

Description

The SX20N65MP is silicon N-channel Enhanced VDMOSFETs, is obtained by the self-aligned planar Technology which reduce the conduction loss, improve switching performance and enhance the avalanche energy. The transistor can be used in various power switching circuit for system miniaturization and higher efficiency.

General Features

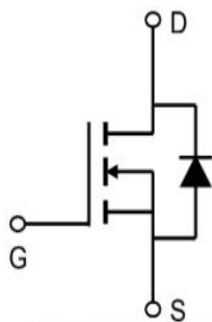
$V_{DS} = 650V$ $I_D = 20A$

$R_{DS(ON)} < 480m\Omega$ @ $V_{GS}=10V$

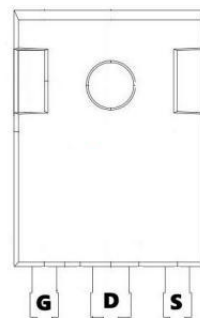
Application

Uninterruptible Power Supply(UPS)

Power Factor Correction (PFC)



TO-247-3L



Absolute Maximum Ratings ($T_c=25^{\circ}C$ unless otherwise noted)

Symbol	Parameter	Value	Unit
V_{DSS}	Drain-Source Voltage ($V_{GS} = 0V$)	650	V
I_D	Continuous Drain Current	20	A
I_{DM}	Pulsed Drain Current (note1)	72	A
V_{GS}	Gate-Source Voltage	± 30	V
E_{AS}	Single Pulse Avalanche Energy (note2)	340	mJ
I_{AR}	Avalanche Current (note1)	18	A
E_{AR}	Repetitive Avalanche Energy (note1)	48	mJ
P_D	Power Dissipation ($T_c = 25^{\circ}C$)	35	W
T_J, T_{stg}	Operating Junction and Storage Temperature Range	$-55 \sim +150$	$^{\circ}C$
R_{thJC}	Thermal Resistance, Junction-to-Case	3.55	$^{\circ}C/W$
R_{thJA}	Thermal Resistance, Junction-to-Ambient	62.5	$^{\circ}C/W$

Electrical Characteristics (T_J=25°C, unless otherwise noted)

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
V(BR)DSS	Drain-Source Breakdown Voltage	V _{GS} = 0V, I _D = 250μA	650	690	--	V
IDSS	Zero Gate Voltage Drain Current	V _{DS} = 500V, V _{GS} = 0V, T _J = 25°C	--	--	1	μA
IGSS	Gate-Source Leakage	V _{GS} = ±30V	--	--	±100	nA
VGS(th)	Gate-Source Threshold Voltage	V _{DS} = V _{GS} , I _D = 250μA	2.0	3.0	4.0	V
RDS(on)	Drain-Source On-Resistance (Note3)	V _{GS} = 10V, I _D = 9A	--	380	480	mΩ
C _{iss}	Input Capacitance	V _{GS} = 0V, V _{DS} = 25V, f = 1.0MHz	--	2150	--	pF
C _{oss}	Output Capacitance		--	265	--	
C _{rss}	Reverse Transfer Capacitance		--	6.2	--	
Q _g	Total Gate Charge	V _{DS} =335V, I _D =18A, V _{GS} =10V	--	38	--	nC
Q _{gs}	Gate-Source Charge		--	12	--	
Q _{gd}	Gate-Drain Charge		--	13	--	
td(on)	Turn-on Delay Time	V _{DD} =335V, I _D =18A, R _G = 25 Ω	--	36	--	ns
t _r	Turn-on Rise Time		--	51	--	
td(off)	Turn-off Delay Time		--	80	--	
t _f	Turn-off Fall Time		--	44	--	
I _S	Continuous Body Diode Current	T _C = 25 °C	--	--	18	A
ISM	Pulsed Diode Forward Current		--	--	72	
V _{SD}	Body Diode Voltage	T _J = 25°C, I _{SD} = 18A, V _{GS} = 0V	--	--	1.4	V
t _{rr}	Reverse Recovery Time	V _{GS} = 0V, I _S = 18A, di _F /dt =100A/μs	--	456	--	ns
Q _{rr}	Reverse Recovery Charge		--	5.9	--	μC

Note :

- 1、The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper.
- 2、The EAS data shows Max. rating . L=4.1Mh IAS=18A, VDD=50V, RG=25Ω, Starting T_J = 25 °C
- 3、The test condition is Pulse Test: Pulse width ≤ 300μs, Duty Cycle ≤ 1%
- 4、The power dissipation is limited by 150°C junction temperature
- 5、The data is theoretically the same as ID and IDM , in real applications , should be limited by total power dissipation.

Typical Characteristics

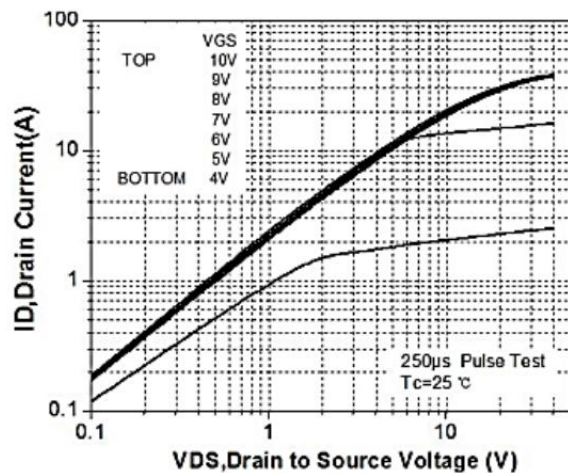


Figure 1. On-Region Characteristics

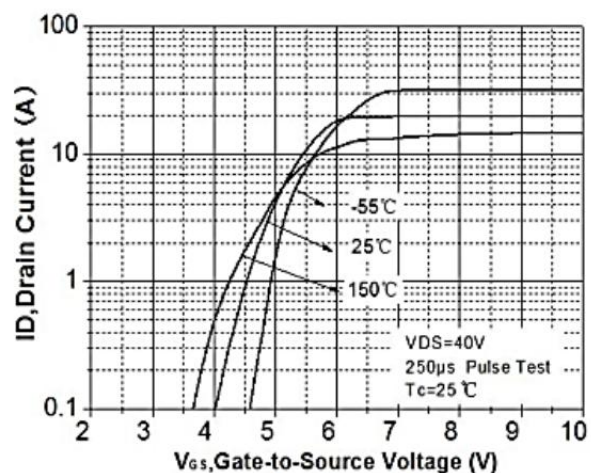


Figure 2. Transfer Characteristics

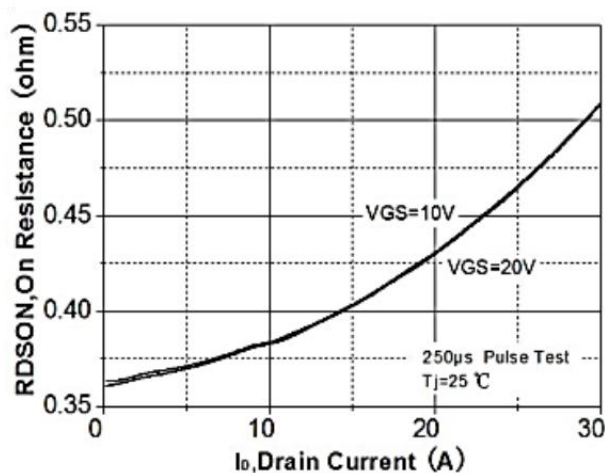


Figure 3. On-Resistance Variation vs Drain Current and Gate Voltage

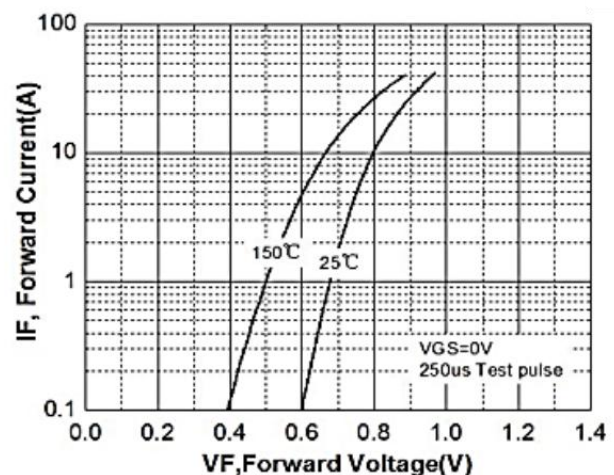


Figure 4. Body Diode Forward Voltage Variation with Source Current and Temperature

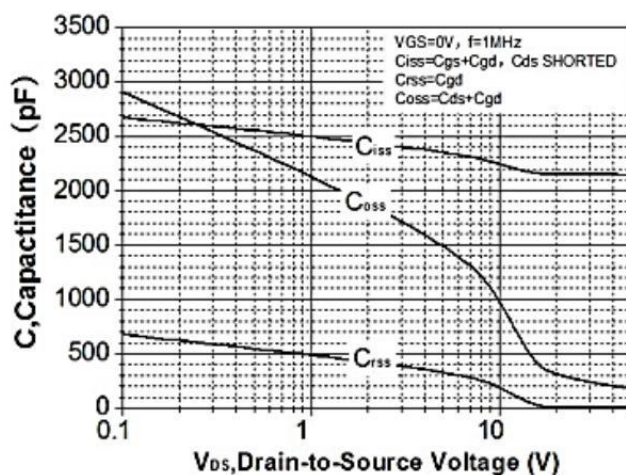


Figure 5. Capacitance Characteristics

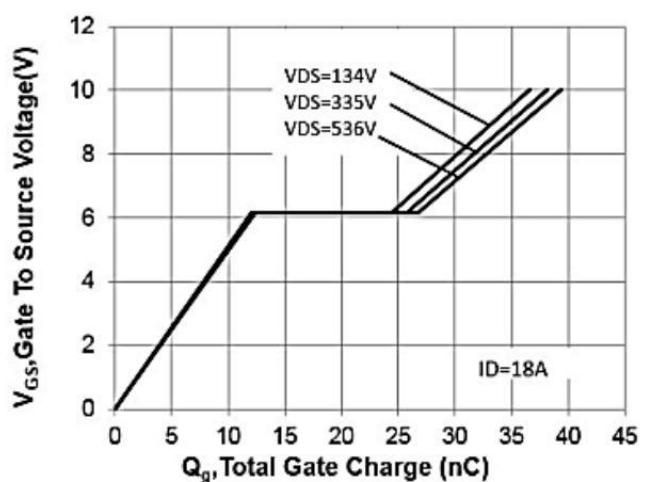
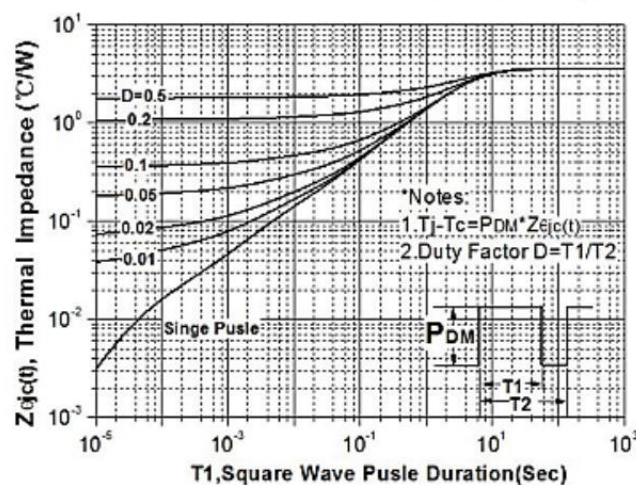
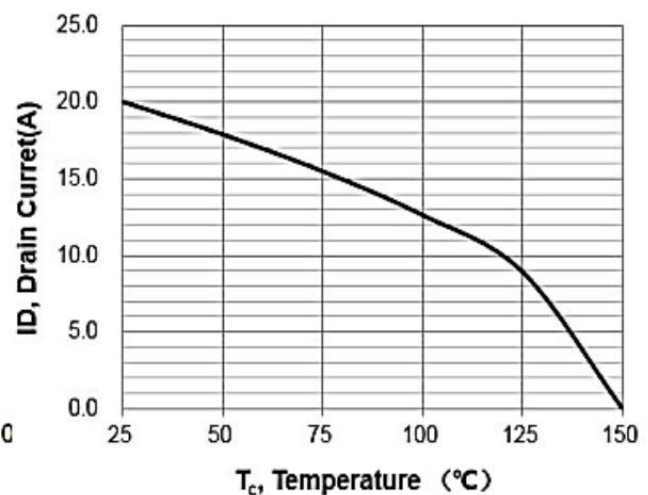
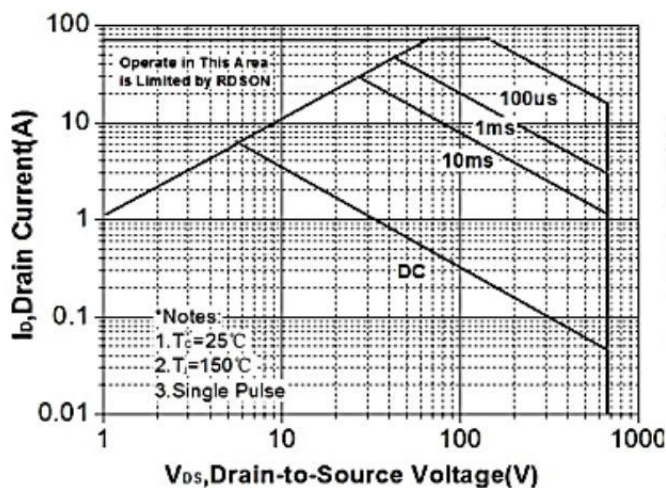
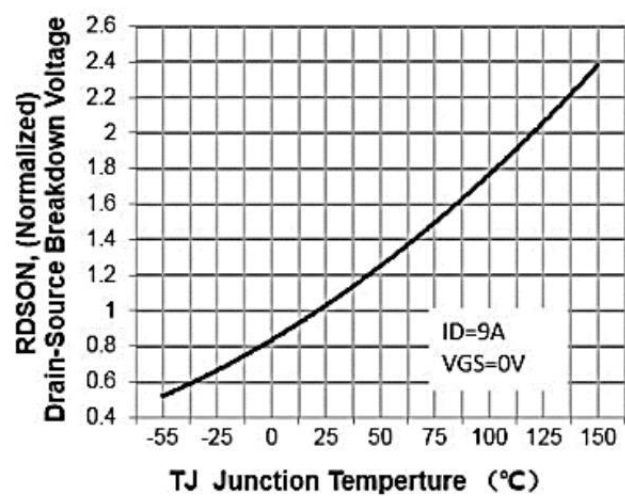
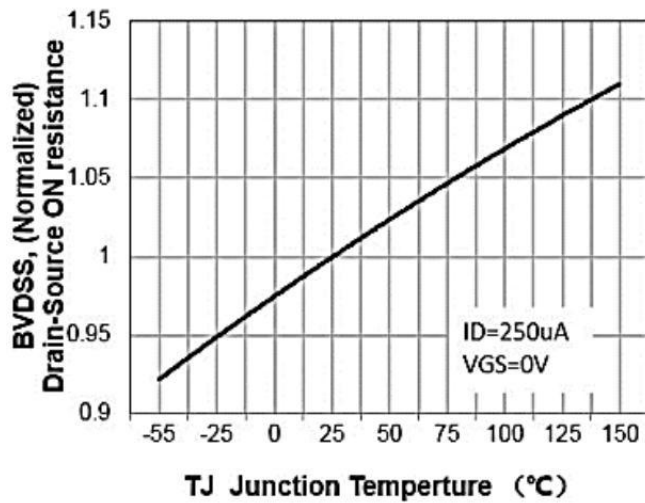
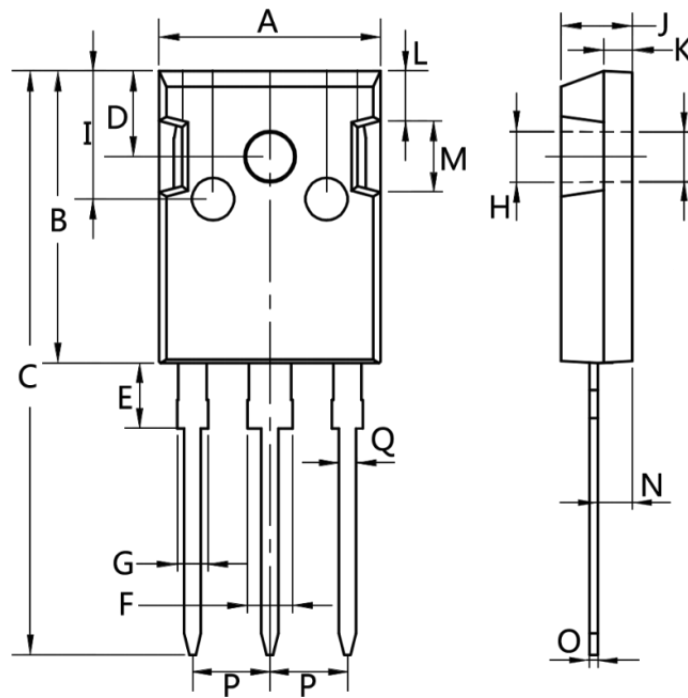


Figure 6. Gate Charge Characteristics

Typical Characteristics



Package Mechanical Data-TO-247-3L


Dim.	Min.	Max.
A	15.0	16.0
B	20.0	21.0
C	41.0	42.0
D	5.0	6.0
E	4.0	5.0
F	2.5	3.5
G	1.75	2.5
H	3.0	3.5
I	8.0	10.0
J	4.9	5.1
K	1.9	2.1
L	3.5	4.0
M	4.75	5.25
N	2.0	3.0
O	0.55	0.75
P	Typ 5.08	
Q	1.2	1.3

Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
TAPING	TO-247-3L		360