0°	5°	10°
Q	0°	3°	6°



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